**Technical Note
n.6501
January 2008**

Technical description
B2C video on demand distribution on an IP network by downloading media content onto PC using an http server and streaming video content to end user PC from a streaming server for viewing video on AXMEDIS PC Player

Description of Content
Trial video clips of VRS authored funny home videos with embedded video ads, formatted as AXMEDIS objects with MPEG 4 PC resolution video content with accompanying information.

Business Model
Revenue from content distribution to consumers could be earned based on two basic models:

• Consumer pays to the distributor for paid content;

• Free of charge content.

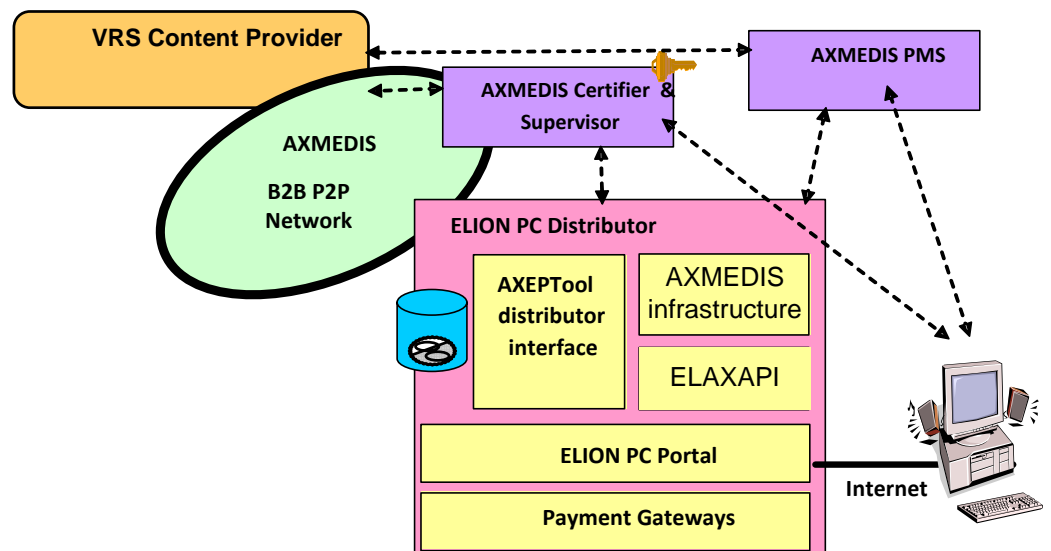# ELION content on demand distribution for PC

As part of AXMEDIS, a group of partners from Baltic States has undertaken to deploy a video-on-demand distribution for Internet and PC by exploiting the AXMEDIS Framework and solutions. The real life trial involves a video content producer from Lithuania (VRS Grupe), and two broadband operators – ELION (Estonia), operating an internet-based media distribution portal, and TEO (Lithuania) – IPTV service provider. Although the purpose of the trial is to show how AXMEDIS solution and tools can be used as an integrated automatic content production and distribution value chain. This technical note describes the technical aspects of the ELION platform, integrating AXMEDIS solution and tools into video on demand (VOD) distribution for PC service.

The purpose of the ELION trial is to showcase AXMEDIS technology adopted for streaming/downloading protected AXMEDIS content to PC over Internet. It shows to broadband operator's distribution of value added video on demand (VOD) content to ELION trial internet service subscribers using the media rental. Internet service subscribers can view digital video material on their PC through an AXMEDIS PC Player. The ELION trail for the exploitation of AXMEDIS solution intends to show business to consumer (B2C) digital content distribution on IP network by downloading content into PC using http server. The content can consist of AXMEDIS objects with any kind of content with integrative capabilities: video, images, document, audio, animations, games, SMIL, HTML, MPEG-4, etc. The content is protected by the content producer by using AXMEDIS production tools and DRM technology. End User licenses for the content usage are produced on the fly, on demand, when an AXMEDIS object (the license) is bought by the consumer.

