

Training Catalog 2009



Telecoms – Communication

EDITORIAL

eurodoc Services works in the documentation field to:

- Help companies meet their various documentation needs.
- Ensure a close link is maintained between system or equipment designers and users.
- Guarantee the correct operation of documentation processes.

eurodoc Services mainly works in the energy, defense, telecoms, aeronautical, rail, medical and other, related sectors. Its main activities are:

- Engineering Center/Design Office.
- Integrated Logistic Support system specification and implementation.
- Document design and creation.
- Content Management System design and integration.
- Document management.

These activities are coordinated by a training and document process organization consultancy team.

Don't hesitate to contact us so that we can arrange a meeting to study your training needs, occasional or permanent, general or specific, and assist you in answering them.

We look forward to meeting you,



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Sales Manager

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eurodoc Services, A RECOGNIZED TRAINING ORGANIZATION

To prepare your customers or engineers for use, operation and maintenance of your telecommunications equipments, ***eurodoc Services*** provides three types of training:

- ◆ An **introduction** to basic techniques
- ◆ **Theoretical courses** presenting systems and equipment
- ◆ **Practical workshops** on specific equipment.

Several solutions to meet your needs:

The Training Center

eurodoc Services offers training sessions in basic techniques and theoretical courses, allowing you to:

- ◆ Train new staff
- ◆ Maintain staff skills levels
- ◆ Give your Training department permanent support
- ◆ Respond faster to requests for training

Technical training on-site

For certain specific courses, our trainer-engineers work on-site, either:

- ◆ By integration in existing training departments,
- ◆ Seconded anywhere in the world to your customers.

They train local operating teams and assist them until the system purchased is up and running. Courses are taught mainly in English and in French.

Multimedia applications, E-learning

Relying on its computer expertise, eurodoc Services develops computer-based training tools using all the advantages that a multimedia approach offers:

- ◆ Animated, interactive sequences
- ◆ Self-access CAT (Computer Assisted Training)
- ◆ Computer Assisted Diagnosis and Troubleshooting
- ◆ Consulting in solutions développement: selection of platforms, software installation, etc.

Distributed on CD-ROM or over Internet/Intranet, these supports complete initial training by enhancing the transfer and memorization of concepts.

Course & courseware design and creation

eurodoc Services also provides course and courseware design and creation services and can develop specifically-designed courses to match your exact needs:

- ◆ **Needs analysis:** to determine the objectives of the training, study environmental constraints and analyze the population to be trained.
- ◆ **Course and courseware design:** design of the training program, modules and training materials to be used; creation of manuals and/or software.
- ◆ **Logistic support:** provide the human and material resources required, find accommodation and organize weekends for foreign trainees.

Course and courseware design and creation is also part of our change management consultancy department's work. Our team of consultants can, at an early stage of a project, analyze, design and coordinate change management procedures allowing enhanced control of skills transfer.

Quality commitment: AFAQ certification

eurodoc Services was granted **AFAQ certification** (AFAQ is the French quality assurance authority) of its quality system in accordance with the international **ISO 9001** standard on July 15, 1999, for its training, documentation and technical support services. Certification was renewed on February 13, 2005 (ISO 9001 v. 2000, N QUAL/1999/12809c). This certification demonstrates the expertise of *eurodoc Services* staff and their commitment to a process guaranteeing full customer satisfaction.

References

With its experience in the hi-tech field and widely-recognized expertise, eurodoc Services is a partner of major companies at both the European and global level:

- | | | |
|-------------------------------------|------------|------------|
| ◆ 9Cegetel | ◆ EADS | ◆ Philips |
| ◆ Air France | ◆ EADS D&S | ◆ RATP |
| ◆ Alcatel-Lucent | ◆ Ericsson | ◆ Renault |
| ◆ Alcatel-Lucent Submarine Networks | ◆ Ipanema | ◆ Sagem |
| ◆ Bouygues Telecom | ◆ MBDA | ◆ SFR |
| ◆ CS Communication & Systèmes | ◆ Motorola | ◆ SOFRELOG |
| ◆ Dassault | ◆ Nokia | ◆ Thales |

TRAINING AGREEMENT

eurodoc Services offers training in compliance with the relevant article of Law 71-575, 16 July 1971
Training certification 11 78 067 02 78.

At the end of each session, *eurodoc Services* sends the customer an attendance record and training agreement jointly with the invoice.

FEES AND PAYMENT

In-company courses are invoiced at **1 650 € ex. tax per day.**

- This fee is a flat-rate fee, irrespective of the number of trainees (up to a maximum of 10).
- It includes training manuals. Instructor travel and accommodation are invoiced as additional costs.
- This rate is valid for the current year.
- The price shown is the price before tax (our organization is subject to 19.6 % VAT for all courses given in France).
- The price is open to negotiation according to the number of sessions to be taught.
- Invoicing is at the end of each session.
- Payment is by bank transfer within 30 days, end of month.

GENERAL TERMS

Cancelling an enrolment

Notice of any enrolment to be cancelled must be given in writing at least a fortnight before the course begins, once this time has passed, the following amounts will be due:

- 50 % of session price if cancellation is 10 working days before the session begins
- 100 % of session price if cancellation is 5 working days before the session begins

TRAINING CATALOG

Telecom domain

- General courses
- Signaling Protocols
- The Local Loop
- Radiocommunications
- Digital transmissions
- Data Transmission Networks
- The World of Internet
- Network management and security

All domains

- Electronic documentation

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General courses

GENERAL TELECOMMUNICATIONS	2 or 5 days
THE OSI MODEL	2 days
TELEPHONY	5 days
ISDN	3 days

GENERAL TELECOMMUNICATIONS

OBJECTIVES	DURATION	
This course enables participants to become familiar with telecoms terminology and acquire basic knowledge of the components that make up a telecommunications network. The latest technological developments are clearly explained.	2 or 5 days	
AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO		
Describe the general organization of a telecommunications network		
Define the features and functions of switching and transmission equipment		
List the main modes of transmission and modulation		
List the steps of signal digitization (PCM T1 and E1)		
Define a data link		
Describe OSI model layers		
Present existing public networks and the services offered		
METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by lectures and video sequences.	2 days : Non-technical staff that need to be familiar with telecoms terminology, for example, technical sales representatives; 5 days : Technicians and engineers from other fields (electronics, physics, computer science, etc.) who are now working in the telecoms field.	None

PROGRAM

INTRODUCTION

- History
- The market
- Network basics

TRANSMISSION CONCEPTS

- Multiplexing (TDMA, FDMA, etc.)
- Modulation (PCM, phase, frequency, etc.)
- Synchronous (SDH) and plesiochronous (PDH) digital hierarchies
- Supports
 - cables
 - radio waves
 - fiber optics

SWITCHING CONCEPTS

- Automatic switchboards (PBXs)
- The different stages of a telephone call
- Types of signaling (R2, FM, SS7)

DATA TRANSMISSION

- The signal
- Coding
- The different types of transmission
- Standardization (layered architecture, protocols, etc.)
- Data transmission network elements
- The different types of switching

NETWORKS AND SERVICES

- PSTN
- ISDN
- X25 networks
- Internet
- Specialized networks
- WLL (Wireless Local Loop)
- Radio communications (PMR, DECT, GSM, GPRS, UMTS)
- LANs (Local Area Networks)

THE OSI MODEL

OBJECTIVES	DURATION
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At the end of this course the trainee will have acquired knowledge of OSI layered architecture and its applications in the different fields of data transmission.

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

List the seven OSI layers

Give the role of each layer

Identify the main protocols associated with each layer

Give examples of network applications

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge by audiovisual sequences and practical examples.

Data-processing engineers who use protocols,
Technicians and engineers who use protocol analysis equipment.

None

PROGRAM

INTRODUCTION: STRUCTURED NETWORKS

- Structured network architecture
- Structured network design principles
- The OSI (Open Systems Interconnection) model

THE OSI REFERENCE MODEL: GENERAL

- OSI model architecture
- OSI terminology
- OSI and standardization bodies
- Connection-oriented mode/connectionless mode
- Service primitives
- Service and protocol concepts

PHYSICAL LAYER (1)

- From coding to data transmission
- Review: modulation / transmission direction / digitization,
- Terminals / modem / switching nodes
- Transmission supports
- Junction and interface examples

LINK LAYER (2)

- Data link layer objectives
- Frame concept, flow control, error control, link management
- Example: the data link layer in public networks

NETWORK LAYER (3)

- Network connection model
- Routing
- Congestion
- Internetworking
- Examples: X.25 and IP

TRANSPORT LAYER (4)

- Services supplied to the session layer and quality of service
- Transport service primitives
- Transport protocols
- Connection management

SESSION LAYER (5)

- Services supplied to the presentation layer
- Services: dialog and synchronization management
- Session in unconnected mode: remote procedure call
- Service primitives

PRESENTATION LAYER (6)

- Presentation layer design elements
- Abstract Syntax Number 1 concept (ASN.1)
- Compression and encryption

APPLICATION LAYER (7)

- OSI service elements: ACSE and CCR
- File transfer and/or access
- Electronic mail
- Virtual terminals

TELEPHONY

OBJECTIVES	DURATION
------------	----------

This course enables participants to understand how a public or private telephone network and its component parts are set up.	5 days
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AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Describe the general organization of a telephone network

Define the features and functions of switching and transmission equipment

List the steps of signal digitization (PCM T1 and E1)

Understand switching and list the different types of switches

List the advantages of digital networks

Understand ISDN operation

Understand private PBX based networks

List the main signaling standards and their characteristics

Present existing public networks and the services offered

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Acquisition of theoretical knowledge by lectures and video sequences, configure a PBX and install a private network.	Technicians or future technicians without prior telecoms knowledge who work in the telephone networks field.	None
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PROGRAM

THE PUBLIC SWITCHED TELEPHONE NETWORK (PSTN)

- Introduction
- Types of switchboard
- The public switch in public telephone networks
- Connections
- Signaling

THE INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

- What is ISDN?
- Standardization
- Services offered
- Interfaces and connections
- Maintenance principles
- URN and hubs
- LAP-D protocol

PBX CHARACTERISTICS

- The private switch in private telephone networks
- Environment
- Functional block diagram of a Multiservice Switch
- Call processing
- The different types of cabling
- PBX networking
- The telephone network signaling standard
- PBX developments

THE ROLE AND PRINCIPLE OF SIGNALING

- Introduction
- The minimum data required in a signaling code
- Call processing
- Signaling codes and signals
- R2 code
- MF Socotel code
- Tie-line pulse signaling
- Signaling System 7

ISDN

OBJECTIVES	DURATION
------------	----------

This course familiarizes participants with the principles and potential of ISDN.

3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Explain the development of networks towards ISDN

Define ISDN services and present the French ISDN system (Numéris)

Define the functional groups and interfaces

State the engineering rules for the different connections

Present the general structure of the physical frame and its different channels

Analyze link (LAP-D) and network frames

Present the messages and data elements of ISDN Numéris VN4 and Euro ISDN

Trace a User/Network dialog

Understand the role and principle of ISUP.

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge in association with practical exercises configuring ISDN PBXs and analyzing protocols.

Technicians and engineers.

Some prior knowledge of telephony is advisable. Knowledge of X25 protocol is an additional asset.

PROGRAM

WHAT IS ISDN?

- Why ISDN?
- Review: The "analog" PSTN
- Review: analog and digital signals
- Standardization
- Network access and connection
 - channels
 - basic access (2B+D) and primary access (30B+D)
 - access structures
 - URN and hubs
- ISDN and X.25 (Numéris and Transpac)
- Services
 - support services
 - remote services
 - additional services offered to subscribers
- Subscriber equipment architecture

VOICE DIGITIZATION

- Sampling, quantification, compression, coding
- PCM frames

SUBSCRIBER TERMINAL EQUIPMENT (STE)

- Numbering and addressing: E.164 and E.163
- Standard STE architectures

- The different types of equipment: NT1, NT2, DSTE, TA, PBX, etc.
- Bandwidth on request
- Applications: voice, image, data
- Power supply and maintenance

INTERFACES AND PROTOCOLS

- Reference points
- Subscriber system interface (S/T)
- Frame structure at point S
- The U interface
- Layer 2: LAP-D (UIT-T I.440/Q.920 and I.441/Q.921)
- Layer 3: D protocol (UIT-T I.450/Q.930 and I.451/Q.931)

SS7 AND THE ISDN USER PART (ISUP)

- Presentation of Signaling System n°7
- The ISDN User Part: ISUP

BROADBAND ISDN: ATM

- Presentation of ATM
- Local loop: ADSL

USING AND PROGRAMMING A PBX AND PROTOCOL ANALYZER

- Configuring levels 1, 2 and 3
- Frame and message analysis

Signaling Protocols

INTRODUCTION TO SIGNALING	1 day
SIGNALING SYSTEM 7	2 days
SS7: FROM SSUTR2 TO ISUP	1 day
SIGNALING ON GSM NETWORKS	3 days

INTRODUCTION TO SIGNALING

OBJECTIVES	DURATION
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To give the trainee basic signaling knowledge allowing him to tackle the different existing systems. Give the prior knowledge required for the SIGNALING SYSTEM N°7 and GSM network signaling courses.

