

ITU Forum on Conformance and Interoperability for the Arab and African Regions

(Tunis, Tunisia, 5 – 7 November 2012)

TELNET HOLDING Interoperability & Testing activities: IPTV and Multimedia applications

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Tunis, Tunisia, 05-07 November 2012



TELNET HOLDING OVERVIEW

- Over 17 years of operations
- 2010 Group revenues of over \$20,5 million USD
- Over 600 employees with more than 550 engineers
- Operates in Front/Backoffice model with offices in Tunisia and Worldwide (France, Germany, USA and UAE)
- Partnerships with international brands such as SAFRAN, SAGEMCOM, ALTRAN, VALEO, THOMSON, JCAE, TEKELEC, PATTON ELECTRONICS, DASSAULT SYSTEMES, LACROIX ELECTRONICS SOLUTIONS,...
- SEI CMMi Level 5 & ISO 9001v. 2008 certified development centers

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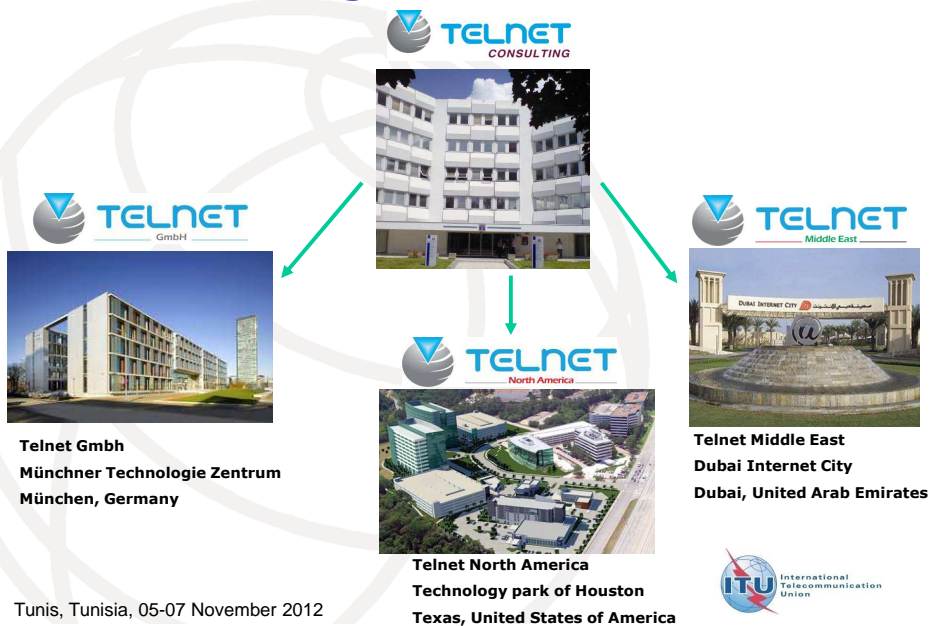


TELNET HOLDING OVERVIEW

- Global provider of Offshore/Nearshore Product Development
- Partnering approach to servicing its customers in Europe
- Proven and established outsourcing models
- Over 10 active large multi national customers
- Business partnership with US and European large companies
- Since April 2011, 18,77% of Telnet Holding capital is listed on Tunisian Stock Exchange
- To be listed on the European Stock Exchange, scheduled for 2012



foreign subsidiaries



Telnet Holding core business

- The group is positioned on three areas:
 - ◆ **Research & Development (R & D) for product engineering;**
 - ◆ **Telecommunications and network integration;**
 - ◆ **PLM Services (Product Life-Cycle Management);**

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Research & Development (R&D) for Product Engineering

- It covers all or part of the components of technological product design:
 - ◆ **Software component, developed by embedded software engineers;**
 - ◆ **Electronic component (chip, hardware), developed by electronics engineers;**
 - ◆ **Mechanical component, developed by mechanical engineers;**
- It covers a great variety of industries such as:
 - ◆ **Telecommunication**
 - ◆ **Multi-Media**
 - ◆ **Automotive**
 - ◆ **Security**
 - ◆ **Defense / Avionics**
 - ◆ **Payment Point of Sale (POS)**
 - ◆ **Industry**
 - ◆ **Information System (IS)**

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Telecommunications and network integration

■ Operators Integration:

- ◆ Deployment and commissioning of access solutions for fixed and mobile networks on behalf of telecom operators in partnership with telecom equipment manufacturer (TEKELEC, Oscilloquartz, Patton Electronics, Ekinops)

