

1. Publishable Executive Summary



AXMEDIS

Automating Production of Cross Media Content for Multi-channel Distribution

www.AXMEDIS.org

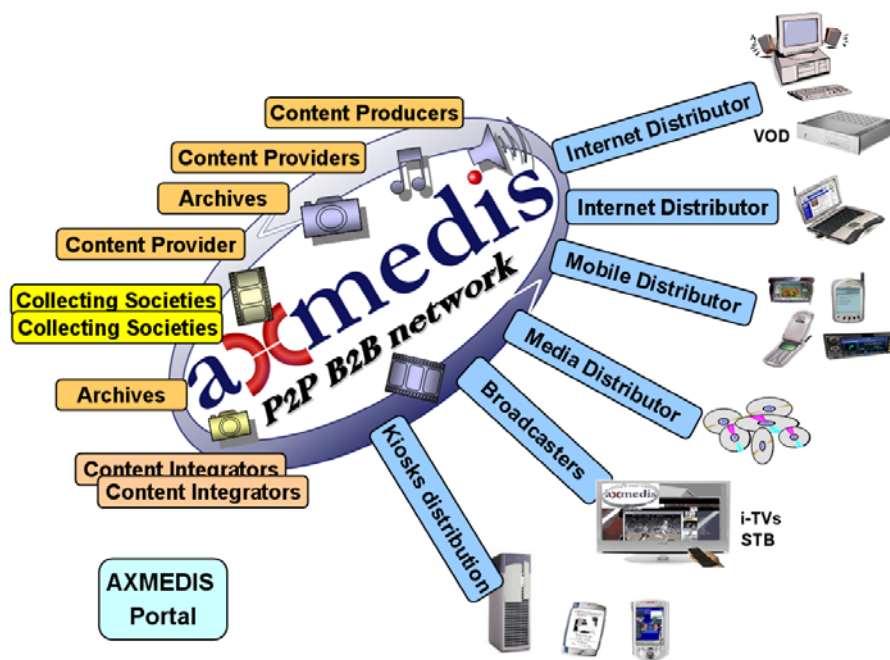
Current market trends and, more specifically, end-users needs demand the content industry to reduce prices without reducing products quality. This is where AXMEDIS project comes in to offer novel solutions and new possibilities to provide viable and sustainable e-content based business activities. Production costs can be substantially reduced while retaining (or even improving) product quality. Content providers, aggregators and distributors need innovative tools to increase efficiency. AXMEDIS automates, accelerates and restructures the production (mainly pre and post production) process making them faster and cheaper. AXMEDIS has obtained those results by: (i) reducing content production costs, accelerating the process with automatic content composition / formatting and workflow support tools and solutions, (ii) reducing distribution and aggregation costs, increasing accessibility, thanks to AXMEDIS production language and solutions, P2P platform at B2B level integrating content management systems and workflow, (iii) providing algorithms and tools for innovative and interoperable Digital Rights Management, exploiting MPEG-21, OMA DRM yet overcoming their limits; supporting several business and transactions models. AXMEDIS consortium has created a framework comprising innovative methods and tools to speed up and optimise content production, protection and distribution, and enabling *production-on-demand*. AXMEDIS has opened the access to the framework by means of an affiliation programme, provoking a relevant interest and collecting a number of new affiliated partners. The AXMEDIS framework has included a set of tools for creating and playing AXMEDIS MPEG-21 objects, cross media content with SMIL and/or HTML as presentation layers and any kind of files as essences or resources. The concept of MPEG-21 has been extended with a lot of features by the AXMEDIS team, among them: the AXMEDIS file format, the intelligence of the AXMEDIS content, the related tools to make them usable for the final users on PC, mobiles, PDA, and STBs. AXMEDIS has produced the only available MPEG-21 authoring tools making the difference and identifying a set of problems of the standard and solving a lot of them.

On the basis of the AXMEDIS Framework, AXMEDIS is distributing demonstrators and tools, validated thanks to initiatives managed by leading distributors (partners) in cooperation with end-users and dealing with: (i) tools for content production, protection and B2B distribution; (ii) content production and distribution for i-TV-PC, PC, kiosks, mobiles, PDAs, STB. The most relevant result has been achieved by transforming demonstrators into effective solutions for content production and distribution. Additional demonstrators have been added later in the project duration: AX4HOME and AXELTEO. The project also performed effective activities of: training, management, assessment and evaluation, dissemination and demonstration at conferences and fairs (please see the established

1.1 Objectives

Given the above overall aim the main AXMEDIS objectives have been:

