



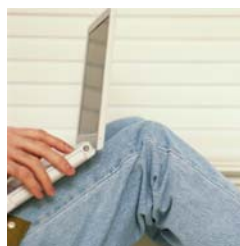
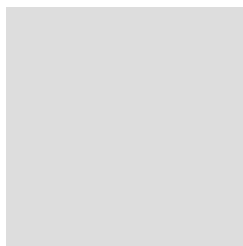
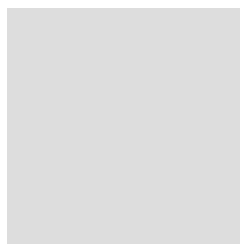
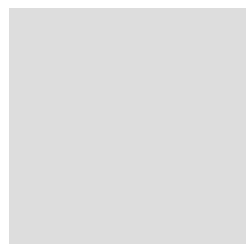
Overview of SATSIX trials

International Workshop on IP Networking over
Next-generation Satellite Systems

(INNSS'07)



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OBJECTIVE

- **Definition phase (end August)**
 - end-to-end systems definition
 - application definition

Demonstration, validation and evaluation of the innovative SATSIX integration aspects through live trials



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SCENARIOS



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- Scenario 1: Corporate applications on DVB-RCS transparent access platform (Thales Alenia Space F, LAAS, B2I)
- Scenario 2: Collective Access Terminal on DVB-RCS transparent access platform (Hungaro Digitel)
- Scenario 3: Corporate applications on DVB-RCS regenerative access platform (Hispasat + Thales Alenia Space E)
- Scenario 4: Residential applications on DVB-RCS transparent access platform (Hispasat + Telefonica ID + UVa)

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SCENARIO 1. Corporate Applications on transparent access platform

- Mail server (SMTP / POP3)
- Web browsing (HTTP / HTTPS)
- Unicast Files transfers (FTP)
- Multicast file transfers (MPUSH based on multicast UDP)
- Collaborative working server
- Voice over IP (SIP)

