



Pre-Event IPTV Workshop Outline
Rio de Janeiro 28th January





- 1. Introduction 3
- 2. HyC Training References..... 4
- 3. IPTV Workshop Training Programme 7
 - 3.1 IPTV Course – The Key Building Blocks 7
 - 3.1.1 Course Outline..... 7
 - 3.1.2 Training Programme Objectives 8
 - 3.1.3 Course Description 10
 - 3.1.4 Who should attend 14
 - 3.1.5 Schedule 14
- 4. Quality Management and Training Material 15



1. Introduction

This document includes the detailed contents related with the Training Program that will be followed during the Pre-Event IPTV Workshop in Rio de Janeiro about IPTV technologies performed by HyC Campus and that will take place from the 28th January.

During this workshop all those professionals from this sector that finally decide to attend this Training event will acquire the essentials concepts to understand the basics at technological level related to this new contents distribution media.

2. HyC Training References

HyC have trained more than 250 engineers and account managers in different Digital TV technologies, including the design and implementation of IPTV strategies and systems, operations and maintenance of TV platforms and IP networking topics such as Quality of Service and Security.

Among our reference customers we have technology providers, integrators and operators such as:



Figure 2. HyC Reference Training Customers

- Cisco – Europe, USA y Latin America Systems Engineers
- Ericsson – Europe y Asia-Pacific Systems Engineers
- ONO – Technology, Operations and Maintenance engineers.
- Jazztel – Operations engineers
- Ya.com: Operations engineers
- Abertis Telecom – Engineering, Operations and Maintenance department
- Aena – Operations engineers
- Portugal Telecom– Engineering, Operations and Maintenance department
- STA – Engineering, Operations and Maintenance department & Pre-sales, Sales and Marketing department
- SATEC – Technology, O&M and Pre-Sales, Sales and Marketing Departments.

Different speakers are selected according to the requirement of each seminar or course, assuring that the technology expertise and experience always cover the requirement of the attendants. The category of the Senior speakers can vary from the Funding Directors of HyC to the different Area Directors or senior consultants with wide experience in field projects.



All of them **focus on solving all different business and technology aspects during and after the training program**, supporting and giving advice to attendants to solve any doubts that may arise in the course of their work during and after the program.

HyC Campus includes access to up to date and accurate technical information, including industry reference white papers and standards. A paper copy of all training materials is provided to all the different attendants.



3. IPTV Workshop Training Programme

3.1 IPTV Course – The Key Building Blocks

This workshop is to be taken by those professionals requiring getting further insight into the TV over IP systems and technologies: Consultants, Engineers and Pre-sales personnel willing to go further in technical aspects.

3.1.1 Course Outline

- Session 1 Introduction to IP TV, concepts and services. Digital Video Concepts
- Session 2 Digital Video Head - end
- Session 3 IP Set Top Boxes
- Session 4 Middleware
- Session 5 Triple Play Networks Requirements: an IPTV perspective
- Session 6 VoD and PVR
- Session 7 CAS / DRM Systems
- Session 8 Monitoring Systems and IPTV measurement
- Session 9 Portal TV, EPG and interactive applications
- Session 10: BSS support for IPTV products & services
- Session 11: Open discussion

3.1.2 Training Programme Objectives

After completing this course the attendants should be able to:

1. Describe the type of services that are provided by IPTV operators and understand which are the tendencies on customer services as well as the high level business targets of operators.
2. Identify the TV Digital system Block Diagram in TV over IP deployments and participate on system level architecture discussions.
3. Participate on the system level discussions about the detailed block diagram of IPTV head-end systems, redundancy schemes and understand available IPTV head-end solutions from key providers in the market
4. Describe video encapsulation, transport, design mechanism/technologies (DVB IPI, ProMPEG)
5. Explain the principles of MPEG encoding as well as describe the standardization landscape (MPEG-4 and WM 9) and market tendencies. Propose to a customer basic system design parameters for both MPEG-2 based and advanced coding technologies (MPEG-4/WM9)
6. Describe the differences between Conditional Access Systems (CAS) and Digital Right Management (DRM) systems, as well as Software

- based and Smart Card based security systems. Identify the proposals from key providers in the market. Explain the different functions implemented in the CAS/DRM systems
7. Size a Video on Demand VoD systems for a specific customer and describe the system level architecture. Identify the available solutions in the market and the difference between HW specific based systems and general purpose HW server based VoD technologies
 8. Identify the IP Set Top Box basic HW and SW architecture and differentiate the products and the roadmap of key suppliers in the market
 9. Participate on the discussion and describe the network implications around the middleware vs portal TV approach for interactive applications. Describe the concept of EPG and the implementation architecture. Understand how signaling is accomplish in IPTV.
 10. Based on a real Case study, define the block diagrams of an IPTV system and propose a sizing at system level. Identify the key aspects to be considered from the system integrator point of view.

