

**Technical Note**  
**n.6901**  
**May 2008**

**Technical description**  
 B2C and B2B Video-on-Demand solution based on internet and P2P distribution

**Content Description**  
 Mainly consumer video.

**Business Models**

Pay per play: an AXMEDIS license is released to the end users for them to play/watch the content up to a maximum number of times: 1, 5, or 10.

Pay per view: an AXMEDIS license is released to the end users for them to watch/access the object for a certain period of time (i.e., 48 hour).

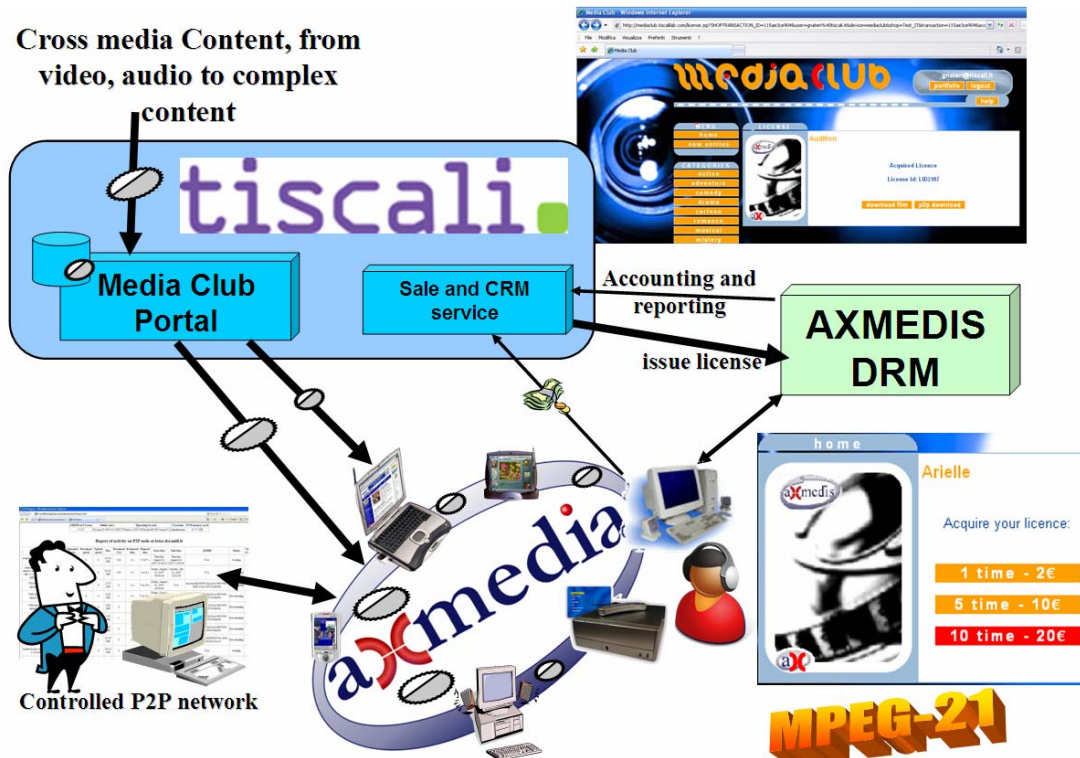
**AXMEDIS content distribution to PC**

Among the available distribution channels, this technical report focuses on the content on demand and P2P distribution of multimedia (mainly video) content to PC. The target audience of this distribution channel is mainly represented by young people consuming video content on the Web (video clips, movies, etc.).

In this context, AXMEDIS supports several possible business models, with the following two being the most relevant:

- Pay per play: an AXMEDIS license is released to the end users for them to play the (video) content up to a maximum defined number of times;
- Pay per view: an AXMEDIS license is released to the end users authorizing them to watch/access the object for a certain period of time (for instance 48 hour);

The solution provides a complete and easy to use environment for the publication and up-selling of content over the Internet. Access to the multimedia content available on the AXMEDIS P2P network is offered by interfacing the system with the AXEPTool P2P tools of AXMEDIS. The current implementation of the TISCALI Media Club and Center has been integrated with the AXMEDIS framework to obtain an end-to-end solution for acquiring, importing, publishing, up selling and delivering the broadband content that is available on the AXMEDIS network. The system is designed to support all main business models for content delivery, as free-to-air, subscription, Pay-per-View, etc.