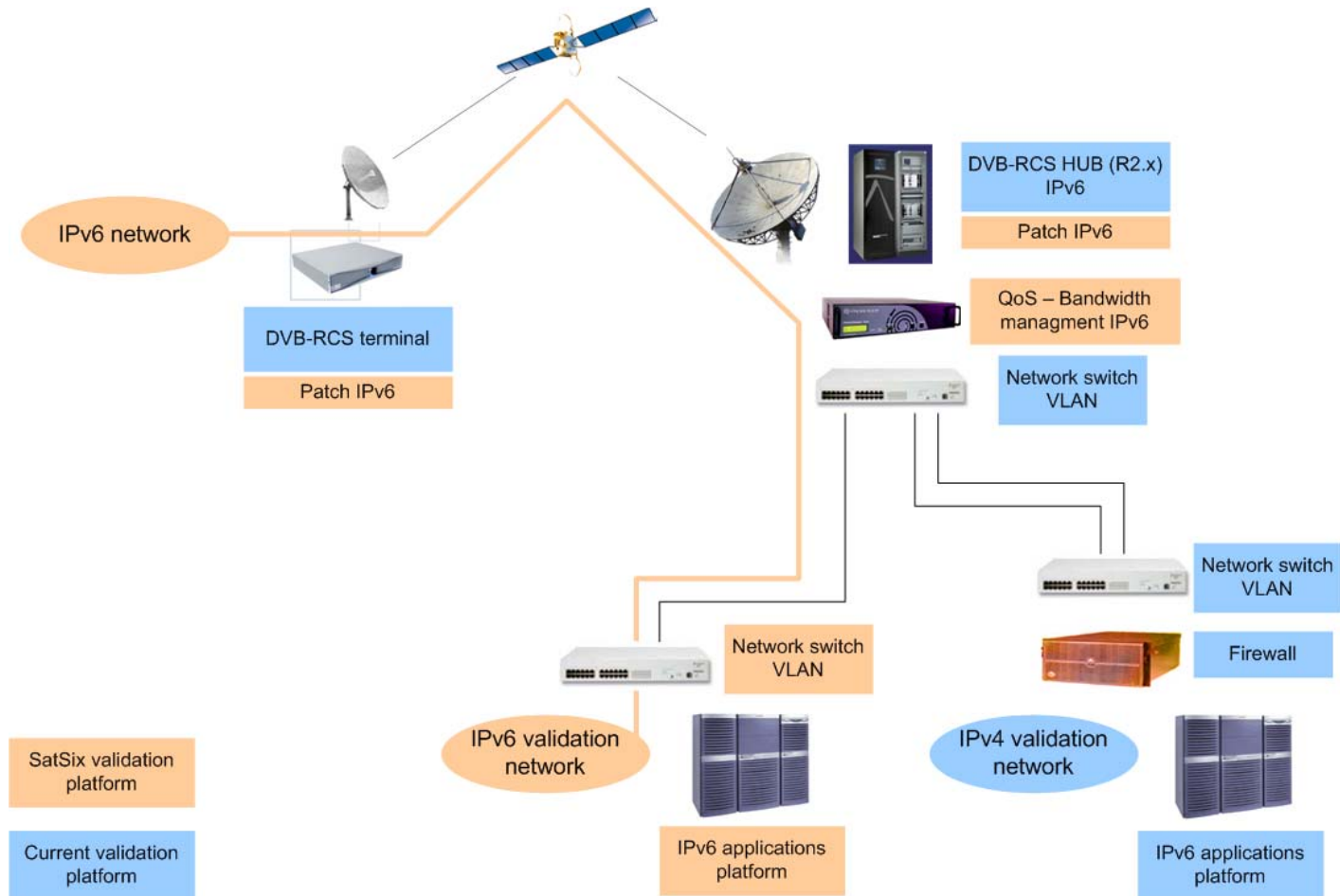


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SCENARIO 1. Platform



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SCENARIO 1. Validation (I)



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- **Mail**
 - Send an email
 - Receive an email
- **Web browsing**
 - Display HTML page (static and dynamic)
 - Download file using HTTP protocol
- **Unicast files transfer**
 - Download a file from the FTP server
 - Upload a file to the FTP server
- **Multicast files transfer**
 - Receive a file from the Mpush server
 - Acknowledgment of the file through the return link
- **Collaborative working server**
 - Connection to a session
 - Chat
 - Audio
 - Video
 - Application sharing
- **Voice over IP**
 - Register software phones on the SIP server
 - Register hardware phones (for example Wifi phone) on the SIP server
 - Make a call between two clients



SCENARIO 1. Validation(II)



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- **Native IPv6**
- **QoS priority**
- **Maximun rate (RBDC) adapted to the applications needs**

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SCENARIO 2. Collective Applications on transparent access platform

- IPv6 WLL access
- WLL security methods (WEP, WPA and WPA2)
- Application/Network security
- IPv6 Mobility
- Dynamic Multicast