1 jour

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Summarize the purposes of signaling

List the different types of signaling

List the main stages of call set-up

List the different signaling systems and codes

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge by lectures and video sequences.

All technical personnel that work on mobile or fixed telephone networks and that are involved in data exchange via the network.

None

PROGRAM

HISTORY

- Switching (general philosophy)
- General principles of the different types of switch
- The corresponding signaling

COMPOSITION OF A TELECOMMUNICATIONS NETWORK

- STN
- Switching plan
- Transmission supports

ROUTING ON A NETWORK

- Switches
- The different types of switching
- The different types of switch used

THE ROLE AND PRINCIPLE OF SIGNALING

- Introduction
- The minimum data required in a signaling code
- Signaling terminology
- Signaling codes and signals (IT16, R2, MF, Socotel, SS7)

MOBILE NETWORK SIGNALING

- Data inherent to mobility
- Protocols used

SIGNALING SYSTEM 7

OBJECTIVES

For trainees to acquire knowledge of semaphore channel signaling network architecture and SS7 messages and procedures.

DURATION

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

List the four levels of recommendation ITU-T n°7

Give the function of each of these levels

Identify the main frames, segments and semaphore messages associated with User Parts

Master addressing in SS7

Be able to decode and interpret SSUTR2, ISUP and MAP messages .

METHOD

Build up theoretical knowledge and carry out "translation" work. Develop understanding of the standards contained in the Q.7xxx series of the ITU-T blue books.

THIS COURSE IS AIMED AT

Technicians and engineers working on communication networks using SS7.

PRIOR KNOWLEDGE

Prior knowledge of signaling is required (the INTRODUCTION TO SIGNALING course provides this).

PROGRAM

OVERVIEW

- History
- ISUP or SSUR? A French-English glossary
- From TUP to ISUP

SS7 FUNCTIONS

- Main features
 - Goals and services
 - Recommendations
 - Illustration: a link between two switches
 - Signaling network structure
 - OSI and SS7 coexistence
- Level 1 (MTP1): semaphore link
- Level 2 (MTP2): semaphore channel
 - Definition of level 2 as per rec. Q.700 - Q.703
 - 3 types of semaphore frames: MSU, LSSU, FISU
 - Level 2 functions and procedures
- Level 3 (MTP3): semaphore network
 - What happens at level 3? Q.704
 - Signaling message orientation
 - Other level 3 functions
- Level 4 (UP): user sub-systems
 - SCCP
 - TCAP
 - TUP
 - INAP
 - ISUP and SSUTR 2
 - DUP and MAP
- Interface primitives between the SS7 functions
 - General considerations
 - Other parallels with the OSI model
 - SS7 service primitives: 4 types
- SS7 message addressing
 - Signaling message structure
 - routing labels
 - MSU frame addressing
 - SCCP addressing
- Operation, management and maintenance
 - Management inside SS7
 - Maintenance: the test concept
 - Quality and flow control concepts
- Monitoring and measurement on the SS7 network
 - Measurement concepts
 - Recommended measurements (Q.752 tables)

SSUTR2

- Overview
- Message format
 - H0 H1 header code allocation
 - Description of the main messages
- SSUTR2 call processing
 - Call setup and release

ISUP

- Overview
 - Advantages with respect to SSUTR2
 - From SSUTR2 to ISUP and from ISUP to SSUTR2
 - Basic services and supports and additional services
- Q.761: ISUP
 - ISUP functions, procedures and signaling methods
 - End-to-end signaling
 - Subsequent developments and compatibilities
- Q.762: signaling messages
 - Message types
 - Signaling messages and information
- Q.763: formats and codes
 - General structure
 - Parameter codes and formats
 - Mandatory parameters of fixed/variable size, optional parameters
 - exemple of message decoding (IAM)
- Q.764: signaling procedures
 - General
 - Example: basic call control sig. procedures
- Example traces (K11)
 - Successful call: IAM – ACM – ANM – REL – RLC, failure

MAP

- Dialogs on a GSM network: MAP
 - The MTP and SCCP, TCAP, MAP layers
- TCAP layer
 - The component and transaction sub-layers
 - Example dialog
 - Message coding: ASN.1
- The MAP application layer
 - Operations in MAP

SS7 : FROM SSUTR2 TO ISUP

OBJECTIVES

For trainees to acquire knowledge on SSUTR2 and ISUP messages in the SS7 network.

DURATION

1 jour

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

List the services supported by SSUTR2

List SSUTR2 messages and their structure

List the services supported by ISUP and their advantages compared to SSUTR2

List ISUP messages and their structure

List standards Q.761 to Q.764

METHOD

Build up theoretical knowledge and carry out "translation" work.
Develop understanding of the standards contained in the Q.7xxx series of the ITU-T blue books.

THIS COURSE IS AIMED AT

Technicians and engineers who work on communication networks using SS7 with SSUTR2 and/or ISUP in application layers.

PRIOR KNOWLEDGE

Prior knowledge of SS7 is necessary (the two-day SIGNALING SYSTEM 7 course provides this).

PROGRAM

OVERVIEW

- ISUP or SSUR? A small English – French glossary
- TUP, SSUTR2 and ISUP
- ISUP ETSI v.2

SS7: REVIEWS

- Introduction
- Level 2: semaphore channel functions
- Level 3: semaphore network functions
- Level 4: user parts
- Interface primitives between the SS7 functions
- SS7 addressing
- Operation, management and maintenance
- Monitoring and measurement on the SS7 network

SSUTR2

- Overview
- Message formats
- SSUTR2 call processing

FROM SSUTR2 TO ISUP IN 2 WORDS

- Similarities and differences between ISUP and SSUTR2
- signaling procedures
- Drawbacks of SSUTR2

ISUP

- Overview
- Q.761: general
- Q.762: signaling messages
- Q.763: formats and codes
- Q.764: signaling procedures

THE FUTURE: ISUP V3 OR SPIROU

GSM NETWORK SIGNALING

OBJECTIVES	DURATION
At the end of this course the trainee will have acquired knowledge of the different types of signaling used on a GSM network.	3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

- List different interfaces along with the functions and protocols used
- Identify the GSM Specifications concerning these protocols
- Understand the Air interface logical channels
- Understand Mobility Management (MM) and Radio Resources (RR) management
- Identify the connections on PCM frames (A and Abis Interfaces)
- List the different layers of Signaling System 7
- Understand BSSAP, MAP, and ISUP messages
- Understand message exchanges over the network

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge. Use of real traces.	Technicians and engineers who work on GSM networks and who analyze network interfaces or use protocol analyzers.	Familiarity with GSM is essential.

PROGRAM

INTRODUCTION

- GSM network architecture
- Interfaces
- OSI model
- GSM specifications
- Data inherent to mobility,

AIR INTERFACE (MS – BTS)

- The role of the Air interface
- Logical channels and layered architecture
- Level 1: the TDMA frame, bursts and multi-frames
- Level 2: LAPD-m
- Level 3: RIL3

A-BIS INTERFACE (BTS – BSC)

- General overview
- Layer 2: LAP-D
- Layer 3

MS – TRAU INTERFACE

- Adaptation of rate in transparent mode
- Data transfer in non-transparent mode
- BTS –TRAU frame formats

REM INTERFACE (BSS – OMC)

- The physical layer
- The link layer: LAP-B
- The network layer: X.25

A INTERFACE (BSS – OMC)

- Overview: SS7
- Layers 1 -3: MTP and SCCP
- Layers 4 -7: BSSAP (DTAP and BSSMAP)
- Call setup sequences

INTERFACES IN THE NSS

- TCAP layer
- MAP layer

NSS – PSTN /ISDN INTERFACES

- TUP
- SSUTR2
- ISUP

The Local Loop

THE WIRELESS LOCAL LOOP (WLL)	2 days
xDSL – ADSL ACCESS SYSTEMS	2 days

THE WIRELESS LOCAL LOOP

OBJECTIVES	DURATION
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At the end of this course the trainee will have an overview of the technology used in WLL and its applications.	2 days
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AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
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- Understand the regulatory framework for WLL
- Be able to list the different solutions offered by WLL
- Understand the principle of use of microwave radio systems in WLL
- Understand FDMA, TDMA and CDMA access methods
- Understand the different types of modulation used in WLL
- Be familiar with the transmission protocols used (PDH, SDH, ATM, etc.)
- Be familiar with the market and manufacturer portfolios

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures and video sequences.	Technicians and engineers destined to work on WLL systems.	None
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PROGRAM

PRESENTATION AND REGULATIONS

- What is "WLL"?
- Regulations

WLL TECHNIQUES

- The different systems
 - Wireless systems (DECT, CT2)
 - Cellular systems (GSM)
 - Fixed radio systems
 - LMDS: Local MultiPoint Distribution System
- Microwave radio systems and WLL
 - General organization
 - WLL Point to MultiPoint architecture
 - Radio link, details
- Access methods: Shared radio resources, multiple access
 - Access methods
 - FDMA: Frequency Division Multiple Access
 - TDMA: Time Division Multiple Access
 - CDMA: Code Division Multiple Access
 - The different methods compared
 - Application of these methods to WLL
- Modulation
 - The principle of modulation
 - Which type of modulation should be used?
 - Phase modulation in detail
 - Amplitude modulation in detail
- Data transmission protocols

THE MARKET AND MANUFACTURER PORTFOLIOS

- An overview of manufacturer portfolios
- A market study
- Analysis of the current situation

APPENDICES

- Regulations
- Manufacturer portfolios

xDSL – ADSL ACCESS SYSTEMS

OBJECTIVES

At the end of this course the trainee will have acquired an overview of new xDSL high access rate technologies, in particular the asymmetric version, ADSL

DURATION

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Understand how xDSL technologies are situated in public networks

Understand the legal context and the consequences of unbundling

Understand xDSL technologies, particularly ADSL

Understand the principle of modulation on discrete frequencies

Compare them with ISDN

Know how IP and ATM are transported on ADSL

METHOD

Build up theoretical knowledge by lectures and video sequences.

THIS COURSE IS AIMED AT

All technicians and engineers that need to work with xDSL.

PRIOR KNOWLEDGE

None

PROGRAM

FROM PSTN TO ADSL

- Internet and PSTN/ISDN
- Unbundling

xDSL TECHNOLOGIES

- Limitations of cable
- Echo cancellation and Frequency Division Multiplexing (FDM)
- xDSL technologies: HDSL, SDSL, ADSL, RADSL, VDSL
- Modulation: CAP and DMT
- 2B/1Q coding
- Conclusion

ARCHITECTURE, EQUIPMENT AND PROTOCOLS FOR ADSL

- Specification
- ADSL architecture
- The protocol layer
- Frame and superframe
- ADSL equipment: Modems, filters, DSLAM

IP, PPP, ATM

- IP (Internet Protocol)
- PPP (Point-to-Point Protocol)
- ATM (Asynchronous Transfer Mode) protocol

Radiocommunications

SHARED RESOURCE RADIO NETWORKS	2 days
TETRA PROFESSIONAL RADIOCOMS	2 days
TETRAPOL PROFESSIONAL RADIOCOMS	5 days
TETRAPOL RADIO INTERFACE	3 days
TETRAPOL NETWORK CELL SELECTION AND HANDOVER ALGORITHMS	3 days
GSM MOBILE RADIOCOMS	3 days
GPRS, THE GSM PACKET SERVICE	3 days
THE 3RD GENERATION OF MOBILE RADIOCOMMUNICATIONS: UMTS	2 days
THE UMTS RADIO INTERFACE	2 days
A RADIOCOMMUNICATIONS APPLICATION: WAP	1 day

SHARED RESOURCE RADIO NETWORKS

OBJECTIVES	DURATION	
This course enables participants to understand the shared resource radio network standard and become familiar with the terminology used and the architecture of a shared resource radio network.	2 days	
AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO		
Describe the shared resource radio network system and the position it occupies		
List services		
List the functions of the different network elements		
Describe the different steps of a call setup and mobile localization		
METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by lectures and video sequences.	An audience of technicians, engineers and technical marketing representatives destined to work in the field of shared resources mobile networks.	None
PROGRAM		
INTRODUCTION <ul style="list-style-type: none"> • A history of Professional Mobile Radio (PMR) • From conventional PMR to Trunk • Shared resources NETWORK ARCHITECTURE AND OPERATION <ul style="list-style-type: none"> • Terminals • Relay stations • Nodal center • Inter-site links 	<ul style="list-style-type: none"> • System operation • Operation in degraded mode • A modular and upgradeable architecture • Inter-regional system SERVICES <ul style="list-style-type: none"> • The services offered to users • Data transmission • The services offered to the operator TRUNK SYSTEM STRUCTURE AND PROTOCOL <ul style="list-style-type: none"> • Signaling characteristics • Frequency channel signaling structure 	<ul style="list-style-type: none"> • Code word structure • Random access protocol • Example calls • Signaling formats • Message formats • Fleet numbering • Addressing • Subscriber identification • Shared frequency channels ETSI RECOMMENDATIONS

TETRA PROFESSIONAL RADIOCOMS

OBJECTIVES	DURATION	
This course enables participants to understand the TETRA standard and become familiar with the terminology used and the architecture of a network based on this standard.	2 days	
AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO		
Describe the TETRA system and the position it occupies		
List services		
List the function of the different network elements		
Describe the different steps of: the call setup, the mobile localization and the handover procedure.		
Identify the main ETSI recommendations relative to TETRA features.		
METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by lectures and video sequences.	An audience of technicians, engineers and technical marketing representatives destined to work in the field of professional mobile radio.	None
PROGRAM		
OVERVIEW OF TETRA <ul style="list-style-type: none"> • Introduction • TETRA • Telecommunications services • Network architecture • Network functions • Services supported by system interfaces • Services supported by external interfaces • Trunking methods TECHNICAL DESCRIPTION <ul style="list-style-type: none"> • The OSI reference model • The physical layer • Organization of layer 2 – Data Link Control (DLC) • Use of logical channels and mapping between layers • Function of the physical layer • General operation 	<ul style="list-style-type: none"> • MAC function • Function of layer 3 • System operating modes • MS operating modes • MS classes • Data services RADIO ASPECTS <ul style="list-style-type: none"> • Coverage techniques • Radio parameters • Coverage • Direct mode • Aspects of coexistence with TETRA ETSI RECOMMENDATIONS	

TETRAPOL PROFESSIONAL RADIOCOMS

OBJECTIVES

This course enables participants to acquire general knowledge of the Tetrapol standard. As this standard is semi-open and is applied in different manner by different manufacturers, the equipment used on the client's network will be used as a basis for the examples and practical exercises.