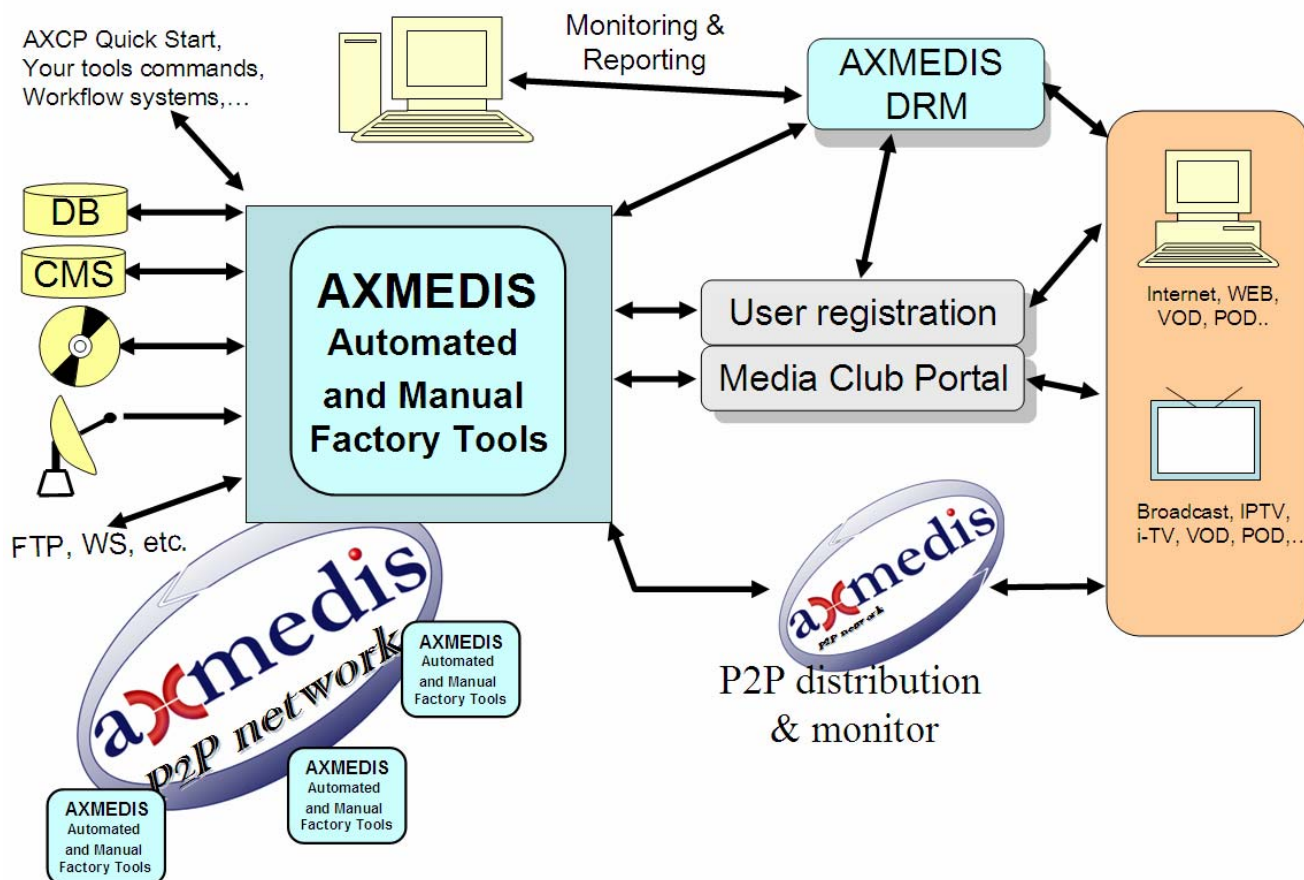
The solution also includes, in addition to the B2C, some services for B2B. The scenarios mainly focus on the opportunity offered to Content distributors to explore media catalogues published directly by content producers on the AXMEDIS B2B P2P Network and the possibility of exploiting the AXMEDIS CAMART (Accounting Manager and Reporting Tool) for identifying the market trends.