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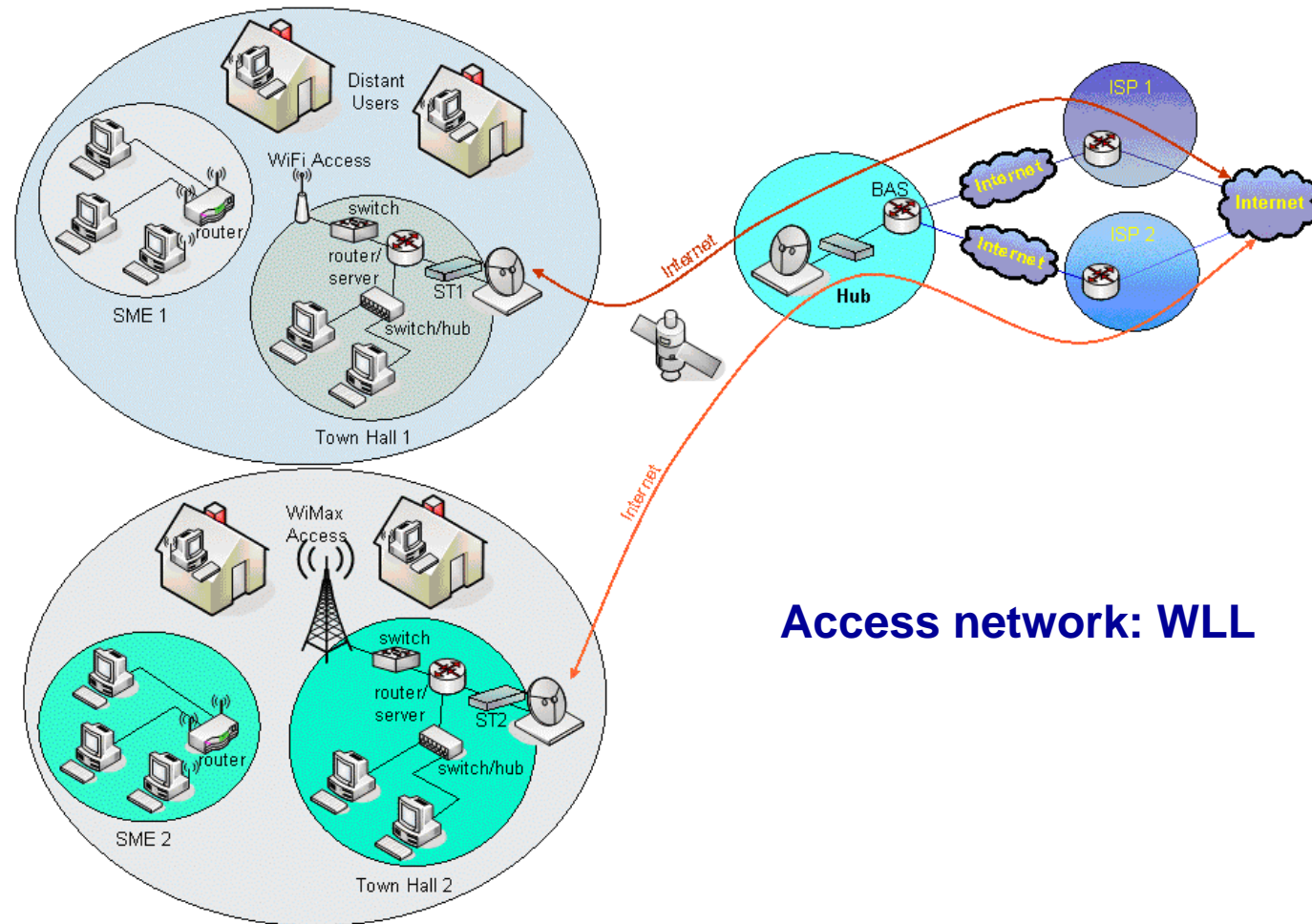
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SCENARIO 2. Platform



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Access network: WLL

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SCENARIO 2. Validation (I)



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- **IPv6 WLL access validation.**
 - connection to the wireless segment
 - acquisition of IPv6 address through the DHCP
 - establish an IPv6 ICMP session to the server

- **WLL security validation. A single hop IPv6 connection via satellite between the remote site router and the RADIUS server. Results expected:**
 - a successful IPv6 RADIUS authentication sessions established between the AP and the RADIUS server
 - wireless clients are able to authenticate themselves through the router's RADIUS connection, via IPv6
 - a successful key exchange on the WLL;
 - that the wireless clients are able to communicate with each other;
 - the wireless clients are able to establish IPv6 ICMP sessions with the server (RADIUS), through the satellite connection.



SCENARIO 2. Validation (II)

- **application/network security validation, (802.1x, RADIUS).**
 - availability of Email services (sending, receiving);
 - an operational Web browsing;
 - a successful establishment of secure shell connections;
 - a successful forwarding of packets through the IPSec connection

- **IPv6 Mobility validation.**
 - the MN will be able to communicate to the Corresponding Node on the Outside IPv6 LAN segment with the IPv6 Home Address from the Home network pool.
 - the Mobile Node will be able to connect with the Home Agent for registering its new CoA and the Corresponding Node will be able to communicate with the Mobile Node without interruption during its roaming between the two WLLs.