DURATION

5 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Describe the basic features of the Tetrapol standard: organization, national network.

Describe the services available to network users.

Describe network architecture: infrastructure, control stations, terminals.

Describe network management: groups and organizations, technical, tactical and operational aspects.

Describe the main mechanisms used for voice and data.

Describe the defense and reconfiguration mechanisms: downgraded modes, communication security.

Describe the main functions of the control stations: terminal programming tool, tactical management tool, management station, network management tool, mediation device.

Identify and describe the main parts of a switch (PABX) and radio relay.

METHOD

Build up theoretical knowledge by lectures and video sequences.
The presence of an operational network with a set of radio and wireline terminals allows theoretical sessions to be alternated with practical presentations of the equipment.

THIS COURSE IS AIMED AT

Anyone wishing to acquire general knowledge of the system.
Personnel responsible for network operation and maintenance – for whom this course is a preliminary requirement.

PRIOR KNOWLEDGE

Prior radiocom knowledge is required.

PROGRAM

GENERAL SYSTEM CHARACTERISTICS

- Introduction to the multi-organization concept
- The basic network
- The national network

USER SERVICES: INFORMATION AVAILABLE ON THE TERMINAL SCREEN

- Private calls: Individual call, multiple external calls (PABX), call transfer and call forwarding
- Group calls: talkgroup, group call, group merging, conferences, general call
- Distress calls: crisis conference, distress conf. individual distress call
- Direct mode (DIR) and repeater mode (IDR) communication
- Data communication: messages (interpersonal, status and SMS) and data transmission
- Group call recording

NETWORK ARCHITECTURE

- OMN
- Types of terminal
- Cells
- Technical trunks
- Switching nodes
- Internal and external interfaces (PBX, DNC, DMR, DAC, LAG, GATEPRO, SCC)

PRESENTATION OF CONTROL STATIONS

- Organization, configuration, software loading, terminal customization
- Subscriber and call management
- Terminal and call management, status
- Network supervision: contexts, alarms
- MD and OMC applications
- DC (LAG, DAC, DCS, DPS, DC).

SYSTEM ORGANIZATION

- The role of each operator
- Operational and technical tactics

MOBILITY MECHANISMS

- Subscriber registration and localization
- Setting up voice calls
- The cell selection principle
- The cell change principle
- System defense and reconfiguration

SWITCH (PABX) DESCRIPTION

- Hardware description
- Functional description

RADIO RELAY DESCRIPTION

- Hardware description
- Functional description

THE TETRAPOL RADIO INTERFACE

OBJECTIVES

The goal of this course is to develop expertise in the field of the protocol used and messages exchanged on the air interface between the relay and the terminal: cell change, registration on the network, call setup and cutoff, information broadcast on the beacon channel of a relay (list of neighboring cells, list of conferences, in normal or downgraded mode, etc.).

DURATION

3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Describe the different layers of the air interface protocols.

Identify and describe the structure of frames composing a superframe.

Describe the main mechanisms of the voice and data logical channels.

Describe the construction of the mechanisms used to establish contact between several terminals.

METHOD

Build up theoretical knowledge by lectures and video sequences.

THIS COURSE IS AIMED AT

Radio and network engineers and people using the air interface mechanisms (technical support, developers, etc.).

PRIOR KNOWLEDGE

General network and telecommunications knowledge (modulation, HDLC protocol...), and knowledge of the Tetrapol, standard is essential

PROGRAM

INTRODUCTION

- Overview
- ISO model layers
- Tetrapol air Interface layers

THE PHYSICAL LAYER

- Introduction (frequency organization, radio channels in relay and direct modes)
- Radio channel organization (frame and superframe, description of the logical channels)
- Channel coding and frame construction (transmission line, voice and data frame construction, random access frame, out of area call frame)
- Channel coding, interleaving, scrambling, differential coding, modulation
- Transmission and reception properties, power correspondence - TEB/TET

THE LINK LAYER

- Introduction
- Voice and data frame structure

THE TRANSPORT LAYER

- Introduction
- Transport layer template
- Connected and unconnected mode
- Short and long datagram mode

THE APPLICATION LAYER

- Introduction
- The TSDUs (definition and examples)

GENERAL MECHANISMS

- Terminal monitoring by the network (registration, localization)
- Handshaking (terminal initiated / network initiated)
- Transaction closure
- Message broadcast by the network to the terminal
- Key distribution
- Terminal distribution

SERVICES

- Individual call
- Conference
- Distress call
- Data transmission
- Terminal management

RADIO PERFORMANCE

- Introduction
- Radio parameters displayed on the OMC
- Radio parameters transmitted on the air interface
- Radio performance (TEB-TET)

PARAMETERS THAT CAN BE CONFIGURED OR DISPLAYED

- Terminal parameters
- Network parameters
- Cell parameters

PRACTICAL EXERCISES

- Decoding and interpretation of real signaling exchanges between the terminal and network

TETRAPOL NETWORK CELL SELECTION AND HANDOVER ALGORITHMS

OBJECTIVES	DURATION
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The goal of this course is to develop a high level of expertise in the field of handover algorithms.

3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE
--

Familiar with the relay selection algorithms (broadcast channel search, broadcast channel selection with tunnel, broadcast channel reselection) and know how to configure them.

Reconstitute all algorithms according to terminal operating mode (preferential coverage, preferential cell, preferential base network).

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures and video sequences.

Mainly radio and network engineers and people configuring handover algorithms (technical support, developers, etc.).

Basic knowledge of the Tetrapol standard (must have followed the air interface course).

PROGRAM

PRESENTATION OF THE BASIC CONCEPTS

- Preferential base network, preferential cell, preferential conference...
- Absolute application criteria
- Relative application criteria (parameters that can be configured via the OMC or via the terminal programming tool)
- Conflicts between application criteria
- Storage of information broadcast in the current cell

RADIO CRITERIA

- Frame error rate measurement
- Downlink loss criteria
- C1 parameter measurement
- C2 parameter measurement

BROADCAST CHANNEL SEARCH PROCEDURE (BCHS)

- Overview
- Determination of the BCHS domain
- Cell selection by the BCHS
- Outgoing calls in BCHS (systematic and conditional outgoing calls)
- BCHS signaling to the user
- BCHS process (radio channel measurements, cell selection, tunnel case...)

BROADCAST CHANNEL RESELECTION PROCEDURE (BCHR)

- Overview
- Cell selection in BCHR mode
- Cell handover by BCHR (storage of radio criteria, cell handover criteria)
- BCHR signaling to the user
- BCHR incident processing

TYPICAL BCHS, BCHR DELAYS

- Incidence of certain application conditions (encryption key acquisition...)

MODIFIABLE PARAMETERS

- The system parameters (infra and terminal); default values; declaration of neighboring cells to supervision
- System dimensioning limits (maximum number of neighbors, data in inter-base network mode...)

CONCRETE IN-THE-FIELD CASE STUDIES

- Theoretical and observed BCHS and BCHR times

GSM MOBILE RADIOCOMS

OBJECTIVES

This course enables participants to acquire the terminology and knowledge of the architecture and associated techniques required to understand GSM.

DURATION

3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Describe the GSM system and the position it occupies

List services

List the functions of the NSS, BSS, OSS and MS.

Describe the different steps of: call setup, mobile localization and the handover procedure

Identify the main ETSI recommendations relative to GSM features.

METHOD

Build up theoretical knowledge by lectures and video sequences.

THIS COURSE IS AIMED AT

An audience of technicians, engineers and technical marketing representatives destined to work in the mobile radio field.

PRIOR KNOWLEDGE

None

PROGRAM

INTRODUCTION

- History
- Mobile radiocom systems and cellular concepts
- Fundamental choices, general characteristics

GSM ARCHITECTURE AND SUB-SYSTEM

FUNCTIONS

- Hardware architecture: MS, BSS, NSS, OSS
- Layer architecture
- Interfaces

SERVICES

- The PLMN (Public Land Mobile Network)
- Support and additional services
- GSM developments

RADIO TRANSMISSION

- Multiple access
- Physical and logical channels
- Interleaving, burst format
- Modulation

INTERFACES AND PROTOCOLS

- Signaling
- BSS – NSS interfaces
- Network access protocols

MANAGEMENT PROCEDURES

- Radio resources
- Mobility/Security
- Calls, services, SMS
- Network

ETSI RECOMMENDATIONS

GPRS, THE GSM PACKET SERVICE

OBJECTIVES	DURATION
On completion of this course, the trainee will have acquired the knowledge required to allow him to undertake detailed study of the elements of a GSM network supporting GPRS facilities.	3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

- Identify the key points of GPRS
- Identify GPRS network interfaces
- Understand the different types of connection
- List the characteristics of GPRS services
- List the functions of GPRS network elements

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by lectures and video sequences.	Technicians, engineers and technical marketing representatives that will be working in the field of transmission of data in packet mode over a GSM network.	Familiarity with GSM and TCP/IP is essential. The 3-day GSM MOBILE RADIOCOMS course and INTRODUCTION TO TCP/IP (1 day) provide this.

PROGRAM

INTRODUCTION

- Mobile networks and Internet
- The different technological solutions (GSM, HSCSD, EDGE, UMTS)
- GPRS services and applications
- Quality of Service (QoS)
- GPRS terminals

GPRS NETWORK ARCHITECTURE

- Review of GSM architecture
- GPRS network access interfaces
- Layered architecture

GPRS EQUIPMENT, FUNCTIONS AND IMPACT

- Impact on the BSS
- SGSN functions, impact on the HLR and on MSC / VLR
- GGSN functions

MANAGING MOBILITY

- Cells, location area and routing area
- Terminal status
- Attachment and detachment procedures
- Location management

MANAGING SECURITY FUNCTIONS

- Subscriber authentication
- Privacy

MANAGING SESSIONS

- Activation, modification and deactivation of a PDP Context

MS – BTS AND MS – PCU INTERFACES

- Logical channels
- Frames and multiframe
- Communication between these interfaces
- Radio procedures and parameters
- Block and burst structure

MS – SGSN INTERFACE

- Logical links and their identifiers

PCU – SGSN INTERFACE (Gb)

- Network Service: Frame Relay
- BSSGP

SGSN – GGSN INTERFACE (Gn)

- GTP

GGSN – PSPDN INTERFACE (Gi)

- Access modes

SCENARIOS AND EXERCISES

THE 3RD GENERATION OF MOBILE RADIOCOMS: UMTS

OBJECTIVES	DURATION
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On completion of this course the trainee will have acquired general knowledge on the goals, services, commercial stakes and technical principles of UMTS, notably migration from a GSM/GPRS network.

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Give an overview of 3G technical concepts and commercial aspects

Describe the basic architecture of a UMTS network

Understand the role of its different components

Give an overview of UMTS solutions

Situate the importance of services

Situate the new actors

Understand CDMA

Understand the Core Network (CN) and main messages exchanged on the different interfaces

Understand the Universal Terrestrial Radio Access Network (UTRAN) and main messages exchanged on the different interfaces

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures and video sequences.

Technicians, engineers, technical marketing representatives and decision-makers working in the UMTS market.

Knowledge of GSM and GPRS is required to follow this course.