## Content on Demand Distribution via Web and P2P

The system functionalities for content distribution on Internet are:

- The back office functionalities:
  - Content acquisition within the AXMEDIS P2P, in automated manner
    - searching for new content by making queries on the potentially available rights (see the PAR of the AXMEDIS model) in the AXMEDIS Database and AXMEDIS P2P;
    - acquiring a distribution license for the selected content;
    - adding the content acquired to the MediaClub catalogue;
  - Content offered in TISCALI Media Club Portal for the final users:
    - Proposing the obtained AXMEDIS content to the final users;
    - Defining the licenses for the end users on the basis of the acquired licenses;
  - CRM services: using the AXMEDIS CAMART of DRM for accounting, reporting and customer charging purposes;
- The front-end main functionalities are:
  - catalogue browsing;
  - user registration;
  - content purchase process;
  - content/license acquisition operation (interaction between AXMEDIS Player, PMS and Distributor);

The picture below summarizes the TISCALI MediaClub main components for Internet distribution.



The internet distribution system core is based on the Content Management System (CMS) Xaura2 that allows the “Media Content Manager” to organize content in its own catalogue (media file, description, price, etc) making it available for Internet distribution (Media Portals).

The other components that combine to create the distribution-to-internet system are:

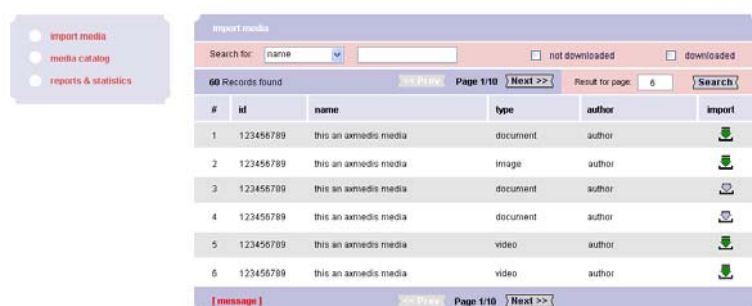
- **MediaClub Portal** – The Web site portal offers and manages media content, handles end user subscription and profile, user portfolio, etc. This Web portal includes the following components:
  - a. **Xaura Media Repository** – The media content repository enhanced to support AXMEDIS content;
  - b. **Media Club AX Plugin** – A Xaura2 Component which interfaces the AXMEDIS platform, enabling and encapsulating AXMEDIS operations (catalogue retrieving, content searching, media downloading, permissions, etc);
  - c. **MediaClub E-Commerce** – Payment gateway system, integrated with the MediaClub Portal to allow content payment to the end user; The same service also manages the registration of the TISCALI users on the AXMEDIS DRM and the production of licenses;
  - d. **MediaClub Downloads** – Allows the end user to access the media content offered in the MediaClub Portal;
- **AXMEDIS P2P Controlled Network** uses BitTorrent technology with query support and cataloguing servers for distribution of protected and unprotected content via P2P. It has capabilities of automating content publication, controlling P2P network and extracting statistical data and reports. The AXMEDIS P2P solution allows to control the network by means of control nodes that can be geographically distributed. The **AXEPTool** is the B2B tool for the AXMEDIS P2P: it is required for database search and for storage services (see [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3612](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3612)). A light version of the AXMEDIS P2P client is AXMEDIA that is used for offering P2P services to the final users.
- **AXMEDIS DRM** adopts MPEG-21 DRM and includes servers and licensing tools that allow DRM, detection of attacks, black list management, collection of actions logs containing traces about the rights exploitation, tools for administrative management, etc. The AXMEDIS DRM includes services for registering new users, storing new licenses, controlling actions of the final users, providing grants to the players, collecting events and reporting to the distributor the accounting via the AXMEDIS CAMART, etc. (see [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3616](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3616) ).
- **AXMEDIS AXCP** to automate your content production, protection and distribution as stated above and in more details into the technical note: [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3624](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3624)