- **Dynamic multicast validation over IPv6 network**
 - the multimedia content will be played at the client site;
 - starting and stopping actions from the clients (joining and leaving the Multicast Group) will transfer or stop the traffic over satellite



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SCENARIO 3. Corporate Applications on regenerative access platform

- VPN connectivity
- Internet and Intranet access (HTTP. FTP)
- Videoconference

ULE encapsulator protocol
ULE/IPv6 integration



first step to GSE integration



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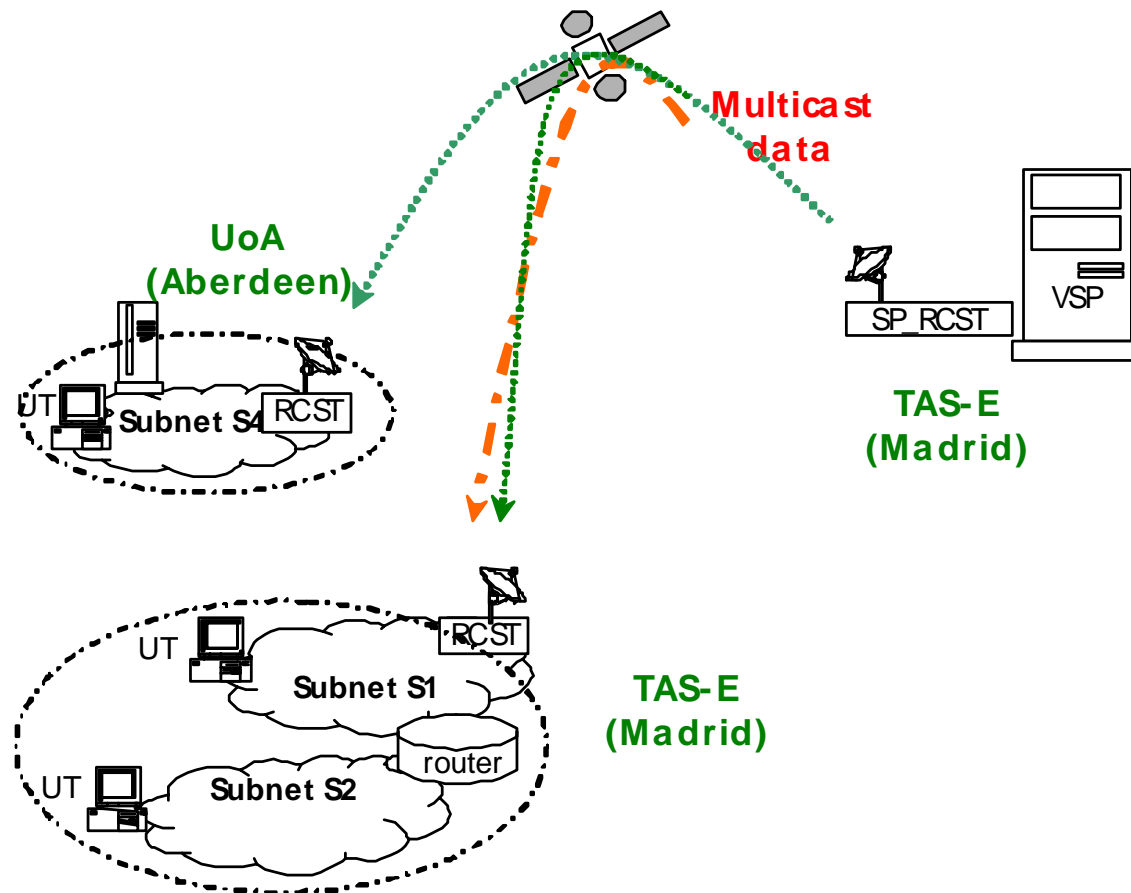
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SCENARIO 3. Platform