■ Networks Interconnection:

- ◆ The supply, installation and commissioning of interconnect solutions and business networks;
- ◆ The audit and diagnostics for corporate networks;

■ Resell and distribution of communication solutions and network equipment:

- ◆ Audio, video conferencing: in partnership with Polycom;
- ◆ Networks Access Solutions: in partnership with PATTON Electronics;
- ◆ VoIP & Unified Communications Solutions: in partnership with Digium ;

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Telecommunications and network integration

1. Hardware and Software Installation, Professional Services for Tekelec Systems Configuration and Commissioning related:
 - Monitoring (PIC)
 - Switching and Signaling STP
 - Messaging Platforms
 - PCRF
2. Tier 1 and Tier 2 TAC support for:
 - Hotline and TSC1 & TSC2 Technical support for PIC customers
 - On site technical support engineer for PIC & NSG customers in North Africa, Europe & Middle East.
3. Health Check/Software field upgrades for STP Eagle

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Telecommunications and network integration

Main Projects in Carrier Networks done in Europe, Middle East and Africa (EMEA) in partnership with Tekelec: Installation, testing and commissioning of network management and Monitoring for fixed and mobile 2G; 2.5G and 3G during 2003-2011 in Europe, Middle East and Africa in collaboration with **Tekelec** mainly in:

Europe	<ul style="list-style-type: none"> •France (Orange, SFR & Byg-Telecom) •Monaco (Monaco Telecom) •Italy (TIM) •Spain (UNI2) •Netherlands (iBasis, KPN) •Portugal (Optimus) •Luxembourg (P&T) •Liechtenstein (Mobilkom) •Slovakia (Orange) 	<ul style="list-style-type: none"> •Belgium (Mobistar) •Germany (T-Mobile & O2) •Austria (Colt) •Baltic (Bosnia Telecom & Iskratel) •Turkey (AVEA, Turk Telecom , Vodafone) •Russia (MTS, Megafone) •Romania (Cosmote)
Africa/ Middle -East	<ul style="list-style-type: none"> • Tunisia (Orascom Tunisia Telecom) • Morocco (Maroc Telecom) • Algeria (Orascom Telecom Algeria) • Libya (Libyana) • Egypt (Mobinil) • Jordan (JTC) • Kuwait (Wataniya) • U A E (Ettisalat) • Bahrain (Viva) 	<ul style="list-style-type: none"> • Mali (Ikatel) • Ivory Coast (OCI) • Burkina Faso (Onatel) • Senegal (Sonatel) • Cameroun (Orange) • Nigeria (Zain/Airtel) • Kenya (Airtel & Orange) • Ghana (Airtel) • Ethiopia (Ethiopia Telecom)
WorldWide	<ul style="list-style-type: none"> •Brazil (Telemig) •USA (Ericsson) •Martinique, French Territory (OMT ZTE) •Guadeloupe, French Territory (OMT ZTE) •Philippines •India (BHARTI) 	

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Telecommunications and network integration

EXAMPLES

- Analog and digital modems
- Ethernet switches and routers
- Digital and analog access servers
- xDSL Access Multiplexers
- Access devices and VoIP offset
- Interface converters
- Interconnection solutions for corporate networks LAN
- Internet / Intranet Solutions
- Solutions of audio and video conferencing via IP and ISDN
- Storage solutions for network servers
- Secure solutions for networks access;

- Our deployment & professional services Partners



- Our Commercial Partners



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Product Life-Cycle Management Services

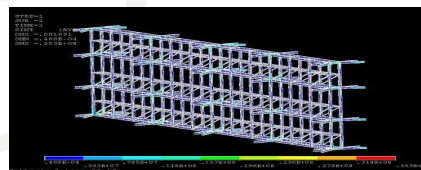
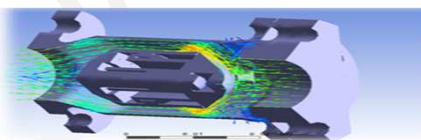
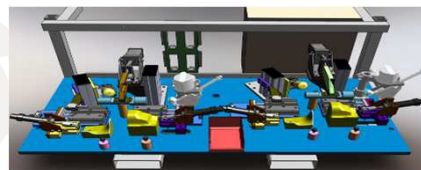
- The "PLM" is the management of the lifecycle of a product from conception to maintenance, through all stages of its manufacture and its quality control.
- PLM Systems is the Tunisian representative of world software leader in PLM services (Dassault Systemes). Its services include:
 - ◆ Resell software;
 - ◆ Provide related technical support;
 - ◆ Provide training;