Elion AXMEDIS system architecture

High level description
The scheme below depicts the general components of the ELION trial. Components depicted in yellow are software components developed by partners specifically for this solution.
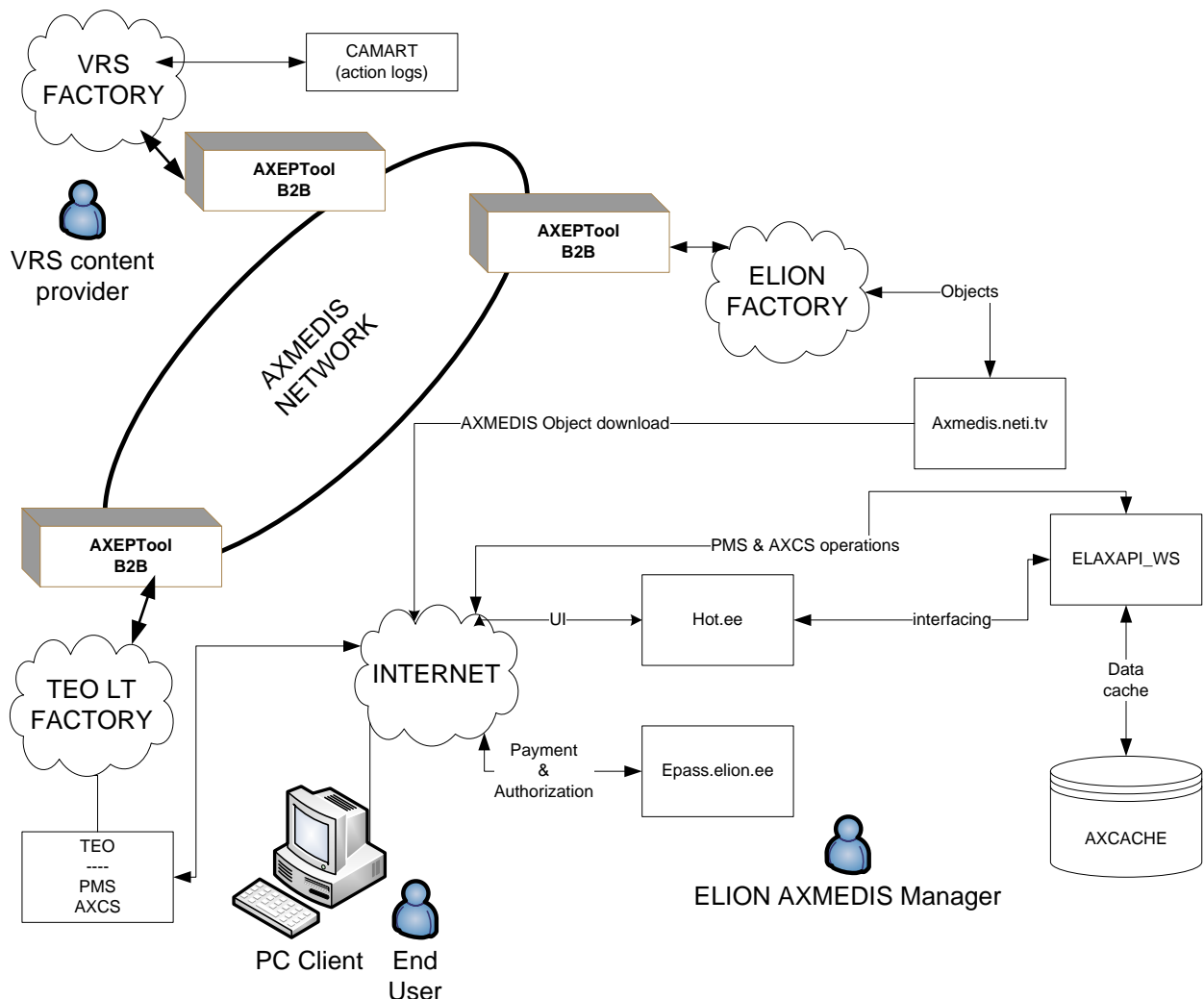
In this solution, the content is produced at B2B level automatically and delivered to ELION via P2P. Content producer is VRS, which produces and makes available some trial video content for ELION internet service, other cross media AXMEDIS content can be taken from the AXMEDIS P2P network as well. The videos are formatted as AXMEDIS Objects, with a pre-set usage rights and conditions and defined metadata. VRS places these AXMEDIS objects into P2P network (AXEPTOOL). http://www.axmedis.org/documenti/view_documenti.php?doc_id=3612 The content producers, VRS, use the content production automation provided by AXCP tools: VRS uses AXCP http://www.axmedis.org/documenti/view_documenti.php?doc_id=3624