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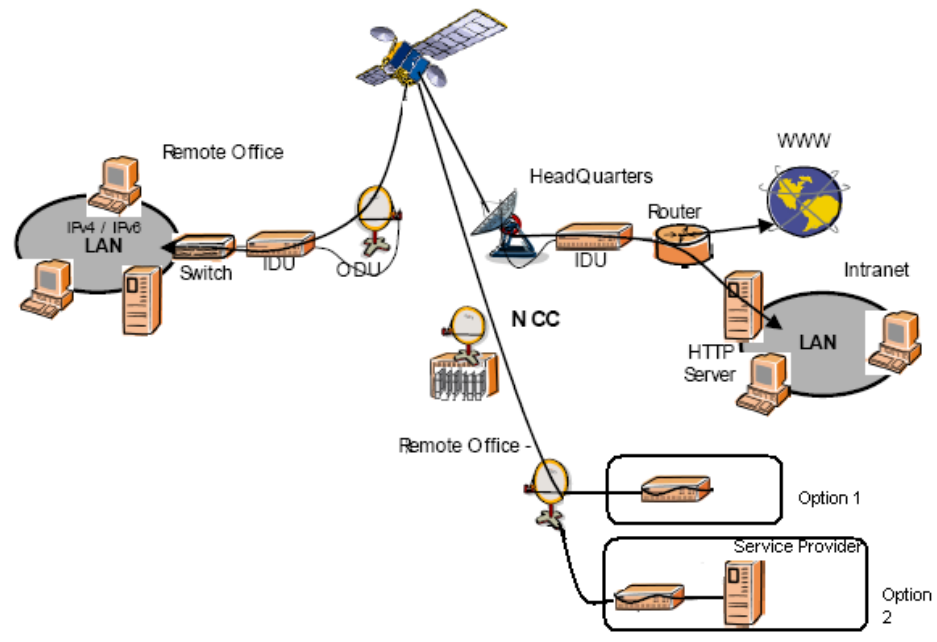


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SCENARIO 3. Validation

The reception is the critical part of the demonstration and an ULE de-Encapsulator is required in the project.



The Video Service Provider injects the IPv6/ULE data into the terminal using the appropriate interface.



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SCENARIO 4. Residential Applications on transparent access platform

- Principal residential application of satellite networks
 - triple-play services



Audio, video and data broadcasting to final users by satellite in one-way communication:

HDTV,

DTV

Video IP services



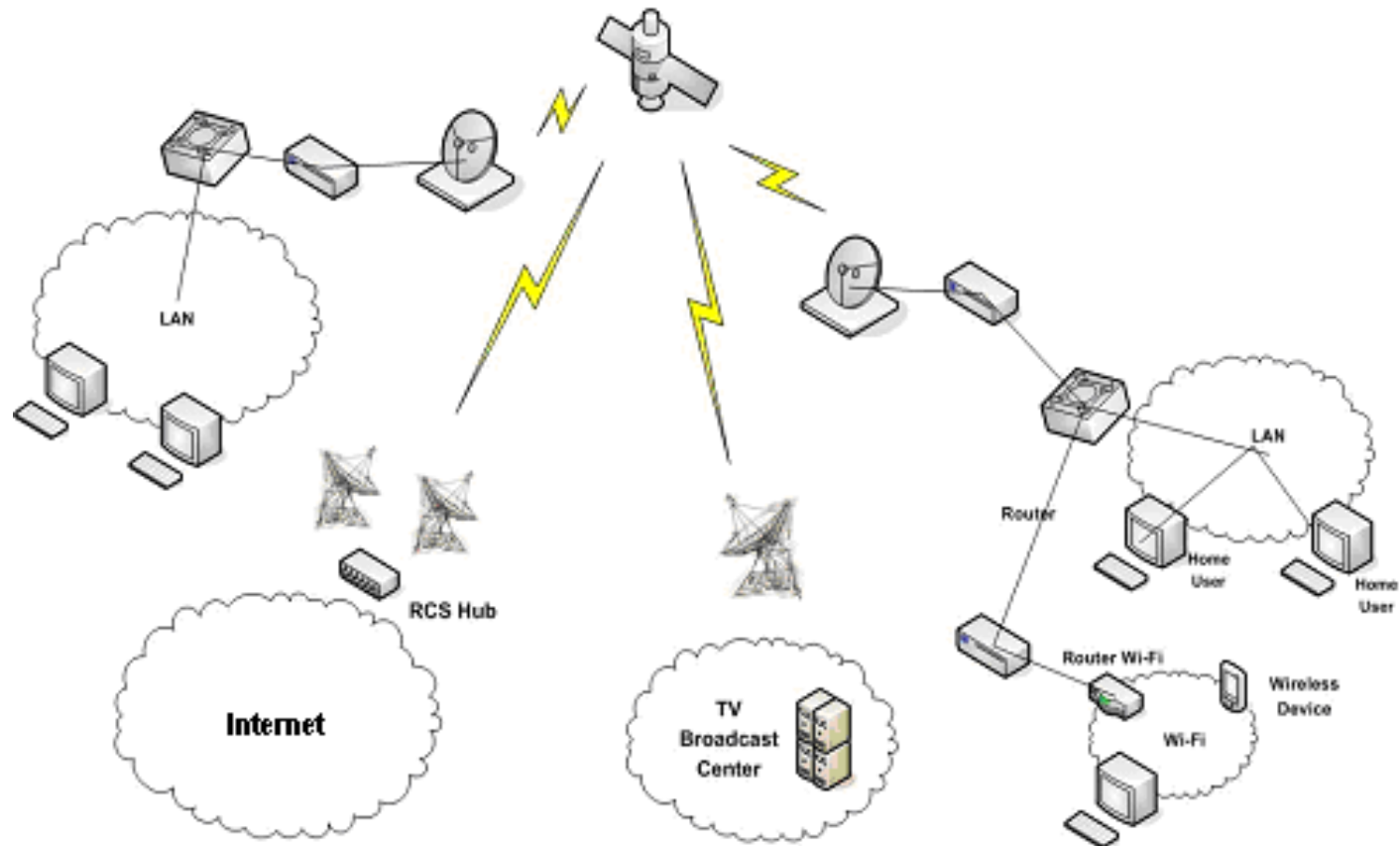
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SCENARIO 4. Platform