## Internet Distribution via Web – back office – Scenario

The Internet Distribution channel prototype performs the following actions:

- search and acquire content from the AXMEDIS B2B Network via AXEPTool;
- content publication on the Web site and distribution to the final user;
- view reports information coming from CAMART

mediacubmanager



The screenshot shows the 'mediacubmanager' interface. On the left, there are navigation links: 'import media', 'media catalog', and 'reports & statistics'. The main area displays a search results table with the following data:

#	id	name	type	author	import
1	123456789	this an axmedis media	document	author	
2	123456789	this an axmedis media	image	author	
3	123456789	this an axmedis media	document	author	
4	123456789	this an axmedis media	document	author	
5	123456789	this an axmedis media	video	author	
6	123456789	this an axmedis media	video	author	

At the top of the table, there are search filters: 'Search for: name', 'not downloaded', and 'downloaded'. Below the table, there are pagination controls: '60 Records found', 'Page 1/10', 'Next >>', and 'Result for page: 6'. A 'Search' button is also present.

### Scenario 1: Content acquisition from AXMEDIS Network

1. The Distribution Manager (DM) submits a query search (via AXEPTool) to find content that should be proposed to the Web site users, select content and import data in the distributor CMS.
2. DM analyzes the query result and select content to import in the distribution CMS.



**Import media:** the interface for querying content in the AXMEDIS B2B Network. A query result example is shown in the picture below. By selecting one of the content listed in the page, a new page is loaded containing all the relevant metadata of the AXMEDIS object selected.

## Scenario 2: Editing and publishing content on the Web site

1. The content is integrated with additional information and published on the Web site
2. The user, browsing the site, selects, pays and downloads one of the proposed content.

### mediacubmanager

**Media Catalogue:** From the content details page, the content can be imported in the distribution CMS system (Xaura2). At the end of the import process the media catalogue list page will be loaded as shown in the figure.

At this stage the content is fully imported in the Distribution CMS and is ready to be managed by the editor for publishing the content on the Web site.

### mediacubmanager

#	id	name	type	author	imported
1	123456789	this an axmedis media	document	author	2005-08-01 09:00
2	123456789	this an axmedis media	image	author	2005-08-01 09:00
3	123456789	this an axmedis media	document	author	2005-08-01 09:00
4	123456789	this an axmedis media	document	author	2005-08-01 09:00
5	123456789	this an axmedis media	video	author	2005-08-01 09:00
6	123456789	this an axmedis media	video	author	2005-08-01 09:00

**Content Editing:** Once the Editor has logged in, (s)he browses the administration interface using the left column links in the page and access content by clicking in the Content Library folder.

At this stage the Editor can search the catalogue for the content that needs to be edited and published by using the search box or simply browsing the content listed in the page.

The Editor can modify the content adding information on the price and assigning it to the category where it should be published.

When the content is finally published, it becomes available and accessible on the Web site for all the users.

### xaura2admin

name	type	date
this is an article	Article	2005-08-01 09:00
this is an article	Article	2005-08-01 09:00
this is an article	Article	2005-08-01 09:00
this is an article	Article	2005-08-01 09:00
this is an article	Article	2005-08-01 09:00

## xaura<sub>2</sub>admin



**Axmedis Media Club**

- Resources
  - css
  - feed
  - img
  - layout
  - schema
  - ss
- Web Site
  - EU
  - Europa
  - inc
  - Polis
  - Übersicht
- Content Library
  - EU
    - Europa
    - Polis
    - Pressestimmen
    - Übersicht
  - Media Library
    - articles
    - fotos
    - New Category
    - quiz

content library > EU > this is an article

content details

content name:

type: article

date: 2005-08-01 08:00

[ message ] [ Save ]

publish

name	website	section	publish
EU	web	eu	<input type="checkbox"/> 2004-08-01 09:00
Euro News	web	eu/news	<input type="checkbox"/> 2004-08-01 08:10
Euro Meteo	web	eu/meteo	<input type="checkbox"/>