In ELION distribution system, the AXMEDIS content ready for distribution is stored in delivery server. The content is downloaded from AXMEDIS P2P network by using content downloader P2P client. Then the content is prepared, if needed, with the AXMEDIS Editor for distribution. After content is prepared it will be made available for download over web server using public networks

Detailed system description

ELION AXMEDIS Video on demand distributor for PC is based on existing ELION's Hot.ee (http://live.hot.ee/axmedis) community portal to enable content listing and usage. It uses existing broadband network architecture components in addition with some newly developed components for AXMEDIS integration.
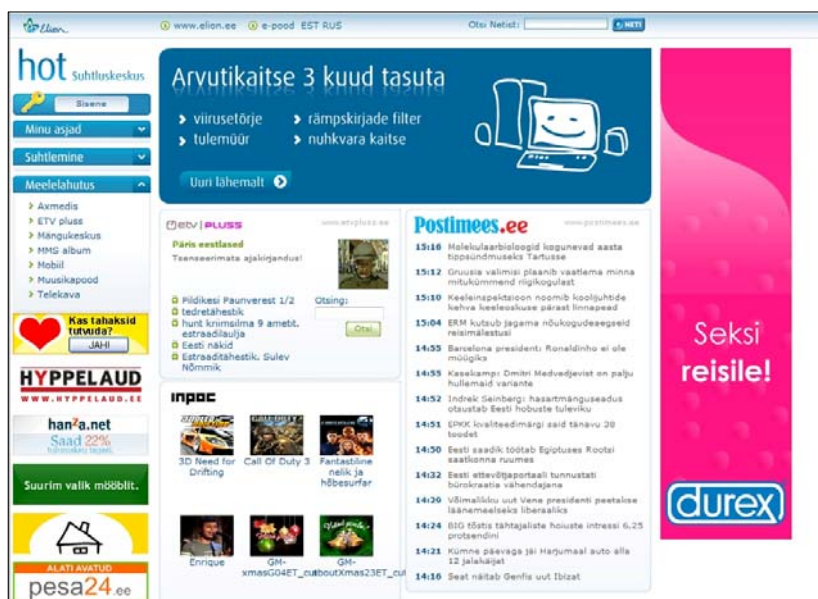
ELION solution based on AXMEDIS is comprised of:
- **Axmedis.neti.tv virtual sever** node including:
  - AXEPTool B2B node for content download and sharing on AXMEDIS B2B Network: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3624
  - ELAXAPI_WS interfacing web service for end user UI representation on hot.ee
  - IIS web folder share for AXMEDIS object downloads to end user
  - IIS web folder share to distribute AXMEDIS PC Player: http://www.axmedis.org/documenti/view_documenti.php?doc_id=3634
  - AXCACHE database for ELAXAPI_WS web service data store
  - SQL Server manager express for AXCACHE.