PROGRAM

INTRODUCTION

- Why a new technology? What is UMTS?
- From 2G to 3G: GSM, HSCSD, GPRS, EDGE and UMTS
- Spectrum and recommendations

SERVICES AND MOBILE TERMINALS

- User services
- Support services (data bearers)
- Remote services
- Additional services
- Network operator & Service provider: a new context
- The Virtual Home Environment (VHE)
- Mobile terminals

NETWORK ARCHITECTURE

- General architecture
- The UMTS network in Phase 1
- Protocol layers architecture

RADIO TECHNOLOGY: CDMA

- Data rates on the radio interface
- Multi-layer cellular architecture
- Spectrum use: FDD mode and TDD mode
- Code Division Multiple Access (CDMA)
- Channelization code & Scrambling code

- Radio interface protocol layers
- UMTS channels

THE CORE NETWORK (CN)

- Core network structure and architecture
- Protocol layers
- CN functions: MM, SM, RAB and security
- Mobile Originated Calls (MOC) and Mobile Terminated Calls (MTC)

THE RADIO ACCESS NETWORK (UTRAN)

- Radio access network architecture
- Protocol layers
- RNC
- Node B

TRANSPORT PROTOCOL: ATM

- Principles of ATM
- The ATM layer
- AAL (ATM Adaptation Layer)
- Classes of Service and their use in UMTS

THE FUTURE: TOWARDS THE 4TH GENERATION!

- All IP architecture
- Different solutions for the 4G
- Core Network developments

THE UMTS RADIO INTERFACE

OBJECTIVES	DURATION	
To gain in-depth understanding of the UMTS radio interface: modulation, speech coding, channels and procedures.	2 days	
AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO		
Have acquired a detailed understanding of CDMA		
Understand the radio interface and its different protocol layers		
Be familiar with radio measurement management procedures, power control, handovers and speech coding.		
METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by lectures and video sequences.	Anyone involved in UMTS and needing in-depth knowledge of the radio interface: Mobile terminal manufacturers, Node B manufacturers, technical acceptance engineers, optimization engineers, etc.	Must have followed the course, 3RD GENERATION MOBILE RADIOCOMS: UMTS or have equivalent prior knowledge of UMTS.

PROGRAM	
<p>RADIO TECHNOLOGY: CDMA</p> <ul style="list-style-type: none"> • W-CDMA and TD-CDMA • CDMA: spectral spreading, Channelization Code & Scrambling Code <p>OVERVIEW: THE UU RADIO INTERFACE</p> <ul style="list-style-type: none"> • Radio interface protocols • The different UMTS channels • Services and functions of the physical layer • Services and functions of layer 2 (L2): MAC, RLC, PDCP, BMC • RRC (Radio Resource Control) • Example: radio processing flow <p>RLC/MAC AND LOGICAL CHANNELS</p> <ul style="list-style-type: none"> • Logical channels • Mobile RRC status • RLC protocol • MAC protocol <p>TRANSPORT CHANNELS AND THE PHYSICAL LAYER</p> <ul style="list-style-type: none"> • Transport channels • Processing principles • Connecting to logical channels • Examples of processing flows 	<p>PHYSICAL CHANNELS AND THE PHYSICAL LAYER</p> <ul style="list-style-type: none"> • The different physical channels • Structure of UL and DL physical channels • Time organization of physical channels <p>THE PHYSICAL LAYER: SPREADING AND MODULATION</p> <ul style="list-style-type: none"> • UL and DL spreading and modulation • Demodulation <p>RADIO PROCEDURES (PHYSICAL AND RRC)</p> <ul style="list-style-type: none"> • Searching for a cell (physical) • Managing measurements (RRC) • Compressed mode (physical) • RRC connection setup • Power control (physical and RRC) • Handovers (RRC) <p>ADAPTIVE MULTI RATE</p> <ul style="list-style-type: none"> • AMR concepts • Audio processing flow • The different AMR CODEC modes • AMR CODEC frame format • AMR (12.2 kbit/s), an example of channel coding and multiplexing • AMR, TFO and TrFO modes • Performance results

A MOBILE RADIO APPLICATION: WAP

OBJECTIVES

On completion of this course the trainee will have acquired a good general knowledge of the technical concepts and commercial aspects of WAP: architecture, technology, protocols, services, applications.

DURATION

1 jour

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Understand the functionalities and services offered by WAP

Understand WAP architecture

Give an accurate description of WAP protocol structure

Identify the future applications of the mobile Internet.

METHOD

Build up theoretical knowledge by lectures and video sequences.

THIS COURSE IS AIMED AT

Technicians, engineers, technical marketing representatives and decision-makers working in the mobile internet field and its applications, notably to offer, develop or maintain WAP.

PRIOR KNOWLEDGE

It is advisable that trainees be familiar with GSM/GPRS radiocomms, TCP/IP and Internet.

PROGRAM

THE ADVANTAGES OF THE MOBILE INTERNET

- Internet
- GSM (Global System for Mobile communication)
- Towards convergence of mobile communication and the internet

WAP OVERVIEW

- History of WAP
- Features and services
- Billing

WAP ARCHITECTURE

- General
- The WAP terminal
- WAP gateway
- The Web server
- The operator network

WAP PROTOCOL STRUCTURE

- General
- WDP: Wireless Datagram Protocol
- WTLS: Wireless Transport Layer Secure
- WTP: Wireless Transaction Protocol
- WSP: Wireless Session Protocol
- WAE: Wireless Application Environment

INTRODUCTION TO WML

Digital transmissions

DIGITAL TRANSMISSION AND PDH	2 days
SYNCHRONOUS DIGITAL HIERARCHY (SDH)	2 days
OPTICAL FIBER TRANSMISSION	2 days
RADIO TRANSMISSION	2 days
TRANSMISSION BY SATELLITE: VSAT	2 days
DIGITAL TRANSMISSION AND PDH + SYNCHRONOUS DIGITAL HIERARCHY (SDH) + OPTICAL FIBER TRANSMISSION	5 days
DIGITAL TRANSMISSION AND PDH + SYNCHRONOUS DIGITAL HIERARCHY (SDH) + RADIO TRANSMISSION	5 days

DIGITAL TRANSMISSION AND PDH

OBJECTIVES

DURATION

At the end of this course the trainee will have acquired knowledge of the basic principles of digital transmission and of the Plesiochronous Digital Hierarchy (PDH). 2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

- List the characteristics of a digital signal
- Describe the four basic Pulse Code Modulation functions
- Describe the composition of a PCM frame
- Describe the Plesiochronous Digital Hierarchy (PDH)
- Describe frames of orders 2 to 5
- Describe the main codes used in digital transmission
- Define the functional organization of a digital transmission line
- Describe the different devices used during digital transmission
- Understand PDH network operation

METHOD

THIS COURSE IS AIMED AT

PRIOR KNOWLEDGE

Build up theoretical knowledge by lectures and video sequences.

Anyone with a basic knowledge of digital techniques and who works on digital transmission networks.

None

PROGRAM

DIGITAL TRANSMISSION IN TELECOM NETWORKS

- The objectives of digital transmission
- Review: analog and digital signals
- Transmission parameters: bandwidth, attenuation, etc.

CONVERTING AND MULTIPLEXING ANALOG

TELEPHONE SIGNALS

- Sampling
- Quantization
- Compression
- Coding
- PCM frames

PDH: PLESIOCHRONOUS MULTIPLEXING

- The Plesiochronous Digital Hierarchy (PDH)
- Multiplexing plesiochronous signals
- Higher order plesiochronous frames

THE MAIN DIGITAL TRANSMISSION CODES

- Characteristics of the signals to be transmitted
- NRZ, RZ, bipolar NRZ, bipolar RZ, coherent and differential bi-phase
- 4B3T, HDB3, CMI, 12B1P1C

TRANSMISSION SUPPORTS

- Cables
- Optical fibers
- Radio link
- Satellites

TRANSMISSION EQUIPMENT

- Repeaters
- Digital Line Terminals (DLTs)
- Multiplexers
- Optical Line Terminations (OLTs)
- Satellite and radio stations

OPERATING PDH NETWORKS

- Alarms
- Monitoring quality
- Supervision

THE SYNCHRONOUS DIGITAL HIERARCHY (SDH)

OBJECTIVES	DURATION
------------	----------

At the end of the course, the trainee will be familiar with the basic principles of synchronous transmission frame organization and the hierarchy of these frames.

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Describe a basic synchronous hierarchy frame

List the functions of the different frame fields

Give the differences between SDH and PDH

Understand SDH terminology

Evaluate the advantages and the importance of services supported by SDH network devices

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures and video sequences.

Anyone with a basic knowledge of digital techniques who works on digital transmission networks.

Prior knowledge of digital transmission is required. For this reason, this course is always linked with the Digital transmission and PDH course.

PROGRAM

PRIOR TO SDH

- Characteristics and limits of the plesiochronous hierarchy
- Synchronous hierarchy concepts
- CCITT (ITU-T) recommendations concerning SDH

SDH BASICS

- Containers (Cns)
- Virtual Containers (VCns)
- Tributary Units (TUs)
- The Tributary Unit Group (TUG)
- The Administrative Unit (AUn)
- The Administrative Unit Group (AUG)
- Multiplexing architectures

SDH FRAME ORGANIZATION AND SYNCHRONIZATION

- Organization of STM-N frames
- EIR, POH
- Asynchronism and justification
- Creating the AU4: Pointer

HOW TO CREATE SDH FRAMES

- Low-rate multiplexing
- High-rate multiplexing

OPTICAL INTERFACES

OPERATING SYNCHRONOUS NETWORKS

- Transmission error and alarm processing
- Performance measurements
- Security and optical checks

MULTIPLEXING CHAIN: EXAMPLE

SYNCHRONOUS NETWORK SYNCHRONIZATION AND PROTECTION

OPTICAL FIBER TRANSMISSION

OBJECTIVES

At the end of the course, the trainee will have acquired knowledge of different optical fiber transmission supports (from low-capacity networks to high throughput trunks).

DURATION

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Describe the light spectrum

Define attenuation in the main windows

List the characteristics of the different types of fibers

List the main transmitters and their characteristics

List the main receivers and their characteristics

Draw up a link budget

Choose link components

List the most commonly used measuring devices for optical fiber transmission

METHOD

Build up theoretical knowledge by lectures and video sequences.

THIS COURSE IS AIMED AT

Technicians and engineers working in the optical transmission field
 Technical sales representatives responsible for the marketing of optical transmission equipment

PRIOR KNOWLEDGE

None

PROGRAM

BASICS OF OPTICAL PHYSICS

- Spectral classification
- Snell's law
- Spectral bandwidth
- Fiber spectral attenuation
- Energy band theory

FIBERS: FAMILIARIZATION

- Numerical aperture
- Multimode fibers
- Monomode fibers
- Modal dispersion
- Chromatic dispersion

OPTICAL TRANSMITTERS

- DEL
- The laser module
- Choosing the appropriate transmitter

OPTICAL RECEIVERS

- PIN diodes
- Avalanche diodes
- Choosing the appropriate receiver

LINKS: FAMILIARIZATION

- Cables
- Connectors
- Receivers
- Drawing up a link budget

OPTICAL EQUIPMENT

- Radiometers
- Spectrum analyzers
- Reflectometers
- Attenuators

THE STATE OF THE ART AND FUTURE DEVELOPMENTS

COMBINED OPTION

DIGITAL TRANSMISSION AND PDH + SDH + OPTICAL FIBER TRANSMISSION

5 days

RADIO TRANSMISSION

OBJECTIVES	DURATION
------------	----------

This course enables participants to acquire the knowledge and terminology required to understand radio waves and radio communications.

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Define an electromagnetic wave

List propagation modes

List the different types of modulation

List radiotelephony units of measurement

Describe the elements making up a transmitter/receiver

Describe the different applications using radio transmission

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures and video sequences.

Technicians and engineers who use radio wave or radio communication systems.

None

PROGRAM

INTRODUCTION TO RADIO WAVES

- Overview and history
- Electromagnetic waves
- Radio communication units
- Comparative description of cable and radio links

GENERAL ORGANIZATION OF A TRANSCEIVER STATION

- Signals to be transmitted
- Structure of a transceiver station

COMPONENT PARTS OF A STATION

- Types of transceiver
- Modulation and modulators
- Demodulation and demodulators
- Oscillators
- Mixers
- Amplifiers
- Ultra-high frequency devices
- Power sources
- Operating tools

APPLICATIONS

- Radio waves
- Mobile telephony
- Satellite links

COMBINED OPTION

DIGITAL TRANSMISSION AND PDH + SDH + RADIO TRANSMISSION

5 days

TRANSMISSION BY SATELLITE: VSAT

OBJECTIVES	DURATION
------------	----------

This course enables participants to acquire the knowledge and terminology required to satellite transmission systems using small VSAT antennas.

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Understand the advantages of transmission via satellite and the fields of application

Be able to list available services

Be able to describe the investments required and calculate costs

Demonstrate familiarity with VSAT network architecture

Understand multiple access methods

Understand modulation and carrier wave parameters

Be able to draw up a link budget

Be able to calculate required bandwidth

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge by lectures and video sequences.

Technicians and engineers who will be installing, configuring or operating VSAT systems.