RESIDENTIAL SCENARIO



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SCENARIO 4. Validation (I)

- **Verification in-orbit of all the service capabilities defined for the Digital TV service over DVB-S2**
- **QoS tests to measure quality of video and audio:**
 - Subjective measures: MOS, VQM
 - Objective measures: delay, jitter and packet loss under some limits.



- **DTV vs HDTV**



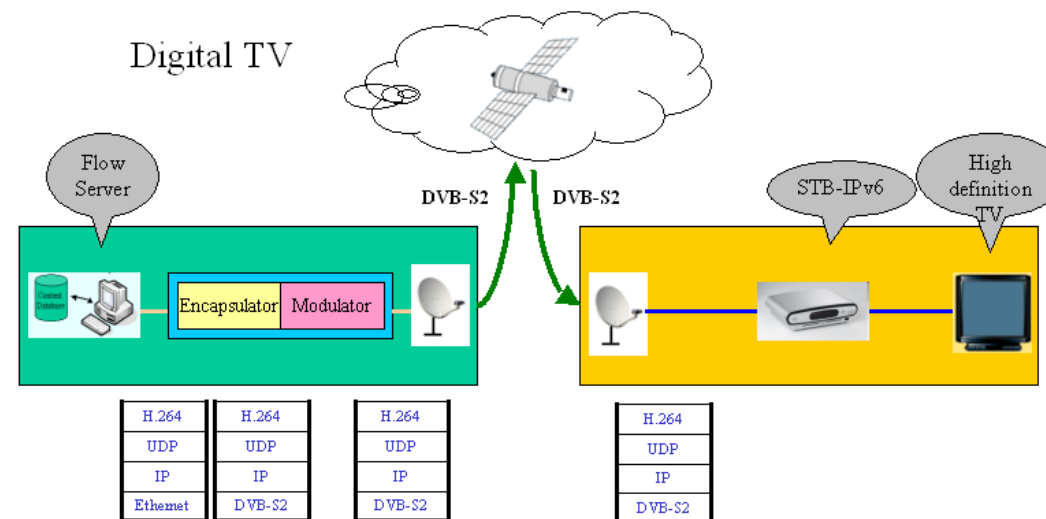
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SCENARIO 4. Validation (II)

- **Description**
 - Broadcast Digital TV
 - Broadcast High Definition Digital TV



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CONCLUSIONS



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- **Innovative IPv6 features:**
 - Dynamic QoS
 - PEP/RRM interaction
 - WLL inter-working
 - Dynamic multicast
 - Application/Network security
 - Mobility

- **Access network:**
 - WLL security
 - C2P
 - ULE
 - DVB-S2 scheduling

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Thank you!

Scenario 1: Corporate applications on DVB-RCS transparent access platform (TASF)

Scenario 2: Collective Access Terminal on DVB-RCS transparent access platform (HDT)

Scenario 3: Corporate applications on DVB-RCS regenerative access platform (HSA +TASE)

Scenario 4: Residential applications on DVB-RCS transparent access platform (HSA + TID)

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