- **www.hot.ee portal** – hot.ee portal is Elion's existing proprietary community & communication portal that will be featuring additional menu option to enable AXMEDIS object distribution and marketing http://live.hot.ee/axmedis .
- **Epass.elion.ee** – it is ELION's proprietary account services and billing system serving as single shared resource between several solutions.

ELION shared with TEO AXMEDIS DRM facilities and servers (http://www.axmedis.org/documenti/view_documenti.php?doc_id=3616). ELION Manager uses axmedis.neti.tv node to manage AXMEDIS objects distribution and to gather statistics data about rights exploitation and content consumption.
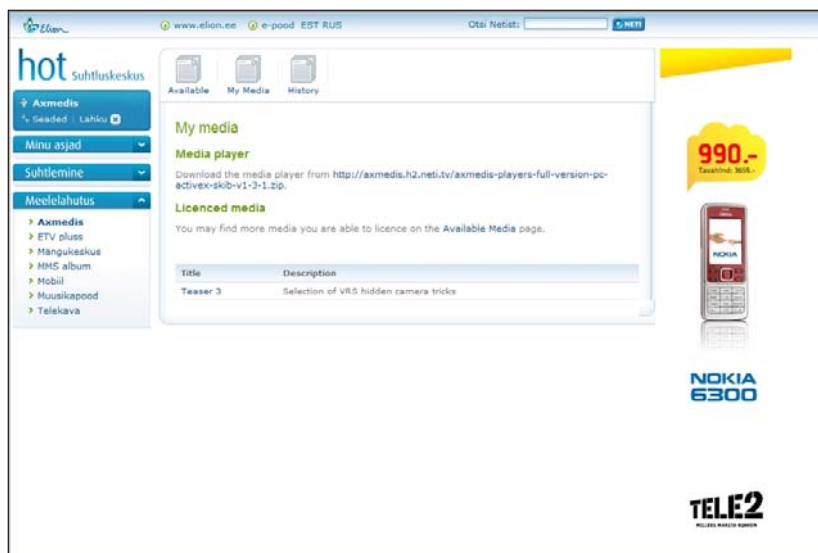
How does the ELION trial work?

The videos content (or eventual any kind of cross media content provided), in AXMEDIS format, have been manually or automatically downloaded from AXEPTool, AXMEDIS P2P file sharing system based on BitTorrent, to be put on the video/content on demand server of ELION by the ELION AXMEDIS manager.

ELION's internet service subscriber knows about AXMEDIS content service and decides to view a video from this service. When the user wants to view AXMEDIS digital objects, he/she may connect to www.hot.ee via internet, register as a hot.ee user and goes to the AXMEDIS area by choosing "AXMEDIS" button.

For the first time, the user has to download the AXMEDIS player from a link provided. The user can browse the content available and select desirable content for viewing. If prompted for licence user acquires the licence by secure on-line credit card or bank transfer payment, by SMS, or using provider's pre-pay service E-Pass.

Only if the user has acquired the licence the AXMEDIS Player permits to play the selected media content on PC.

All user actions with regards to this content are registered in AXMEDIS AXCS / PMS. The user can "Play", „Stop", "Pause", "Skip Forward" and exploit the content unlimited counts within the licensed 24 hour period.

After viewing the video clip, the viewer can go back to AXMEDIS browser or can go to hot.ee portal home page to get another one, etc.

To test the Content on Demand of ELION you can go on the WEB page and follow the instructions:

http://www.axmedis.org/com/index.php?option=com_content&task=view&id=75&Itemid=46