None

PROGRAM

INTRODUCTION TO VSAT NETWORKS

- Why satellites?
- VSAT networks compared with land networks
- VSAT network topology
- Frequency bands
- Technological trends
- Improving capacity: digitization, modulation and coding, reduction of component costs

VSAT APPLICATIONS

- Voice, data and video
- Broadband

MULTIPLE ACCESS PROTOCOLS

- TDM/TDMA, SCPC/DAMA
- User protocols

PLANNING & IMPLEMENTING A VSAT NETWORK

- How is the appropriate network configuration selected?
- Specifying service requirements and estimating traffic
- Network performances: response time, BER and availability
- Network engineering: Topologies and link budgets
- Estimating investment and costs

CALCULATING PASS BAND PARAMETERS

- Calculating pass band
- Data required to calculate a link budget
 - ocean regions
 - satellite position
 - type of radio wave (uplink/downlink), coverage
 - Uplink saturation flow density: SFD
- Ground station specific data
 - advantage of the S/C pattern at E/S
 - axial voltage rate
 - ground station G/T
- Carrier wave parameters
 - types, data rates and number of carriers, modulation pattern
 - coding for Forward Error Correction (FEC)
 - C/N threshold and Eb/No threshold (info + header)
 - Uplink and downlink margins
- Link budget analysis options
- Interpreting results
- How to reduce bandwidth required: antenna size, configuration, BER thresholds, traffic offered, compression, availability

CASE STUDIES: VSAT APPLICATIONS AND SERVICES

- Case study n°1: VSAT financial network
- Case study n°2: VSAT for rural communications

Data Transmission Networks

DATA TRANSMISSION BASICS	5 days
X25 PROTOCOL	3 days
BROADBAND NETWORKS (ATM)	3 days
FRAME RELAY	2 days
LOCAL NETWORKS	2 days
CORPORATE LANS	3 days
ETHERNET	2 days
WIRELESS NETWORKS: WIFI	2 days

BASIC DATA TRANSMISSION

OBJECTIVES

This course familiarizes participants with the main principles of data transmission, network architecture and the terminology of the field.

DURATION

5 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Describe the structure of a data transmission link

Compare the different transmission supports

Describe the OSI reference model

Specify the scope of application and characteristics of ITU-T recommendations

Describe junction interfaces (V24, V28, V35, X21)

Use the manufacturers' documents to select data transmission devices (modem, multiplexer)

Compare different network architectures

Describe the main data transmission services

METHOD

Build up theoretical knowledge with associated exercises based on video sequences.

THIS COURSE IS AIMED AT

Engineers or technicians with basic knowledge of computer science or electronics.

PRIOR KNOWLEDGE

It is preferable to have some basic knowledge of computing or electronics.

PROGRAM

INTRODUCTION

STRUCTURE OF A DATA TRANSMISSION LINK

- The different types of link
- Link operation modes
- Different types of data coding
- Transmission supports

DATA TRANSMISSION

- Modulation
- Modulation speed and bit rate
- Error protection
- V24 junction
- Modems
- Multiplexing
- Switching

STANDARDIZATION

- Standards bodies
- The OSI reference model
- Examples of standards

PUBLIC NETWORKS

- The Public Switched Telephone Network (PSTN)
- Specialized links, TRANSFIX
- TRANSPAC
- NUMERIS
- ADSL
- TCP/IP and the Internet

PRIVATE NETWORKS

- Manufacturer networks
- Local networks

DATA COMMUNICATIONS SERVICES

- Videotex
- Fax, telex
- Electronic messaging

INTRODUCTION TO FRAME RELAY AND ATM

X25 PROTOCOL

OBJECTIVES	DURATION
------------	----------

At the end of this course, the trainee will have acquired the knowledge enabling him to analyze exchanges between computer equipment and an X25 packet data transmission network.

3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Define the lower layers of the reference model

Define the concepts of bits, frames and packets as used with X25

Analyze data transfer mechanisms at frame and packet level

Describes the possible types of user connection to an X25 network

Define the PAD function

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge on the basis of a range of exercises on X25 exchanges.

Put line analysis principles into practice by using listings from real cases.

Anyone with basic prior knowledge of data transmission network architecture who may be required to work on X25 networks.

None

PROGRAM

THE LINK LAYER

- Introduction and review of data transmission
- HDLC procedure
- HDLC frame structure
- Use of the control and address fields
- Study of different frame types
- Link level settings
- Causes and diagnosis of incidents

THE NETWORK LAYER

- Virtual circuit
- Structure of the different types of packet
- Data transfer
- Release
- Supplementary services
- Virtual circuit settings
- Causes and diagnosis of incidents

ANALYZING PROTOCOL

- Introduction
- Using X25 analyzers
- The PAD function

BROADBAND NETWORKS (ATM)

OBJECTIVES	DURATION
------------	----------

This course enables participants to learn more about broadband networks, gain a technical grounding in them, and become familiar with their fields of application.

3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Describe the development (techniques and needs) towards broadband networks

Compare the different broadband network solutions

Describe FDDI and DQDB metropolitan network layers and protocols

Describe the main points of the ATM technique

Argue for the relevance of investing in ATM technology

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge by lectures, video sequences and trade publications.

Anyone familiar with telecommunications and networks who wishes to learn more about broadband techniques and applications.

None

PROGRAM

THE ORIGINS OF BROADBAND

- Technological developments
- The emergence of new needs
- The progress accomplished towards standardization

FAST PACKET SWITCHING

- Review: permanent / switched, circuit / packet mode
- Frame Relay
- Cell relay
- Comparisons

METROPOLITAN AREA NETWORKS (MANs)

- FDDI
- DQDB, 802, 6
- SMDS

FRAME RELAY

- From X25 to Frame Relay
- Network architecture

THE ATM TECHNIQUE

- ATM cells
- The ATM adaptation layer
- Network architecture
- ATM switches

SYNCHRONOUS TRANSMISSION

- SONET
- SDH

TOWARDS BROADBAND ISDN

FRAME RELAY

OBJECTIVES	DURATION
------------	----------

This course enable participants to learn more about the principles of Frame Relay, its organization and implementation.

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Describe the functions of Frame Relay

Explain how congestion is handled

Describe Frame Relay signaling

Describe the different types of encapsulation

Describe voice over Frame Relay,

Describe frame relay and ITU-T

Describe Frame Relay and ANSI

Describe frame relay and the Frame Relay Forum

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge by lectures.

Anyone with basic knowledge of data transmission.

None

PROGRAM

GENERAL

- Requirements
- Frame multiplexing and its advantages
- The advantages of Frame Relay

FRAME RELAY

- What is Frame Relay?
- Frame Relay and the OSI
- The UNI/NUI interface
- The NNI interface
- The main standards and certification
- The frame
- Switching
- Tunneling

HANDLING CONGESTION

- Flow control
- Controlling congestion
- Handling dense traffic
- Classes of Service (CoS)

FRAME RELAY SIGNALING

- The Local Management Interface
- Managing virtual circuits

ENCAPSULATION

- Interoperation
- Types of encapsulation

VOICE OVER FRAME RELAY

- The voice over Frame Relay standard
- Multiplexing and fragmentation
- Example technologies
- Managing transit time
- The protocol stack (VoFR)

FRAME RELAY AND ITU-T

- Recommendations I.370, I.372, Q.922 and Q.933
- Standards X.36, X.37 and X.76

FRAME RELAY AND ANSI

- T1.606, T1.618, T1.617

FRAME RELAY BY THE FRAME RELAY FORUM

- Standards FRF.1 to FRF.13

LOCAL NETWORKS

OBJECTIVES

The objective of this course is to familiarize trainees with what is on offer and learn more about Local Area Networks (LANs).

DURATION

2 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Understand the place of LANs in the network universe

List LAN hardware and software components

List the steps required to implement a LAN

List the three supports, topologies, access methods and their standards

Describe a bridge, a router and a gateway

Describe the functions of a network communication protocol

Describe an ISDN network (NUMERIS), equipment, example applications and Future developments

METHOD

THIS COURSE IS AIMED AT

PRIOR KNOWLEDGE

Theoretical aspects are put into practice by practical work and case studies.

Any technician or engineer who works on local networks. This course may be particularly appropriate for telephone operators. We will then deal with comparative aspects - with PBXs, competing approaches and complementary approaches and developments in the market and techniques.

None

PROGRAM

INTRODUCTION

- Why use a local network?
- Definitions

LOCAL NETWORK COMPONENTS

- Hardware
- Software and the network manager

IMPLEMENTATION

- Cabling and the "cabling system" (BCS, ICS, etc.)
- Installation, configuration and organization
- Management, administration, audit and training

LOCAL NETWORK ARCHITECTURE

- Architecture: overview
- Supports, topologies, access methods
- The LCC layer

STANDARDIZATION

- Manufacturer solutions
- Open solutions
- IEEE 802, 10 BASE T
- Fast Ethernet

INTERCONNECTION AND COMMUNICATION

- The OSI model and IEEE models
- Bridges, switches, routers, gateways
- Interconnection equipment, MANs: FDDI, IRLE
- TRANSREL 802, SMDS, IRLE
- Communication protocols (TCP/IP: principles)
- Application software (NFS, FTP, etc.)
- Network administration (SNMP, CMIP, CMIS)

LOCAL NETWORK SELECTION METHODOLOGY

- Selection criteria, what the market offers

CORPORATE LAN TECHNOLOGIES

OBJECTIVES	DURATION	
This course gives participants the understanding required to master the role and purpose of each layer and component of network architecture.	3 days	
METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by in-depth lectures illustrated by video sequences.	Technicians and engineers.	Prior knowledge of data transmission is an asset.
PROGRAM		
<p>HISTORY</p> <p>TRANSMISSION</p> <ul style="list-style-type: none"> • Network topology • Transmission modes <p>THE PHYSICAL LAYER</p> <ul style="list-style-type: none"> • Data and signal types • High flow rate constraints • Physical supports and other types of link • Data transmission • Standardized interfaces • Link optimization: multiplexing <p>DATA LINK LAYER</p> <p>NETWORK LAYER</p>	<p>LANs</p> <ul style="list-style-type: none"> • Development • The backbone concept • Wireless local networks • Bridges, the spanning tree and source routing algorithms <p>WANs</p> <ul style="list-style-type: none"> • Switched and dedicated links • The flow rate hierarchy • The new technologies • X25 architecture <p>NETWORK INTERCONNECTIONS</p> <ul style="list-style-type: none"> • Routers, routing protocols • ATM and PNNI routing <p>NETWORK ADMINISTRATION</p> <ul style="list-style-type: none"> • Tools and techniques • Security 	

ETHERNET

OBJECTIVES	DURATION	
This course enables participants to acquire the knowledge required to implement Ethernet networks.	2 days	
METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Theoretical aspects are put into practice by hands on training.	Staff working on, operating or in charge of Ethernet networks.	Prior knowledge of local networks is desirable.
PROGRAM		
<p>NETWORK SCALE</p> <p>LOCAL OSI/IEEE NETWORKS: GENERAL PRINCIPLES</p> <p>ETHERNET AND IEEE 802.3</p> <ul style="list-style-type: none"> • Characteristic parameters • Physical aspects • IEEE 802.3 standards • Ethernet technology • Development: gigabit Ethernet <p>ETHERNET NETWORK INTERCONNECTIONS</p> <ul style="list-style-type: none"> • Repeaters 	<ul style="list-style-type: none"> • Bridges • Ethernet switching • Ethernet routing <p>ETHERNET AND CABLING</p> <ul style="list-style-type: none"> • The supports used • HyperLan: 802.11 • Product developments • Cabling structure • Commercially-available cabling systems • Cabling constraints • Manufacturing techniques • Development: All optic fiber cabling 	

WIRELESS NETWORKS: WIFI

OBJECTIVES	DURATION
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This course enables participants to understand the goal, services and main techniques of the 802.11 standard (Wireless-Fidelity).	2 days
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AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Describe the development (techniques and needs) towards wireless LANs.

Compare the different wireless network solutions, their advantages and drawbacks.

Argue for the relevance of investing in WiFi technology.

List available services.

List WiFi network hardware and software components.

List the steps required to implement a WiFi network.

Describe the main points of the WiFi technique and describe the layers and protocols used.

List security loopholes and the operations required to secure a network.

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures.	Any person with a technical telecoms profile involved in implementing Hot Spot type wireless solutions (maintenance and supervision technicians, deployment, validation, radio, transmission and network management engineers, etc.).	Prior knowledge of LANs and TCP/IP is desirable
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PROGRAM

INTRODUCTION

- Wireless network applications
- Wireless network regulations
- The 802 network standard

WIRELESS NETWORK TECHNOLOGIES COMPARED

- Data transmission with mobile networks (GSM, GPRS, EDGE, UMTS)
- The WLAN standards (HyperLAN1 and 2, Bluetooth)

Wi-Fi CELLULAR ARCHITECTURE

- Area networks
- Ad hoc networks

THE PHYSICAL LAYER

- FHSS (Frequency Hopping Spread Spectrum)
- DSSS (Direct Sequence Spread Spectrum)
- IR (Infra Red)
- Wi-Fi (HR/DSSS)
- OFDM (Orthogonal Frequency Division Multiplexing)

THE MAC LAYER

- Media access control: CSMA/CA
- Frame addressing and formatting
- The CRC (Cyclic Redundancy Check)
- Fragmentation and reassembly
- QoS (Quality of Service)
- Mobility management

THE LLC LAYER

SECURITY MANAGEMENT

- Examples of attack and advantages of the security in WLANs
- Wi-Fi and security (and loopholes)
- VPNs (Virtual Private Networks)
- PPTP (Point to Point Tunneling Protocol)
- L2TP (Layer Two Tunneling Protocol)
- IPSec (IP Secure)

EQUIPMENT DESCRIPTION

- Access Point Wi-Fi
- Wi-Fi cards
- Wi-Fi antennas

EXAMPLES OF INSTALLATION OF A COMPANY

Wi-Fi NETWORK

- Network architecture and topology
- Access point placement

PERSPECTIVE APPLICATIONS OF Wi-Fi NETWORKS

- Wi-Fi and video
- Wi-Fi and voice transmission
- Wi-Fi and multimedia

The World of Internet

INTRODUCTION TO TCP/IP	1 day
TCP/IP AND THE INTERNET	3 days
VOICE AND TELEPHONY OVER IP	2 days

INTRODUCTION TO TCP/IP

OBJECTIVES

This course enables participants to quickly cover the principles, the organization and implementation of TCP/IP.