[ message ] [ Save ]

content editor

[ message ]

Font... Size... [ Bold ] [ Italic ] [ Underline ] [ List ] [ Link ] [ Image ] [ Undo ] [ Redo ] [ Refresh ] [ Print ] [ Help ]

**Title** > Wer wird gewählt?

**Subtitle** > Schluss mit Doppelmandaten

**Abstract Text** > Grundsätzlich gilt: Wählbar ist, wer am Tag der Wahl die deutsche oder die Staatsangehörigkeit eines anderen Mitgliedlands der EU hat. Auch hier gilt die Voraussetzung des vollendeten achtzehnten Lebensjahrs. Die Kandidaten für die Europawahl werden von Parteien oder sonstigen politischen Vereinigungen aufgestellt und auf einer bundesweiten Liste (Bundesliste) bzw. auf den Listen einzelner Länder (Landeslisten) platziert. Die endgültige Entscheidung darüber, welche Listen und somit welche Kandidaten zur Europawahl zugelassen werden, treffen der Bundeswahlausschuss bzw. die Landwahlausschüsse.

Image 50x50

Image 74x60

Image 130x110

Image 150x106

### Scenario 3: reporting through CAMART

1. Reporting information for accounting and billing purposes are retrieved from CAMART;
2. Reported information are integrated in the administration system for business purposes;

**Reports:** is the interface for querying usage content reports on CAMART. Query result example is shown here in the figure.



## mediacubmanager



- Search Axmedis media
- Media catalog
- Statistics

**Statistics**

Search: from: 2006-04-10 media id:  creator:

distributor: Tiscali domain:  work identification:

1 records found [ Search ]

media id	creator	distributor	execution	registration
OBJ_fd7914a4-4476-3764-a70c-5adb0744cf23	BUS_d0719d28-e695-4db7-841c-f078ae7fd66	DIS_d4b8fc58-7d8e-3ae9-90d4-b8468d4d4db0	2006-05-23 19:57:24	2006-05-23 20:02:01



**Axmedis Statistic details**

media id: OBJ_fd7914a4-4476-3764-a70c-5adb0744cf23	location:
creator: BUS_d0719d28-e695-4db7-841c-f078ae7fd66	inter. standard recording code: ISRC unknown
distributor: DIS_d4b8fc58-7d8e-3ae9-90d4-b8468d4d4db0	operation id: 5
execution: 2006-05-23 19:57:24	object code: objectCode unknown
registration: 2006-05-23 20:02:01	log id: CSO_560ead4e-b2d8-339b-af26-940c49e27c3c

[ Close ]

### MediaClub Website

MediaClub Web site manages mainly video content such as movies, video clips, etc. According to the growing diffusion of IPTV and PCTV, is designed to give to the end users "one page experience" like useful EPGs adopted in the market. This is done in order to maintain the same user experience across all the different devices (for example: PC, STB, Windows MCE).