To obtain the AXMEDIS ELION PC player you can download from:

http://www.axmedis.org/documenti/view_documenti.php?doc_id=3731

or simply go on the AXMEDIS main web page:

http://www.axmedis.org/com/index.php?option=com_frontpage&Itemid=1

Description of use cases and scenarios
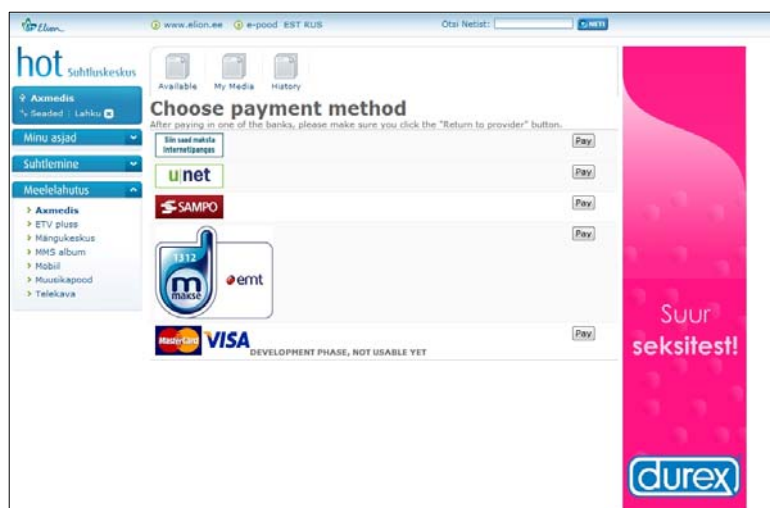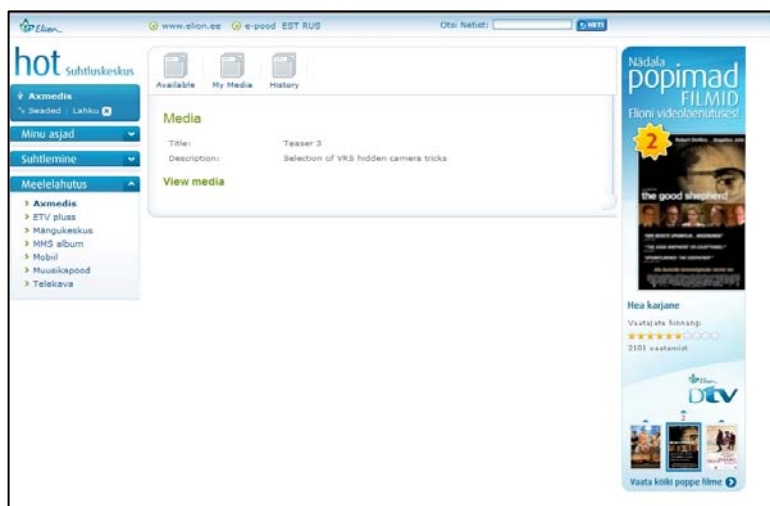
There are two actors in ELION AXMEDIS system:

- End User
- Manager

On the content producer's (VRS) side, there is one actor – VRS Content Editor.

End User has internet connection, windows-based operating system, supported browser, downloaded AXMEDIS player and is authenticated by the E-Pass account and signed up on AXMEDIS. In addition, user must own an internet bank account with supported banks or own a mobile phone subscription with supported local mobile service providers.