NB: The 3-day TCP/IP AND INTERNET course covers the same subject matter in full detail.

DURATION

1 day

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Describe the organization of TCP/IP

Describe the functions of IP protocol

Define IP addressing and sub-addressing

Explain the development of IP v6

Present the functions of TCP and UDP protocols

Describe routing

Identify the different applications used by IP protocol

Understand the limits of use of the Internet (HTTP/TCP/IP) in GPRS (only when this course is followed prior to the GPRS course).

METHOD

Build up theoretical knowledge by lectures combined with video sequences.

THIS COURSE IS AIMED AT

Anyone requiring rudimentary knowledge of the IP world; this course is particularly suited to persons working in the GPRS or ADSL fields with no prior TCP/IP knowledge.

PRIOR KNOWLEDGE

None

PROGRAM

HISTORY

- The concept
- Standards bodies
- Basic documents

TCP/IP ORGANIZATION

- Review: the OSI model
- IP on LAN and WAN

THE NETWORK LEVEL

- IP protocol
- Addressing and sub-addressing
- The development of IP v6,
- ICMP, ARP and RARP
- Routing

THE TRANSPORT LEVEL

- TCP
- UDP

APPLICATIONS

- DNS
- FTP and TFTP
- SMTP, MIME and POP3
- Telnet
- SNMP
- Ping

THE INTRANET

- DHCP server
- Proxy server
- Radius server
- Intranet architecture
- Intranet access

INTERNET: THE WEB

- WWW
- HTTP
- HTML
- WAP

CONCLUSION

- The advantages and drawbacks of TCP/IP

TCP/IP AND THE INTERNET

OBJECTIVES	DURATION
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<p>This course enables participants to become familiar with the principles, organization and implementation of TCP/IP protocols and the Internet world they have given birth to. A 1-day version of this course is also available to prepare for other courses (see TCP/IP FOR GPRS).</p>	3 days
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AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Describe the organization of TCP/IP
 Define IP addressing and sub-addressing
 Explain the development of IP v6
 Define routing and routing protocols
 Present the functions of TCP and UDP protocols
 Identify the main applications using IP protocol
 Understand Internet architecture and Intranet access

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures in association with practical work on IP implementation.	Anyone who works on TCP/IP networks.	None
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PROGRAM

<p>OVERVIEW</p> <ul style="list-style-type: none"> • What is the Internet? • History • Architecture and access • Standards bodies • Basic documents: RFC <p>TCP/IP ORGANIZATION</p> <ul style="list-style-type: none"> • Review: the OSI model • IP on LAN • IP on WAN <p>THE LINK LEVEL</p> <ul style="list-style-type: none"> • PPP • Ethernet <p>THE NETWORK LEVEL</p> <ul style="list-style-type: none"> • IP protocol • Addressing and sub-addressing • The development of IP v6 • ICMP, ARP and RARP • Routers, bridges and hubs • Gateway systems • Routing protocols: EGP, BGP, RIP, Hello, OSPF <p>THE TRANSPORT LEVEL</p> <ul style="list-style-type: none"> • TCP • UDP • Using ports: NAT 	<p>APPLICATIONS</p> <ul style="list-style-type: none"> • Client-server mode • DNS • FTP and TFTP • SMTP, MIME and POP3 • Telnet • SNMP • BootP • PING <p>THE INTRANET</p> <ul style="list-style-type: none"> • DHCP server • Proxy server • RADIUS server • Architecture and access <p>THE WEB</p> <ul style="list-style-type: none"> • WWW • HTTP and HTML • WAP <p>PRACTICAL WORKS</p> <ul style="list-style-type: none"> • Create a network of PCs (with Windows and Linux) using Ethernet boards, • routers and hubs • Declare computer addresses and masks • Configure the router (routing table) • Test the ARP tables and connections (PING) • Perform file transfer with FTP • Lease an IP address to a DHCP server • Find an IP address using a DNS server • Using a protocol analyzer and analyzing traces
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VOICE AND TELEPHONY OVER IP

OBJECTIVES

This course enables participants to become familiar with all technologies currently on offer for VoIP, and presents the current status of the standard.

DURATION

2 days

METHOD

Build up theoretical knowledge by lectures combined with video sequences.

THIS COURSE IS AIMED AT

Engineers, Project managers, technicians and staff working on the network.

PRIOR KNOWLEDGE

Good knowledge of IP is essential.

PROGRAM

INTRODUCTION

A FEW VOIP FIGURES

ARCHITECTURES

- Net to net
- Phone to phone
- Phone to net
- Standards: H323, H310

CONSTRAINTS LINKED WITH MULTIMEDIA FLOWS OVER IP

- Transmission of flows in real time
- PTN, PSTN

PROTOCOLS

- H320, H323, T120, ... protocol structure
- TCP/IP multicast protocols

SIGNALING OVER IP PROTOCOLS

- MGCP, Sig Tran, SIP/H323
- Message formats, dialogs

CONCLUSION

PRODUCTS ON THE MARKET

Network management and security

INFORMATION SYSTEM AND NETWORK SECURITY	5 days
CRYPTOGRAPHY	5 days
TELECOM MANAGEMENT NETWORKS (TMN)	1 day

INFORMATION SYSTEM AND NETWORK SECURITY

OBJECTIVES	DURATION
At the end of this course, the trainee will have acquired in-depth knowledge on security that will enable him/her to understand IS and network protection mechanisms.	5 days

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by lectures illustrated by practical work and case studies.	An audience of computer system managers, decision-makers, project managers, CISOs.	Network & telecoms knowledge

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Understand the installation, configuration and maintenance of systems adapted to companies' security needs.

Protect information systems and networks from the main risks of hacking and intrusion.

Handle daily security issues.

React effectively if a breach is detected in an information system or network.

PROGRAM

GENERAL OVERVIEW

- Typology of security incidents
- The different types of attack
- The corresponding means of protection
- The involvement of all company departments in implementation of a global security system
- The three keystones of a security system: confidentiality, integrity, availability
- The PDCA cycle (Plan, Do, Check, Act)
- Differences between company and military security

BUILDING ACCESS CONTROL AND SECURITY

- Access control procedures
- Reuseable passwords
- Physical security measures, including wiring
- Passes (badges) and access cards
- Biometric authentication (checking and identification)
- 802.11 wireless network protection

GENERAL OVERVIEW OF TCP/IP PROTOCOLS

- Specific features of an IP network; specific features of the Internet
- TCP/IP protocol architecture, associated RFCs
- Relationships between the different layers and their processes
- TCP/IP protocol security features
- IP/TCP/UDP/ICMP protocols and associated problems

METHODS OF ATTACK

- Targeted attack and general attack
- Typical intrusion attack sequence
- Different types of saturation (denial of service) attacks
- General attacks based on the use of malware

FIREWALLS

- General firewall operation and architecture
- Dynamic filtering firewall
- Network Address Translation (NAT)
- Application firewalls
- Firewall configuration, testing and maintenance, regulations and reading of journals
- FireWall-1 (Check Point) and PIX (Cisco)

COMPUTER SYSTEM SECURITY

- Basic principles of computer security
- The main operating systems
- Security guidelines
- The importance of security patches
- Disabling superfluous services
- Account and user group administration
- Securing servers: logging, backup, encryption, file integrity checkers and individual firewalls
- Vulnerability tests
- Client computer security procedures

CRYPTOGRAPHY: GENERAL

- >The basic concepts of cryptography

- The two main methods of encryption for confidentiality: secret (private) key and public key
- encryption (and other approached) to authentication: provers and checkers, hashing, challenge-response, authentication (and integrity) message by message, digital certificates and public key infrastructures
- replay attacks (encrypted messages intercepted by an intruder and retransmitted with no modification)

CRYPTOGRAPHIC SYSTEMS: SSL/TLS, PRIVATE NETWORKS

- Cryptographic systems
- SSL/TLS
- Virtual Private Networks (VPNs)
- VPN PPP, PPTP, L2TP and IPsec
- Kerberos

QUANTIC CRYPTOGRAPHY

- Principles of Quantic Key Distribution (QKD)
- Strengths of quantic cryptography
- BB84 protocol
- Complementarity of the QKD and standard systems
- Current market solutions

APPLICATION SECURITY: E-COMMERCE AND E-MAIL

- the reasons motivating attackers to increasingly attack applications
- The main steps in securing an application
- Web services and e-commerce services
- e-mail
- Other applications (databases, instant messaging, etc.)

RÉACTION TO INCIDENTS AND DAMAGE

- Incident classification according to severity
- Backup process
- Intrusion Detection System (IDS) technology
- Intrusion Prevention System (IPS) technology
- Reactions to intrusions in the event of major incidents
- Activity continuity plans
- Resumption after damage
- Vulnerability tests

SECURITY FEATURE MANAGEMENT

- Questions on the organization and place of the computer security department in the company hierarchy
- Risk analysis
- Creation of a technical security architecture
- Security-related process control principles
- Secure operation management
- User training
- Vulnerability tests

LEGAL AND SOCIAL ASPECTS

- Laws against piracy and other computer crimes
- Customer privacy issues
- Employee work environment monitoring
- Information warfare and cyber terrorism
- Securing the Internet to avoid attacks

CRYPTOGRAPHY

OBJECTIVES	DURATION
------------	----------

On completion of this course the trainee will have acquired a good general knowledge of cryptography concepts and techniques. The trainee will be introduced to existing cryptographic systems, certain possible attacks on these systems and the means of protecting the keys.	5 days
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AT THE END OF THIS COURSE, THE TRAINEE WILL BE FAMILIAR WITH
--

The secret (private) key system (DES, 3DES, AES)

The public key system (RSA or Diffie-Hellman)

Message hashing and hash values

Digital signatures and digital certificates

Public Key Infrastructures (PKI and ISO X509)

Secure e-mail and the PGP software

SSL (Secure Socket Layer) systems for e-commerce

IPsec (Internet Protocol Security) protocol

Key protection

Cryptographic attacks

Authentication, confidentiality, integrity and non-repudiation.

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
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Build up theoretical knowledge by lectures and consolidate it with practical work and case studies.	Anyone wishing to become aware of digital data protection methods and secure communications.	A good knowledge of network & telecoms
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PROGRAM

PRIVATE KEY CRYPTOGRAPHY

- Padlocks and keys
- Substitution and the Caesar cipher
- Encryption by transposition
- Broadcasting and the confusion principle
- The DES, 3DES and AES algorithms
- The development of cryptography: globalization
- The guarantees provided by private keys
- Problems posed by the exchange of private keys

PUBLIC KEY CRYPTOGRAPHY

- Public exchange of secret keys
- The confidentiality achieved using public keys
- Creating public keys
- Creating digital signatures using a private key
- Keyless hashes
- Guarantees provided by hashes
- Comparison between private keys, public keys and hash values

PUBLIC KEY DISTRIBUTION

- Digital certificates
- X.509 public key infrastructures
- Pretty Good Privacy and the Web of trust system

SYSTEMS USED IN THE REAL WORLD

- Secure e-mail
- The Secure Socket Layer and Transport Layer Security protocols
- An overview of the IPsec protocol
- Cryptographic pitfalls
- Key protection

TELECOM MANAGEMENT NETWORKS (TMN)

OBJECTIVES	DURATION
------------	----------

This course enables participants to acquire knowledge and of the different aspects of telecom network management and become familiar with the relevant terminology.

1 jour

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO
--

Describe management functions

Describe TMN architecture

List the functional blocks

Identify the protocols comprising the Q3 interface

Describe the physical architecture of a management network

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
--------	-------------------------	-----------------

Build up theoretical knowledge by lectures and video sequences illustrated with practical examples.

Technicians and engineers who use, manage or develop network management systems.