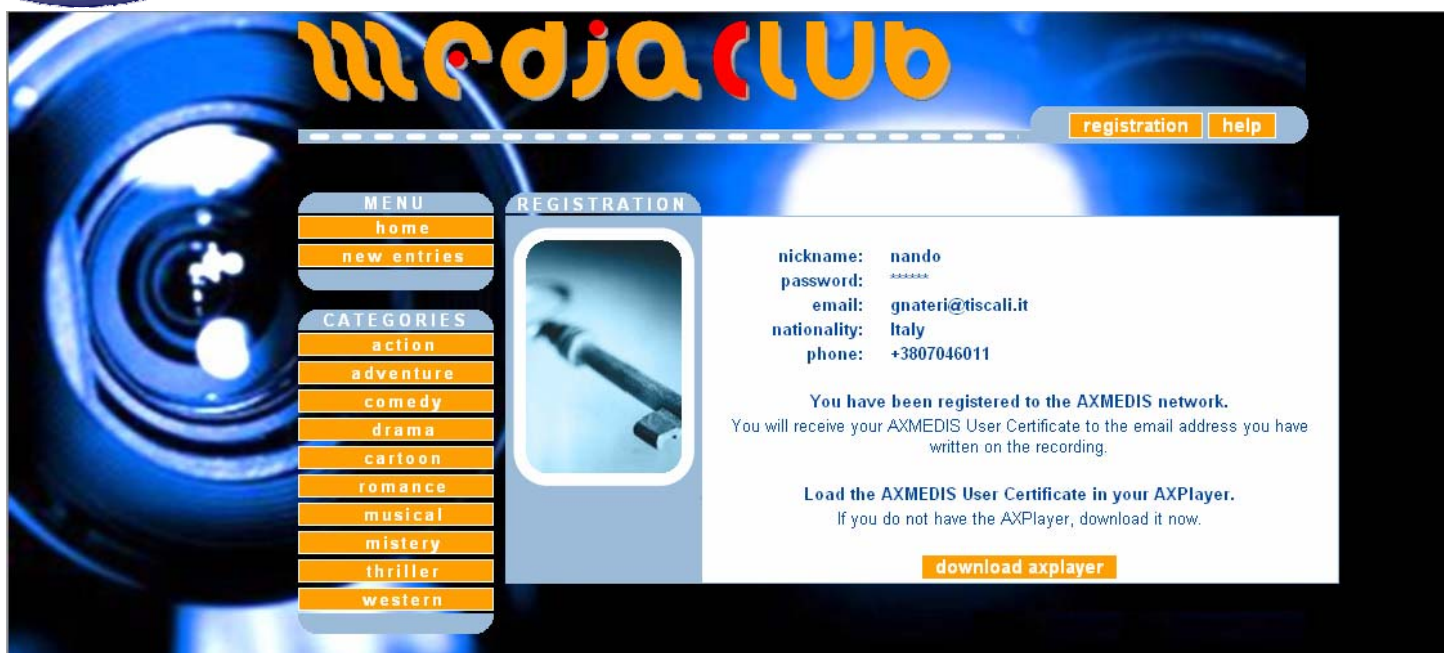


The user can browse the offered contents through categories. For each category the last published objects are displayed in the middle of the page, while others in the same category can be browsed in the bottom slider. AXMEDIS content are automatically identified by the “ax” payload in the bottom left part of the image.

### User subscription



All data requested are the once needed to perform AXMEDIS community subscription too. At the end of the subscription process all the information are displayed to the users.



In the subscription success page user is informed that the AXMEDIS user certificate will be sent to his email account with all the steps he has to follow to activate the certificate in his AXMEDIS player. A link to the last updated AXMEDIS player installer is also available in this page.

### User Portfolio

After login, the user accesses his portfolio page, where all information related to the usage on purchased content is available. (i.e. licenses acquired, numbers of plays still available, number of plays already done, etc). Statistics on content usage are directly extracted from AXMEDIS CAMART.

### Buy a content

Web portal payment system actually fully support pre-pay business model, so user is authorized to play the content only after payment has been made. Internet distributor prototype is integrated with the TISCALI payment gateway (TPG) for accepting credit card payments. Users have two possibilities for buying content: the first one is the "pay per play" where users purchase a license when they access the content they want to watch; the second method is by using the Web site electronic wallet that allows users to pre-charge money in their wallet and than use this wallet for purchasing content on the Web site.

Post paid business model is supported. In that case, thanks to AXMEDIS CAMART tools, a detailed consumption report is produced and used by the company billing system.

## Technical Information on MediaClub Architecture

The MediaClub back end resides into a load-balanced system running a Java Web Application, developed inside a Tomcat Server, connected through a MOD-JK module with an Apache Web Server. The BackEnd is available over HTTP to MediaClub Manager Browser. The persistence of the data is granted from a clustered DataBase and NetUp fileserver. The MediaClub Manager authentication on system happens via MediaClub Authenticator (which uses different modes: Administrator Profiler, POP authenticator, RIPE authenticator). The communication with AXMEDIS AXEPTool is provided via WebServices in HTTP connection.