End User enters the community and communication portal www.hot.ee, logins (using e-pass), becomes AXMEDIS user by clicking AXMEDIS menu and downloads AXMEDIS Player. End user is presented with available content listing to choose from. When user has chosen an interesting object for purchasing he/she is directed to payment gateway and is presented with payment options. End User performs payment according to selected option and downloads the selected media object on PC. Having downloaded the object the end user uses AXMEDIS player to exploit the object according to license limitations.
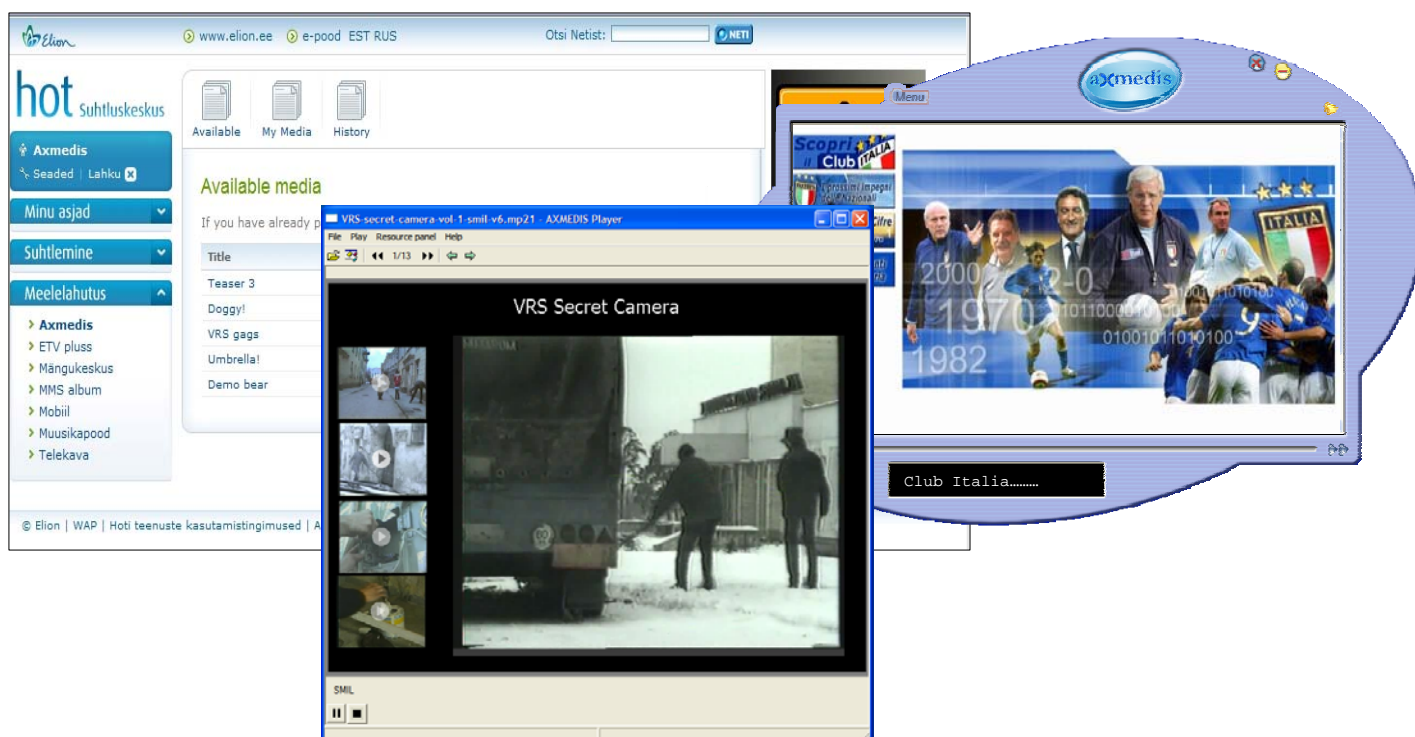
ELION Manager performs actions to manage content on distribution point. All operations are being done over terminal services session by connecting to axmedis.neti.tv node responsible for handling all AXMEDIS operations in ELION distributor.

End user actions

The End User can:
- Enter to www.hot.ee portal;
- Login using e-pass;
- Becomes AXMEDIS Users;
- Browse content;
- Purchase content;
- Downloads content on PC from one or more AXMEDIS compliant channels;
- Consumes AXMEDIS objects via one of the several AXMEDIS free players
  o http://www.axmedis.org/documenti/view_documenti.php?doc_id=3634

Main Manager Actions

The ELION Manager can:
- downloads new AXMEDIS objects for distribution from the P2P or other means;
- removes objects for the distribution;
- publishes objects for the distribution;
- reviews licensing logs;
- manages user database;
- accessing to AXMEDIS DRM server to download reporting and statistics data. See the following link for other details
  o http://www.axmedis.org/com/index.php?option=com_content&task=view&id=75&Itemid=46