None

PROGRAM

DEFINITIONS

MANAGEMENT FUNCTIONS OFFERED

TMN ARCHITECTURE

- Data
- Functional
- Physical

DATA ARCHITECTURE

- The OSI GNIM model
- Managed objects
- Object classes
- The GDMO guide
- Subdivisions and layered architecture
- Containers and naming

FUNCTIONAL ARCHITECTURE

- Function blocks
- Reference points

MANAGEMENT EXCHANGES AND PROTOCOLS

- The Q3 interface
- CMISE services
- ACSE / ROSE
- CMIP protocol

SYSTEM MANAGEMENT FUNCTIONS

- SMFAs
- SMFs

PHYSICAL ARCHITECTURE

- Physical blocks
- Examples of architecture

Electronic documentation

TECHNICAL WRITER TRAINING	5 days
XML, ADVANTAGES AND LIMITS	1 day
UNDERSTANDING SGML AND XML	1 day
APPLICATION DEVELOPERS WORKSHOP WITH EPIC ARCHITECT	3 days
FOSI STYLESHEET DESIGN WORKSHOP - PART 1	3 days
GETTING STARTED WITH ABORTEXT COMMAND LANGUAGE (ACL) <i>On-line self training</i>	-
ACL DESIGN AND IMPLEMENTATION WORKSHOP	2 days
COMPUTER ASSISTED TRANSLATION (CAT) WORKSHOP: TRADOS 6.5 LSP / FREELANCE SUITE	3 days
MIND MAPPING: CAPITALIZING ON AND COMMUNICATING INFORMATION IN SIMPLE VISUAL FORM	2 to 5 days
MODULARIZATION: MANAGING YOUR INFORMATION IN TARGETED, ON-DEMAND MODULES	3 to 5 days
SINGLE SOURCING: DISTRIBUTING YOUR INFORMATION IN PAPER AND ELECTRONIC FORMAT FROM A SINGLE DOCUMENT SOURCE	1 to 3 days

TECHNICAL WRITER TRAINING

OBJECTIVES

To provide participants with the skills required for technical writing that complies with the quality goals set for production of customer technical documentation.

DURATION

5 days

AT THE END OF THIS COURSE, THE TRAINEE WILL

Understand documentation requirements.

Be able to apply the general writing (authoring) principles.

Understand the place of authoring in the complete documentation process.

Master authoring work.

METHOD

Build up theoretical knowledge by lectures, practical workshops.

THIS COURSE IS AIMED AT

Any technical writer or person needing to write some technical documents: Technical writers, training managers, quality managers, software and hardware engineers and maintenance technicians

PRIOR KNOWLEDGE

Must be familiar with Microsoft Word (the most widely used text editor).

PROGRAM

INTRODUCTION: "PRODUCT DOCUMENTATION"

- What is the purpose of technical documentation?
- Who is the target audience?
- How is it produced?
- Who produces it?

DOCUMENTATION, STRUCTURE AND CONTENT

- The different types of document: User Guides, Operating Guides, Maintenance Manuals, etc.
- Standards: civil and military.
- The standards

DOCUMENTATION LIFE CYCLE

- Pre-sales
- Design
- Maintenance

PRE-SALES

- Customer needs analysis
- The offer
- Quality, costs and delays (deadlines)
- Risk analysis

THE DESIGN STAGES

- Work phases

A CONSTANT CONCERN: QUALITY

- Definition
- The ISO 9000 standards
- Traceability
- Milestones and indicators

WORK SPECIFICATION AND ACCEPTANCE

- Review of the offer
- Type, deadlines, workload

REFERENCE DOCUMENTS

- Standards
- Customer data
- Internal data

INPUT DATA ACQUISITION AND MANAGEMENT

- Acquisition
- Checking
- Management
- Interviews

AUTHORING, THE CORE SKILL

CONTENT

- Writing rules: formatting, layout, readability, etc.
- Layout rules: text, lists, tables, figures, diagrams, etc.
- Typographic rules
- Terminology: glossary, abbreviations and acronyms, symbols and conventions

MEDIA AND TOOLS

- Files: naming, backup and archiving rules and automatic spellchecks

VALIDATION ON THE PRODUCT

- Why?
- How?
- The consequences

REVIEW (PROOF READING)

- The reference standard
- Types of review
- The people involved

DELIVERY

- Initiation
- Traceability

REVISIONS/UPDATES

- The different steps
- Acquiring customer comments
- Summary
- Application

THE FINAL VERSION

- Initiation
- Traceability

ASSOCIATED SERVICES

PRODUCTION (CREATION)

- Definition
- Content (diagrams, illustrations, photos, animated sequences)
- The process

TRANSLATION

- Definition
- Content
- The process
- Problems

TRAINING

PUBLISHING

- Definition
- Media (paper, CD-ROM, cartridges) and formats (pdf, HTML, etc.)
- The process
- Problems

SPECIFIC SERVICES

ILLUSTRATED CATALOGS

- Definition
- Content
- The process
- Problems

LOGISTIC DATA

- Definition
- Content
- The process
- Problems

OTHER

CROSS-FUNCTION SERVICES

MONITORING AND MANAGEMENT

PROGRESS

MAINTENANCE

PRODUCTION RESOURCES

XML, ADVANTAGES AND LIMITS

OBJECTIVES DURATION

- To understand why the XML standard has, in the space of a few months, revolutionized communication between different computer applications and won the allegiance of all those who wish to code data efficiently in the context of documentary systems or E-commerce solution implementation: E-catalog, E-marketplace, E-publishing.

1 jour

- To understand the stages of documentary system (or, more generally, information system) migration to XML architecture.

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Understand the advantages of XML for data coding (content, structure, semantics) and inter-application dialog

List differences between HTML, SGML and XML

Identify the limits of XML

METHOD THIS COURSE IS AIMED AT PRIOR KNOWLEDGE

Build up theoretical knowledge by lectures and video sequences.

All persons in charge of a documentation department or information system with questions on the relevance of choosing XML.

None

PROGRAM

THE STAKES

- To reduce production and publication costs and times
- To render an information system durable
- To reuse documentation
- To exchange information
- To render documentation homogeneous
- To group information from various sources
- To control information content

- Standards complementing XML
 - XSL stylesheets
 - Xpointer and Xlink links
 - Xpath addressing
- SGML/XML applications and tools
 - Available DTDs
 - Available tools

THE ORIGIN OF PROBLEMS

- Documents and document content
- Coding typesetting template oriented data

CHOOSING XML

- Comparison of HTML, Framemaker, Interleaf, Microsoft Word, SGML and XML coding formats
- XML, features and advantages
- XML, limits

THE XML RESPONSE

- History
 - Overview of SGML
 - Overview of HTML
- Overview of XML
 - Structure and instance of a document
 - Elements and attributes
 - The concepts of well-formed and valid documents
 - DTDs and future structure coding standards
 - Name spaces

MIGRATING TO XML

- Steps
- Structuring methods
- Retrieving the existent: anticipated difficulties and solutions
- Estimating cost

UNDERSTANDING SGML AND XML

OBJECTIVES DURATION

This one-day course introduces SGML and XML concepts, including a history of these emerging (but already well-established) standards and demonstrates their applications, benefits and syntax.

1 jour

Document structure, DTD components and document instance markup are also described.

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Understand structured information

Understand the concepts of XML and SGML

Understand document structure and DTDs

METHOD THIS COURSE IS AIMED AT PRIOR KNOWLEDGE

Build up theoretical knowledge by lectures illustrated by interactive practical exercises.

Anyone wishing to understand SGML/XML structured documentation.

None

PROGRAM

UNDERSTANDING STRUCTURED INFORMATION

WHAT IS SGML?

- Concepts and benefits
- Case studies

WHAT IS XML?

- Concepts and benefits

UNDERSTANDING SGML, XML AND HTML IN APPLICATION

UNDERSTANDING DOCUMENT STRUCTURE AND DTDs

SGML/XML DOCUMENTS

- SGML/XML document components
- Procedural vs descriptive markup
- SGML/XML markup syntax

APPLICATION DEVELOPERS WORKSHOP WITH EPIC ARCHITECT

OBJECTIVES DURATION

In this comprehensive overview of the components of Epic Architect, the application development process and Arbortext configuration files, participants learn to create, install and maintain an Arbortext application.

3 days

This course must be followed before enrolling in the **FOSI STYLESHEET DESIGN WORKSHOP – PART 1** course.

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Modify the Arbortext window display
 Modify element behavior in a document type
 Use the Arbortext table editor
 Create and maintain a user dictionary
 Understand the rudiments of stylesheets for Arbortext window display

METHOD THIS COURSE IS AIMED AT PRIOR KNOWLEDGE

Build up theoretical knowledge by lectures rounded out by group and individual work.

Any person involved in documentation or information system development using Epic

None

PROGRAM

OVERVIEW OF EPIC ARCHITECT CREATING A SIMPLE APPLICATION CUSTOMIZING AN APPLICATION <ul style="list-style-type: none"> • The "Ignore Tags" utility • Tag Aliases • *.ini files 	<ul style="list-style-type: none"> • PDF Bookmarks • Enabling table editing • Turbo Styler APPLICATION INSTALLATION AND MAINTENANCE	COMMAND AND CONFIGURATION FILES CONFIGURING THE PROFILING OPTION USING CD-ROM PUBLISHER AND CD-ROM CONSUMER
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FOSI STYLESHEET DESIGN WORKSHOP - PART 1

OBJECTIVES DURATION

This course focuses on design and development of Arbortext stylesheets for formatting displayed in the Arbortext window.

3 days

Training is on a Windows platform at Arbortext, the topics covered are applicable on all supported platforms.

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Apply format specification techniques
 Master ad hoc online and paper documentation
 Master the resources used to search for options that are not covered directly
 Design and develop easy-to-maintain stylesheets

METHOD THIS COURSE IS AIMED AT PRIOR KNOWLEDGE

Interactive. Lectures and discussion are balanced by a heavy emphasis on guided, online workshops. At the end of the course, trainees apply their new skills to a stylesheet development project. Course files are made available to the trainees at the end of the course.

Any person developing Arbortext stylesheets.

Trainees should have followed the **APPLICATION DEVELOPMENT WORKSHOP** or an equivalent workshop, have practical knowledge of SGML/XML and DTD syntax; the best preparation is to have set up, compiled or published documents.

PROGRAM

CODING STYLESHEET CATEGORIES FOR THE ARBORTEXT WINDOW DISPLAY USING E-I-CS, DEFAULT STYLES, INHERITANCE, STYLE SETS CODING ATTRIBUTE-BASED FORMATTING <ul style="list-style-type: none"> • Generating a Table of contents without page numbers • Supporting cross references for display in the edit window 	<ul style="list-style-type: none"> • Coding stylesheet formatting for tables Interacting with Arbortext window preferences Creating multiple stylesheets TESTING AND MAINTAINING STYLESHEETS
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GETTING STARTED WITH ACL (ARBORTEXT COMMAND LANGUAGE)

OBJECTIVES DURATION

This course introduces the Arbortext Command Language (ACL), a structured programming language built into the Arbortext series of products. ACL is flexible enough to allow a variety of operations, from writing simple macros to developing complex applications. auto-formation

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Understand ACL features
 Be familiar with ACL syntax and basic commands
 Be able to modify the menu, toolbar and keymaps
 Be able to build simple command files
 Be able to work with variables

METHOD THIS COURSE IS AIMED AT PRIOR KNOWLEDGE

Online self-access training (requires access to a license for the Arbortext authoring tool), with computer-based exercises; the computer files used in the exercises are provided on diskette with the training manual.	Anyone wishing to acquire familiarity with ACL.	Familiarity with a programming language; knowledge of Arbortext is preferable but not essential.
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PROGRAM

KEYMAPPING	VARIABLES AND ARRAYS	INTRODUCTION TO OBJECT IDENTIFIERS
MODIFYING THE MENU	INTRODUCTION TO CONDITIONAL LOGIC	
MODIFYING THE TOOLBAR		
COMMAND FILES	PACKAGES, FUNCTIONS AND ALIASES	

ACL DESIGN AND IMPLEMENTATION WORKSHOP

OBJECTIVES DURATION

This workshop builds on the "Getting started with ACL" course. 2 days
 In this workshop, trainees develop applications and learn the tricks and shortcuts from application developers who work with ACL on a daily basis.
 Training is on a Windows platform at Arbortext, the topics covered are applicable on all supported platforms.

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

User Object Identifiers
 Understand Hooks and Callbacks
 Build and use windows
 Build a complete application (a synthesis of everything learnt in this workshop and "Starting ACL").

METHOD THIS COURSE IS AIMED AT PRIOR KNOWLEDGE

Interactive and online, with groupwork and exercises based on the tasks to be performed.	Programmers, system administrators and analysts.	Trainees are required to have followed the "Starting ACL course or an equivalent course, be familiar with Arbortext and, preferably, have some programming experience (particularly C language).
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PROGRAM

CONDITIONAL LOGIC WORKSHOP
 OBJECT IDENTIFIER (OID) FUNCTIONALITY
 HOOKS AND CALLBACKS
 DESIGNING AND USING WINDOWS
 BUILDING AN APPLICATION
 ADVANCED TOPICS

COMPUTER ASSISTED TRANSLATION (CAT) WORKSHOP: THE TRADOS 6.5 LSP / FREELANCE SUITE

OBJECTIVES

This course enables participants to master the majority of the features available in the different applications of the Trados LSP 6.5 or Freelance suite.

DURATION

3 days

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Determine the logical sequence of operations to be performed for a given type of work.

Use the different applications according to the type of work to be performed: preparation, drawing up an estimate, alignment, translation, terminology.