## AXMEDIS Tools

In the following, the links to download the most important AXMEDIS player are reported. It is also possible from the AXMEDIS portal to download additional AXMEDIS tools and content:

- o Available PC players are:
  - o AXMEDIS stand alone PC player;  
[http://www.axmedis.org/documenti/view\\_documento.php?doc\\_id=3767](http://www.axmedis.org/documenti/view_documento.php?doc_id=3767)
  - o AXMEDIS Skin based PC player;  
[http://www.axmedis.org/documenti/view\\_documento.php?doc\\_id=3716](http://www.axmedis.org/documenti/view_documento.php?doc_id=3716)



- o AXMEDIS Active X, for usage into HTML pages and simple VB and/or .NET applications and PC players. .NET Player; [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3717](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3717)

## AXMEDIS Adoption and Affiliation Programs

AXMEDIS has been adopted and currently trialed by several industrial partners, who have expressed their appreciation (see <http://www.axmedis.org/com/>). AXMEDIS is open and allows you to access source code, reports, technical support, training days, tutorial material, technical notes and documentation, by means of the affiliation program. AXMEDIS consists of over 38 partners (such as: TISCALI, EUTELSAT, Telecom Italia, TEO, ELION, HP, BBC, Giunti Labs, ACIT, EXITECH, XIM, SIAE, SDAE, etc.). AXMEDIS allows you to exploit innovative results with new tools and solutions for your needs.

## AXMEDIS Tools for your download

In the following, the links to download the most important AXMEDIS player are reported. It is also possible from the AXMEDIS portal to download additional AXMEDIS tools and content:

- o Available PC players are:
  - o AXMEDIS stand alone PC player; [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3767](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3767)
  - o AXMEDIS Skin based PC player; [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3716](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3716)
  - o AXMEDIS Active X, for usage into HTML pages and simple VB and/or .NET applications and PC players. .NET Player; [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3717](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3717)
- o PDA Windows Mobile 5 and 6 player, supporting: SMIL, HTML, MPEG-4, video, audio, documents, images, etc.; [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3842](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3842)
- o Mobile [http://www.axmedis.org/com/index.php?option=com\\_content&task=view&id=172&Itemid=91](http://www.axmedis.org/com/index.php?option=com_content&task=view&id=172&Itemid=91)
- o Many other tool from: [http://www.axmedis.org/com/index.php?option=com\\_content&task=view&id=83&Itemid=55](http://www.axmedis.org/com/index.php?option=com_content&task=view&id=83&Itemid=55)

## AXMEDIS Technical Notes

On the AXMEDIS portal you can find a set of other technical notes on:

- o How to integrate the AXMEDIS DRM into a e-Commerce portal for digital content [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3736](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3736)
- o The show case of TEO (Telecom Lithuania) in adopting AXMEDIS DRM into their VOD service to STB based on Kreatel/Motorola [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3738](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3738)
- o The show case of ELION (Telecom Estonia) in adopting AXMEDIS DRM for content distribution service towards PC [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3745](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3745)
- o The show case of EUTELSAT in adopting AXMEDIS for satellite data broadcast of AXMEDIS content towards PC and STB [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3820](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3820)
- o The show case of TISCALI in adopting AXMEDIS Model, P2P and DRM for content distribution service towards PC.
- o The show case of ILABS in adopting AXMEDIS solution for the automated production of content and distribution towards PDA [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3991](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3991) and java enabled mobiles [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=3992](http://www.axmedis.org/documenti/view_documenti.php?doc_id=3992)
- o The show case of BBC in adopting the AXMEDIS tools for distributing content that is created on the user side by recoding free on air DVB-T and integrating additional content and information coming from internet and AXMEDIS P2P. [http://www.axmedis.org/documenti/view\\_documenti.php?doc\\_id=4005](http://www.axmedis.org/documenti/view_documenti.php?doc_id=4005)
- o The show case of TI, Telecom Italia, about the usage of AXMEDIS as back office management and interoperable platform among AXMEDIS MPEG-21 DRM and OMA
- o The show case of SIAE for content collection from the users.
- o The show case of VARIAZIONI about the usage of AXMEDIS DRM for content enrichment and distribution, mainly video, images and audio
- o Etc.

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