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Product Life-Cycle Management Services

- **EXAMPLES**
- CAD & Simulation : Special machine design, ...
- CAM & Industrialization: Aircraft structures, ...
- CAE :
 - ◆ Numerical simulation of aircraft braking systems;
 - ◆ Calculation and simulation in the field of Energy;



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Telnet Activity Within ITU-T

ITU-T Member since : 2009

Active participation in ITU-T SG 15; 16 & 17

Past ITU-T SG 16 participations:

- Geneva, CH 20-23 July, 2010 :
 1. ITU-T Inter-operability Event on IPTV
 2. ITU-T WP3/SG16 JCT-VC Meeting
- Geneva, CH 16-23 March, 2011:
 1. ITU-T WP3/SG16 JCT-VC Meeting .High Efficiency Video Coding standard (HEVC)

Up Coming ITU-T SG – 16 Participation:

- Geneva, CH 21-30 November, 2011:
 1. ITU-T WP3/SG16 JCT-VC Meeting High Efficiency Video Coding standard (HEVC)

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Testing and Interoperability for IPTV projects

- Set-Top Box Interoperability Testing &Validation for IPTV
- Home Gateway Interoperability Testing &Validation

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Testing and Interoperability for IPTV projects

■ Live TV Channels:

The offered packages depends of the subscription, The Live service tests include tests on :

- ♦ Live SD, HD and mosaic channels: VMX server issues, zapping time, video quality, zapping on PIP (Picture In Picture), zapping on Channel List
- ♦ Time Shift: Pause Rewind/Replay a Live TV, two Time Shift type offered: the local Time Shift using the PVR functionality and the Network Time Shift using the operator Network.
- ♦ Start / Stop / Schedule a Record on Live TV, Watch and Record (simultaneously record a program on one channel, while you watch another channel)

■ VOD (Video On Demand) :

Video On Demand is a service that gives the access to many television series and a large collection of movies of every genre. Our tests approve:

- ♦ The User Interface: All VOD menus.
- ♦ The VOD, PIP and Trailers video quality (VMX server and video decoding issues)
- ♦ The trick mode and bookmark functionality
- ♦ The VOD validity (when buying a VOD the validity duration is fixed by user)

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Testing and Interoperability for IPTV projects

■ EPG (Electronic Program Guide):

By tuning into the Program Guide, a menu is displayed that lists current and upcoming programs on all available channels. Our tests approve:

- ♦ The User Interface: All EPG menus including the PIP Video quality.
- ♦ Conformity with the EIT broadcasted channels (time and title, additional information including a brief synopsis of the program).
- ♦ The EPG Update

■ CatchUp TV:

For some channels, the CatchUp TV service is available; you can easily replay any TV program for a period of days after the original broadcast. Our tests approve:

- ♦ The User Interface: All CatchUp menus including the PIP Video quality.
- ♦ The CatchUp TV video quality including the trick mode functionality.

■ Radio Channels:

Many radio channels are offered, our tests approve:

- ♦ The User Interface: All Radio menus including the background animations on Radio channel
- ♦ The Radio zapping functionality.
- ♦ The audio quality.

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Testing and Interoperability for IPTV projects

■ PVR (Personal Video Recorder):

The PVR function allows recording a Live TV program on the Local Hard Disk Drive. The maximum record duration depends of the middleware. Our tests approve:

- ◆ The User Interface: All PVR menus including the Start / Stop Record popup information.
- ◆ Records tests: impulsive and schedule record, real and maximum record duration
- ◆ Watch and record tests: simultaneously record a program on one channel, while you watch another channel.
- ◆ Replay the recording: video quality and trick mode functionality.

■ App Store :

Many flash applications can be integrated on the Set Top Box (games, weather...). Our tests approve the compatibility of the offered application with the Set Top Box middleware.

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Testing and Interoperability for IPTV projects

■ DLNA (Digital Living Network Alliance):

A DLNA media player is integrated on the Set Top Box middleware. Our tests approve:

- ◆ The DLNA functionality (shared local and distant DMS).
- ◆ The supported Audio, Photo and Video codec.
- ◆ The media player functionality (trick mode on video files, display photo (or diaporama) when an audio playlist is started...)