METHOD

Build up theoretical knowledge by lectures rounded out by practical and work alone or in pairs.

THIS COURSE IS AIMED AT

Anyone involved in the translation process.

PRIOR KNOWLEDGE

Familiar with Word.
Knowledge of tagged format files desirable.
Note: Trados must be installed on the workstations

PROGRAM

OVERVIEW

MODULE 1: WORKBENCH

- Presentation of the interface and main features
- Basic concepts: translation segments and units
- Basic configuration
- Creating a translation memory (TM): TM structure
- Configuring a memory as needed
- Managing a project: how to analyze and pre-translate the files to be translated
- Managing a memory: import, export, maintenance, etc.
- The translation cycle: alignment, translation, clean-up

MODULE 2: WINALIGN

- The principle of WinAlign
- Aligning a text and its translation
- Importing the results of an alignment into a memory

MODULE 3: THE WORKBENCH – WORD INTERFACE

- Introduction to the TRADOS – Word interface
- Interaction between WorkBench and the text editor
- Translating a Word document: the WorkBench toolbar
- The concept of transposables and terms

MODULE 4: THE WORKBENCH – TAGEDITOR INTERFACE

- Introduction to the TRADOS – TagEditor interface
- Basic features and settings
- The concepts of tags and DTDs
- Translating a tagged document: HTML, Excel or PowerPoint

MODULE 5: MULTITERM

- Preparing, creating and importing a terminological database
- Consulting the records, adding terms to a glossary
- Catalog and software architecture concepts
- Configuring a database

TRAINING COURSE REVIEW AND FEEDBACK ACCORDING TO NEEDS

MIND MAPPING: CAPITALIZING ON AND COMMUNICATING INFORMATION IN SIMPLE VISUAL FORM

OBJECTIVES

This course gives participants a method and tools allowing them to capitalize on and communicate technical and marketing information in simple visual form. This is achieved using a software program or simply a sheet of paper and a pen. The software proposed is the market standard: Mind Manager by Mindjet.

DURATION

2 – 5 days
(advanced software features)

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Distribute visual information

Capitalize on the exchanges made in a meeting in synthetic diagram form

Capture an audience's attention by means of interesting, dynamic illustrations that change as the presentation progresses

METHOD

Build up theoretical knowledge by lectures and practical workshops.

THIS COURSE IS AIMED AT

Anyone involved in communication and capitalizing on and summarizing information – for meetings, presentations and reports

PRIOR KNOWLEDGE

None

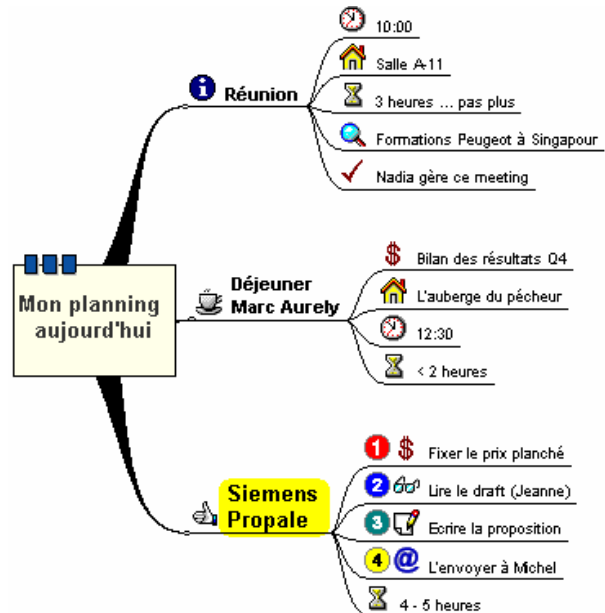
PROGRAM

INTRODUCTION

- What is Mind Mapping (or heuristic analysis)?
- How can it help you communicate your ideas to others?
- How can it help you remember the ideas expressed by others?

PROGRAM

- The basics: discovering and learning Mind Mapping (or heuristic analysis) by concrete examples from routine professional life
- The diagram: discovering or rediscovering the pleasure and power of diagrams No need to be an expert draughtsman or artist
- The software: using the main features of Mind Manager
- Validation: application of the principles learnt in a company context, either during the training only, or by sessions after one or two weeks work in the company



CONCRETE EXAMPLE OF PROGRAM MANAGEMENT

See opposite.

MODULARIZATION: MANAGING YOUR INFORMATION IN TARGETED, ON-DEMAND MODULES

OBJECTIVES

This course gives you a method to deliver information targeted according to your audience in different formats. It will notably allow you to improve your oral presentations and company documents by providing relevant information only in modular form. A module is a group of items of information, centered on a single, identical topic. A module differs to a paragraph by its homogeneous nature and the defined scope of its content. This Knowledge Management (KM) method can be applied to both technical and marketing content, either oral or written.

DURATION

3 – 5 days
(advanced software features)

AT THE END OF THIS COURSE, THE TRAINEE WILL BE ABLE TO

Structure the entire documentation in the form of modules to be selected according to target user profile.

Deliver tailor-made information for presentations and training courses, both marketing and technical.

Capitalize on unstructured or unwritten knowledge to promote in-house training and the application of good standard practices.

METHOD

Build up theoretical knowledge by lectures and practical workshops.

THIS COURSE IS AIMED AT

Anyone involved in communicating technical and marketing information to a mixed audience.

PRIOR KNOWLEDGE

None

PROGRAM

INTRODUCTION

- What is the a user profile?
- Written communication: different types of documents such as user guides, marketing brochures...
- Oral communication: presentations, discussions...
- The 5 key steps: Divide / structure / contextualize / title / homogenize

DIVIDE

- Identifying the main topics and their ramifications
- Dividing the documentation into sections and chapters and modules
- Analyzing the links between illustrations and text

STRUCTURE

- Analyzing the links between illustrations and text, then grouping (or not) the different aspects of a same topic
- Grouping the same topics of the documentation according to document architecture: phrase, sub-module, module, chapter, section, part and document

CONTEXTUALIZE

- Targeting the reader by asking the 7 key questions:
- Why? Who am I writing for and what is my goal? (to explain and sell a concept, transfer technical information, argue for a decision, summarize an operation...)

- Who? What are the reader profiles? (including their jobs and professional environments)
- What? What is my document? Is it a comprehensive user guide, a memo, a marketing brochure, a technical brochure, a database of contextual knowledge... ?
- How? What are my audience's access modes to the information contained in my? Is it entirely paper-based? Entirely electronic format (intranet, internet)? Or is it a mix of the two?
- When? When do my audiences access the documents? Is it in an emergency situation? For learning? Or other?
- Where? Localize your subject matter. Cultural differences may require part of the documents produced to be revised.
- How much? Take the frequency and importance of the information delivered into account. An infrequent operation that has a major effect on production must be given special treatment to make sure it is applied to the letter

TITLE

- By levels of detail: title the different levels, from module to document level
- Design a table of contents that facilitates navigation within the document
- For large documents, consider creating sectional tables of contents

HOMOGENIZE

- Content: pay attention to sentence length, use appropriate verbs, select relevant verb forms
- Format: style sheet management (depending on the software used .dot or .css or .dtd), review the capitalization rules
- Vocabulary: select terms according to the target audience, manage repetition and the use of synonyms

APPLICATIONS

- Applying the modularization method to documents provided by the trainees
- Simulation of oral presentations
- Document architecture: managing document sections, index and thesaurus – notably with programs such as Documentum and Answer Works

TOOLS: (OPTIONAL)

- Document architecture: managing document sections, index and thesaurus – notably with programs such as Documentum and Answer Works
- Restructuring documents created with MS Word: the reference text editor: the concepts of templates, keyboard shortcuts, styles, tables of contents and document titles, section breaks and pages
- Restructuring information published with Dreamweaver: HTML tags, .css stylesheets, structuring in table form

SINGLE SOURCING: DISTRIBUTING YOUR INFORMATION IN PAPER AND ELECTRONIC FORMAT FROM A SINGLE DOCUMENT SOURCE

OBJECTIVES	DURATION
This course gives you a method and tools to produce technical and marketing documents in paper (hard copy) and electronic format from a single identical source. Electronic formats are varied and include .xml, .html, .chm, .pdf and .hlp. The software used may be (as required): RoboHelp by Macromedia or Doc-To-Help by ComponentOne.	1 – 3 days (advanced software features)

AT THE END OF THIS COURSE, THE TRAINEE WILL

Be able to distribute information in paper and electronic format from a single source.

Be familiar with the market-standard document management tools

Be able to rationalize the distribution of relevant information by targeting the audience and distributing only the information required for a given user profile

METHOD	THIS COURSE IS AIMED AT	PRIOR KNOWLEDGE
Build up theoretical knowledge by lectures and practical workshops.	Any person needing to write or to participate in the authoring process: technical writers, training managers, quality managers, software and hardware engineers and maintenance technicians	Technical Writer Training

PROGRAM

INTRODUCTION

- What is Single Sourcing?
- How to best write a document to optimize Single Sourcing

IMPORTING A DOCUMENT

- Creating a project
- Importing an MS Word document
- Structuring the document

COMPLETING THE DOCUMENT

- Creating an additional section
- Managing key words

STRUCTURING

- By levels of detail: titling the different levels, from module to document level
- By user profile: Differentiating topics according to their level of complexity and offering more or less technical/advanced interpretations.
- Designing a table of contents that facilitates navigation within the document
- For large documents, consider creating sectional tables of contents

INDEXING

- Creating a key word

- Managing indexing: progressively as the document is compiled and/or on a case-by-case basis when it is complete
- The importance of the index for context search
- Document architecture: managing document sections, index and thesaurus – notably with programs such as Documentum and Answer Works

GLOSSARIES

- Defining key words either progressively as the document is compiled or on completion of the document project

PUBLISHING

- The differences between and options offered by the different electronic formats: .xml, .html, .chm, .pdf and .hlp
- Selecting the right format(s)
- Launching publication by selecting the options

CONFIGURING AND CUSTOMIZING

- Modifying the navigation interface for .xlm, .htm, .chm and .hlp type files
- Customizing the home (main) and contact pages according to electronic format

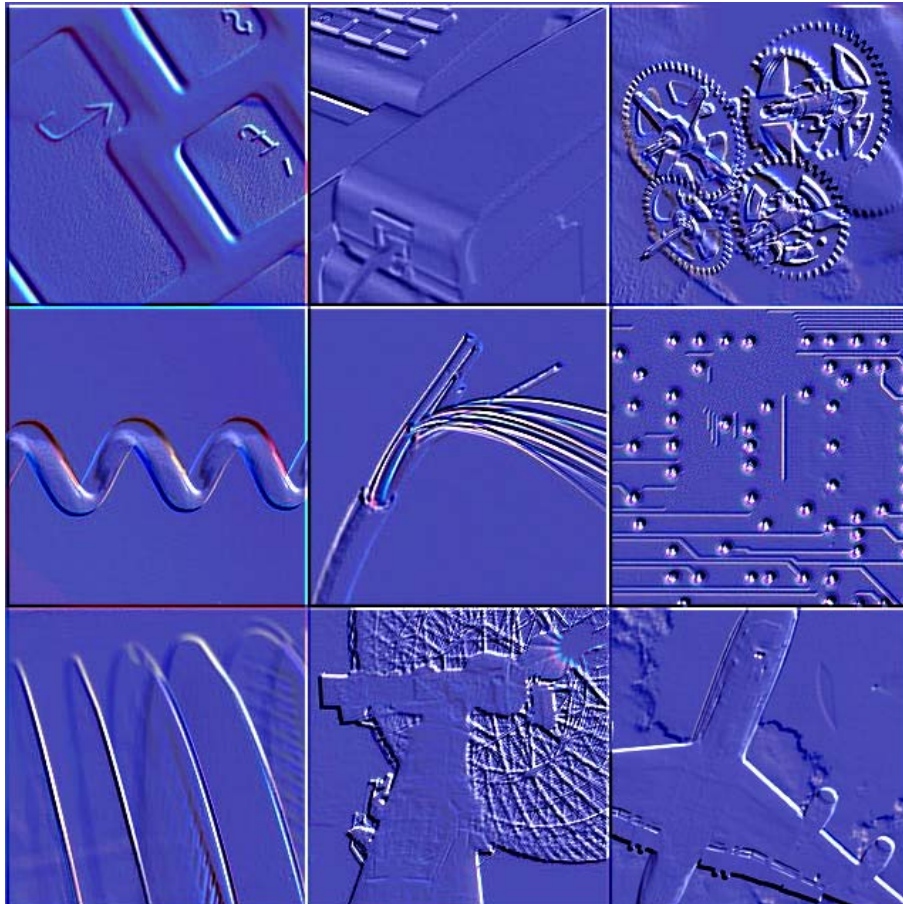
TOOLS: (OPTIONAL)

- Document architecture: managing document sections, index and thesaurus – notably with programs such as Documentum and Answer Works
- Restructuring documents created with MS Word: the reference text editor: the concepts of templates, keyboard shortcuts, styles, tables of contents and document titles, section breaks and pages
- Restructuring information published with Dreamweaver: HTML tags, .css stylesheets, structuring in table form

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