Key features of the ELION AXMEDIS Solution for content on demand

The key features of ELION AXMEDIS solution are:
o B2C video (and potentially any kind of content) on demand distribution on an IP network by downloading media content onto PC using an http server and streaming video content to end user PC from a streaming server for viewing video on AXMEDIS PC Player;
o Obtaining content for the distribution directly from the producers and/or from the AXMEDIS P2P B2B network via AXEPTool http://www.axmedis.org/documenti/view_documenti.php?doc_id=3612
o Usage of AXMEDIS objects with
  o Any kind of content, all types: Video, images, document, audio, animation, etc.

- o http://www.axmedis.org/documenti/view_documenti.php?doc_id=3634
- o Protection information not in the object
  - o Produced with the AXCP with an automatic massive processing of objects
  - o With the protection tool, automatically posted in the AXCP by the Protection Tool
  - o http://www.axmedis.org/documenti/view_documenti.php?doc_id=3624
- o License for the end users:
  - o Produced on the fly, on demand, when an AXMEDIS object is bought by
    - Using internet bank transfer payment
    - Calling the mobile phone number provided for toll payment
- o License allows
  - o Free of charge view of trailers and pay per view for AXMEDIS objects;
  - o Play, stop, pause and skim video stream from VOD server (ads inserted into clips cannot be skipped using seek operation: end user can skip forward only)
  - o Other rights according to content type and business model
- o The AXMEDIS Objects may be
  - o Displayed/played on AXMEDIS PC player, free downloaded from:
  - o http://www.axmedis.org/documenti/view_documenti.php?doc_id=3731
- o The users operate a PC. The user has to perform the registration of
  - o Themselves as users (on an AXMEDIS portal)
    - Any AXMEDIS player tool they would use.

Unique AXMEDIS benefits to internet service providers

By integrating AXMEDIS standards into service environments ELION is ensuring its market readiness for new pan-European standards and enabling content producers to exploit a fully transparent delivery & marketing system thus freeing content owners of having expensive solutions for private distribution and need to have dedicated infrastructure.

AXMEDIS enables ELION to address several interoperable channels as well as multitude of possible content formats thus enriching the service capability and in turn unlocking content creator creativity. With rich AXMEDIS objects the final package delivered to end user can include a revolutionary experience due to ability to host any kind of digital elements including interactivity: audio, video, digital imaging, animation, games, text/documents, programs, SMIL, HTML, MPEG-4 with interactive parts, etc. http://www.axmedis.org/documenti/view_documenti.php?doc_id=3634

Other benefits are:

- The automatic or semi-automatic nature of workflow at production and distribution levels, thanks to AXMEDIS AXCP tools http://www.axmedis.org/documenti/view_documenti.php?doc_id=3624
- Transparent accounting and reporting of digital content consumed by value chain actors, thanks to AXMEDIS DRM tools http://www.axmedis.org/documenti/view_documenti.php?doc_id=3616 ; and the usage of a standard interoperable DRM with many other distribution channels and players see other technical notes and show cases, AXMEDIS is an extension of MPEG-21 standard DRM and format;
- The simple integration of distribution and production tools with the efficient P2P content distribution of AXMEDIS for B2B and B2C (in this case only the B2B part has been used) http://www.axmedis.org/documenti/view_documenti.php?doc_id=3612
- The cross media content, when this type of content can be played according to the player capabilities. http://www.axmedis.org/documenti/view_documenti.php?doc_id=3634
- The connection with the AXMEDIS P2P network for accessing to the content to be distributed towards several distribution channels;

Contact: Andrius Lokotas
  Elion Ettevõtted Aktsiaselts;
  AXMEDIS ELTEO
  Endla 16,
  15033 Tallinn,
  Estonia
axmedisinfo@axmedis.org
Andrius.Lokotas@Elion.ee