# ENG-301 - PDH & SDH Digital Transmission

## Description

A 5-day Training Program to provide participants with an understanding of the Plesiochronous Digital Hierarchy (PDH) transmission and its limitations with respect to the Synchronous Digital Hierarchy (SDH) transmission. A brief description of SONET (Synchronous Optical NETwork) is included, as well as differences between SDH and SONET.

## Objectives

- Provide an overview of the evolution of telecommunications as well as a review of its basic principles
- Describe the structure of PDH, SDH and SONET as well as their network architecture including customer, loop and office equipment
- Present the limitations of PDH
- Provide an overview of different facilities of SDH
- Give a description of SONET
- Explore the new life for legacy SDH network by explaining the Generic Framing Procedure (GFP), the virtual concatenation and the Link Capacity Adjustment Scheme (LCAS)

## Topics

### Part 1: Introduction

**Evolution of telecommunications**

**Review of telecommunications fundamentals**

- Bandwidth and capacity
- Encoding/decoding
- Modulation/demodulation

- Multiplexing/demultiplexing
- Synchronous and asynchronous transmission

## Part 2: Plesiochronous Digital Hierarchy (PDH)

### PDH multiplexing structure

- T1
- E1
- DS3

### PDH network architecture

- Customer equipment
- Loop equipment
- Office equipment

### PDH limitations

## Part 3: Synchronous Digital Hierarchy (SDH)

### SDH multiplexing structure

- Containers and Virtual Containers (VC)
- SDH frame
- Section overhead
- Administrative Units (AU)
- Tributary Units (TU)
- Synchronous Transport Module-N (STM-N)
- Higher level multiplexing

### Synchronized Optical NETwork (SONET) multiplexing structure

- Tributaries and Virtual Tributaries (VT)
- Synchronous Transport Signal-N (STS-N)
- Synchronous Payload Envelope (SPE)
- Optical Carrier (OC) level

### SDH facilities

- Network topologies
- Equipment
- Synchronisation
- Protection switching
- Alarm structure
- Performance monitoring
- Network management

**New life for legacy SDH networks**

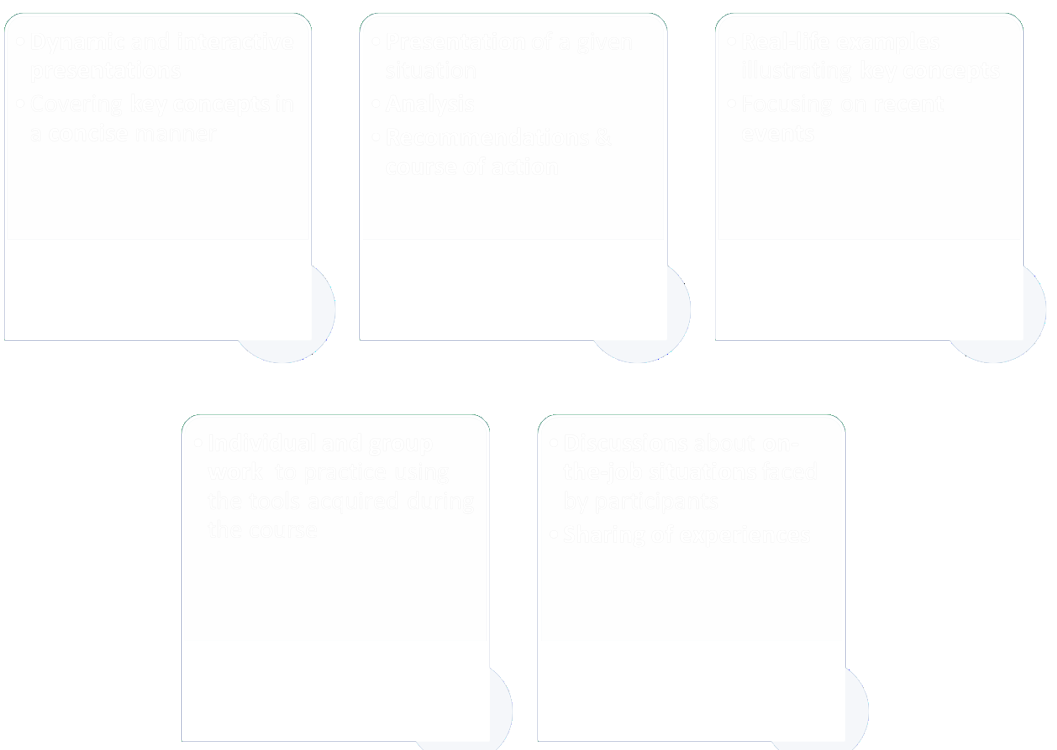
- Generic Framing Procedure (GFP) – mapping broadband data onto SDH frame
- Virtual concatenation – splitting bandwidth into logical groups to support the transport of variable bit data streams
- Link Capacity Adjustment Scheme (LCAS) – providing bandwidth-on-demand capability for data

## Target Audience

- Telecommunications managers and personnel responsible for the planning, design, implementation, management and maintenance of digital transmission systems
- Managers looking to complement their skill-set by gaining a good understanding of PDH and SDH transmission as well as SONET

## Methodology

A combination of engaging activities and dynamic presentations to stimulate and maximize participants' learning.




## Location

A selection of Neotelis' training courses is held in various cities around the world. Please contact us at training@neotelis.com for the complete Yearly Training Calendar.

Neotelis can also deliver in-house sessions of this course specifically for your organization. Please contact us at training@neotelis.com for more information and a Proposal.

## About Neotelis

Neotelis provides training, consulting, conferences and publications to the telecommunications industry worldwide. Its team of senior experts has trained thousands of executives and managers working for operators, regulators, policy-makers and governments in over 120 countries around the world.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