■ User Account :

Creating user profiles for the different users at home will not only personalize your TV viewing experiences, but also ensure better parental control. By logging in as different users, each family member gets to create their own user experiences. The administrator / user can define or change audience rating ; our tests approve the users and accounts profiles.

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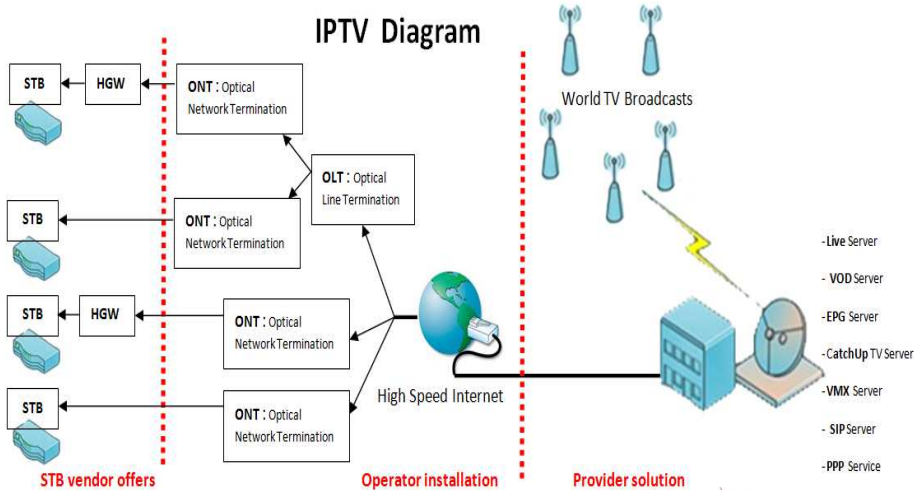
IPTV Testing & Validation

- The turnkey end-to-end IPTV is a partnership project with:
 - The Server Provider
 - The Network Operator
 - The Set Top Box and HGW middleware provider
 - The Set Top Box vendors

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IPTV Testing & Validation



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Network Operator

- Bring its experience to deploy all Server provider services
- The combined should works on STB from multiple vendors enabling Service Providers to select their choice of hardware today and in the future (Hybroad, Airties, Kaon, Humax, Airties, Pace...)

HUMAX
EASY DIGITAL™

PAGE

KAON
www.kaonmedia.com

AirTies



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Server Provider

- Brings the turnkey end-to-end IPTV, OTT and Hybrid video solutions for major operators worldwide. Huawei's Unified TV solutions combine advanced features such as fast channel change, messaging on TV, start over, hybrid IP/DVB-x services with integrated user experience, and Multiscreen TV and OTT services and an application store.



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Middleware Provider

- Middleware provider offers a client software platform that contains all of the features and open APIs necessary to create innovative applications and user interfaces for the Digital Home. Service providers and 3rd party developers can use HTML or Flash to combine services such as voice, video, user interface, security, network access, connectivity or management and deploy them in a multi-screen environment including TVs, tablets and mobile devices.

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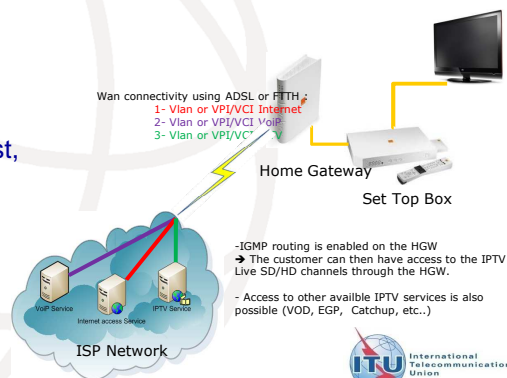


Home Gateway CPE

- A Platform for simulating the ISP network (ISAM, Servers and Vlan : (PPP server, VoIP Server and IPTV Server with Live/VoD channels)

- Validating triple play services via ADSL/VDSL/FTTH (Internet access, VoIP, and IPTV)

- Execute test plans for IPTV testing (IGMP Proxy, IGMP Snooping, Multicast to unicast, IGMP Routing, QoS, etc...)



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Home Gateway CPE

- 1- Run triple play scenarios for robustness testing :
 - Internet download via WIFI+ VoiP call + HD Live Channel running on STB
- 2- Verify that the end user is well able to access the IPTV services beyond the HGW (HD/SD Live channels, VOD, Catchup-TV, EPG, etc..)
- 3- Validate the HGW DLNA services (DMS/DMR/DMC).

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Thank You for Your Attention

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