3.1.3 Course Description

IPTV – The Key Building Blocks

- **Session 1 Introduction to IPTV, concepts and services. Digital Video Concepts**

- 1.1 Course introduction and objectives
- 1.2 TV over IP system general block diagram
- 1.3 TV and VoD Services
- 1.4 EPG's examples
- 1.5 Reference scenarios of IPTV evolution in Europe
- 1.6 Introduction to Digital Video concepts
- 1.7 Codification: MPEG-2, H.264
- 1.8 High Definition
- 1.9 CAS
- 1.10 Multiplex
- 1.11 DVB SI
- 1.12 IP Adaptation

- **Session 2 Digital Video Head-end**

- 2.1 Introduction
- 2.2 General Architecture
- 2.3 Head-end Subsystems

- 2.3.1 Signal reception
- 2.3.2 Codification
- 2.3.3 IP Adaptation
- 2.3.4 Management System
- 2.4 Design alternatives: EnCube, Kassena, Envivo.

- **Session 3 IP Set Top Boxes**

- 3.1 Introduction
- 3.2 Architecture and STB features
- 3.3 Interfaces
- 3.4 Study of the STB available in the market

- **Session 4 Middleware**

- 4.1 Middleware traditional concept
- 4.2 Open and proprietary solutions
- 4.3 MHP: Multimedia Home Platform
- 4.4 IPTV approach
- 4.5 Middleware Demonstration

- **Session 5 Triple Play Networks Requirements: an IPTV Perspective**

- 5.1 System architecture
- 5.2 Network Elements
 - 5.2.1 Transport network technologies

5.2.2 IP DSLAM

5.2.3 Voice service supply

5.2.4 QoS

5.3 Triple Play Network Implementation Case Study. How to build an End-to-End 3Play Solution. Networks Requirements.

- **Session 6 VoD y PVR**

6.1 Basic principles of VoD and PVR

6.2 System architecture and technical basis

6.3 Guidelines for the service deployment

6.4 Main providers

6.5 VoD Demonstration

- **Session 7 CAS / DRM Systems**

7.1 CAS basic principles

7.2 IPTV Solutions vs. Broadcast Solutions

7.3 Market solutions and trends

7.4 DRM basic architecture

7.5 DRM Server functions

7.6 DRM Business Models

- **Session 8 Monitoring System and IPTV measurement**

8.1 Introduction

8.2 Monitoring architectures

8.3 Video monitoring

- 8.4 Audio monitoring
 - 8.5 Objective parameters monitoring
 - 8.6 Subjective quality monitoring
 - 8.7 MPEG-2 Transport Stream measurement and analysis
 - 8.8 Network MPEG-2 Transport Stream measurement
 - 8.9 Video over IP measurements
 - 8.10 Systems examples
 - 8.10.1 Image monitoring – Tracebox
 - 8.10.2 IP parameters monitoring – Bridgetech
 - 8.11 Monitoring and measurements Demonstrations
- **Session 9 PortalTV, EPG and interactive applications**
 - 9.1 PortalTV concept
 - 9.2 EPG functionalities
 - 9.1 Other interactive applications
- **Session 10 BSS support for IPTV products & services**
 - 10.1 Provisioning Processes for IPTV services: Mediation & Billing.
 - 10.2 Customer Support Services for IPTV services
 - 10.3 DWH and Reporting for IPTV services
 - 10.4 Project Plan definition for Business Processes/BSS customization
 - 10.5 Economics for BSS

3.1.4 Who should attend

This course is to be taken by those professionals requiring getting further insight into the TV over IP systems and technologies. This course is intended for the following personnel. A basic technology background at system level is assumed.

- Consultants
- Engineers
- Pre-sales personnel willing to go further in technical aspects

3.1.5 Schedule

HyC will prepare a 1- 6 hours-day training course

4. Quality Management and Training Material

HyC has already established a Quality Management Control Process for the training Programmes. Course Attendant Satisfaction Enquiry will be conducted at any course with the aim to improve the courses and adapt them to the customer objectives. Paper Dossier material will be delivered.