- Allowing automating cross-media production and distribution, by supporting interoperability on content, protection (DRM, Digital Rights Management), and distribution, etc., making possible the deployment of solutions for content production on demand; This objective has been reached developing suitable models, languages and tools. The tools can be accessed on the AXMEDIS portal.
- Creation of a common model for interchanging: content, cross media content and components among content providers and distributors, supporting copyright law, interoperability for content formats and DRM models. Safeguarding owners' rights during content production process considering the whole value chain; This goal has been largely solved providing interoperability among PC, STB, PDA, and mobiles. In addition, also among OMA and MPEG-21 DRM.
- Establishing modalities and tools for managing, distributing and sharing cross media content and components among producers, publishers, distributors to reach final users via a multi-channel architecture (including but not limited to i-TV, PC, PDA, mobile phones, Kiosk, STB/PVR, etc.); This objective has been largely solved demonstrating that AXMEDIS model and tools can be suitably used to profitably manage: IPTV, PC distribution, PDA distribution, mobile distribution, satellite in push solution, VOD towards STB, IPVOD, Distribution via Kiosks, etc.
- Deployment of a set of demonstrators with and without DRM and the automated tools for content production and distribution:
 - (i) integration of Content Management Systems with AXMEDIS solutions including P2P framework, see AXMEDIS P2P solution.
 - (ii) accelerating content production, composition / formatting, and P2P sharing at B2B level, see AXMEDIS AXCP tools.
 - (iii) content production and distribution on-demand for i-TV-PC,
 - (iv) content production and distribution for PC,
 - (v) content production and distribution on-demand for mobile phones,
 - (vi) content production and distribution to kiosks and local PDAs,
 - (vii) content production and distribution via IP for STB and/or PC, Video on Demand,
 - (viii) automated content management and protection with MPEG-21 and OMA, related distribution toward mobiles and PC,
 - (ix) automated content production on the final user site recording free on air channel and compounding it with additional contributions (extra content, cover, information, etc.) coming from IP (server or from P2P),
 - (x) managing DRM domains for home content distribution and management;
- Research and develop tools and technologies to make large content collections more accessible to
 - (i) the business market of content integration/aggregation and for
 - (ii) the mass market over several distribution channels.
 - Some of these collections are either in the archives of the project partners;



The AXMEDIS consortium (consisting of leading European digital content producers, integrators, aggregators, and distributors; and also information technology companies and research groups) has created the AXMEDIS framework to provide innovative methods and tools to speed up and optimise content production and distribution, up to the *production-on-demand* capability, for leisure, entertainment and digital content valorisation and exploitation in general.

AXMEDIS format may include any other digital formats and it can exploit and expand: SMIL, HTML, PDF, PS, FLASH, DOC, images, video, MPEG-4, MPEG-7, MPEG-21, as well as many *de facto* standards.

AXMEDIS has deployed a set of tools in the AXMEDIS framework and is now using them for a set of demonstrators operating as real components in activities such as production, protection and distribution organised by the leading distributor partners. This is to achieve and realize a real-life distribution chain validated by the activities of end-users. The demonstrators focus on tools for:

- (i) content production, protection and B2B/C2C distribution / sharing;
- (ii) content production and distribution to end-users via different channels including interactive TV (i-TV), personal computer (PC), kiosk, mobile, PDA, STB/PVR, and others,
- (iii) digital rights management (MPEG-21 and OMA) and control of all the activities regarding the production and the accounting for the DRM.

AXMEDIS already started and is offering assistance and technical support to companies interested in using the developed platform and adopting AXMEDIS solutions, accessing to the so-called AXMEDIS Framework. Presently AXMEDIS has in addition to the following partners a set of Affiliated partners (see www.axmedir.org for the list, among them: SIAE (I), FOCUSEEK (I), GESFOR (Spain), PENTEX (I), Albeniz Foundation (Spain), HEXAGLOBE (Fr), RIGEL (I), RAI (I), Telecom Bretagne (Fr), Maat-G (Spain), etc.). To these companies and institutions, AXMEDIS has provided training and demonstration and support maintaining and improving the framework. AXMEDIS has also provided them the opportunity of meet each other at the AXMEDIS conferences and workshops.

1.2 AXMEDIS Consortium, M37-M48

AXMEDIS Partner/Contractor	ACRONYM	COUNTRY
Dipartimento di Sistemi e Informatica, Università degli Studi di Firenze, DISIT Lab.	DSI	Italy
Dipartimento di Italianistica, Università degli Studi di Firenze	DIPITA	Italy
ASSOCIAZIONE DEI FONOGRAFICI ITALIANI	AFI	Italy
FONDAZIONE ACCADEMIA NAZIONALE DI SANTA CECILIA	ANSC	Italy
ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	EPFL	Switzerland
EUTELSAT S.A.	EUTELSAT	France
FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	FHGIGD	Germany
GIUNTI INTERACTIVE LABS S.R.L.	ILABS	Italy
HEWLETT PACKARD ITALIANA S.R.L.	HP	Italy
TISCALI S.P.A.	TISCALI	Italy
XIM LIMITED	XIM	UK
ACit - ADVANCE CONCEPTS FOR INTERACTIVE TECHNOLOGY GMBH	ACIT	Germany
SEJER REPRESENTING BORDAS AND NATHAN	SEJER	France
UNIVERSITY OF LEEDS	UNIVLEEDS	UK
THE UNIVERSITY OF READING	UR/IRC	UK
EXITECH srl	EXITECH	Italy
STRATEGICA srl	STRATEGICA	Italy
TISCALI Services	TISCALI	Italy
Universitat Politècnica de Catalunya	UPC	Spain
MBI Srl.	MBI	Italy
British Broadcasting Corporation	BBC	UK
Electronics and Telecommunications Research Institute (Korea)	ETRI	Korea
Peking University, China	PKU	China
Sociedad Digital de Autores y Editores	SDAE	Spain
Telecom Italia	TI	Italy
TEO LT, AB	TEO	Lithuania
Elion Enterprises Ltd.	ELION	Estonia
Kaunas University of Technology	KTU	Lithuania
VRS Grupe, UAB	VRS	Lithuania

1.3 Work Performed in the period M37-M48

In this last year of activity, the AXMEDIS framework with all its valuable tools have been completed and many demonstrators of AXMEDIS capabilities have been made accessible and functional 24 on 24, 7 days on 7. In fact, from a scientific and technical viewpoint, the consortium has:

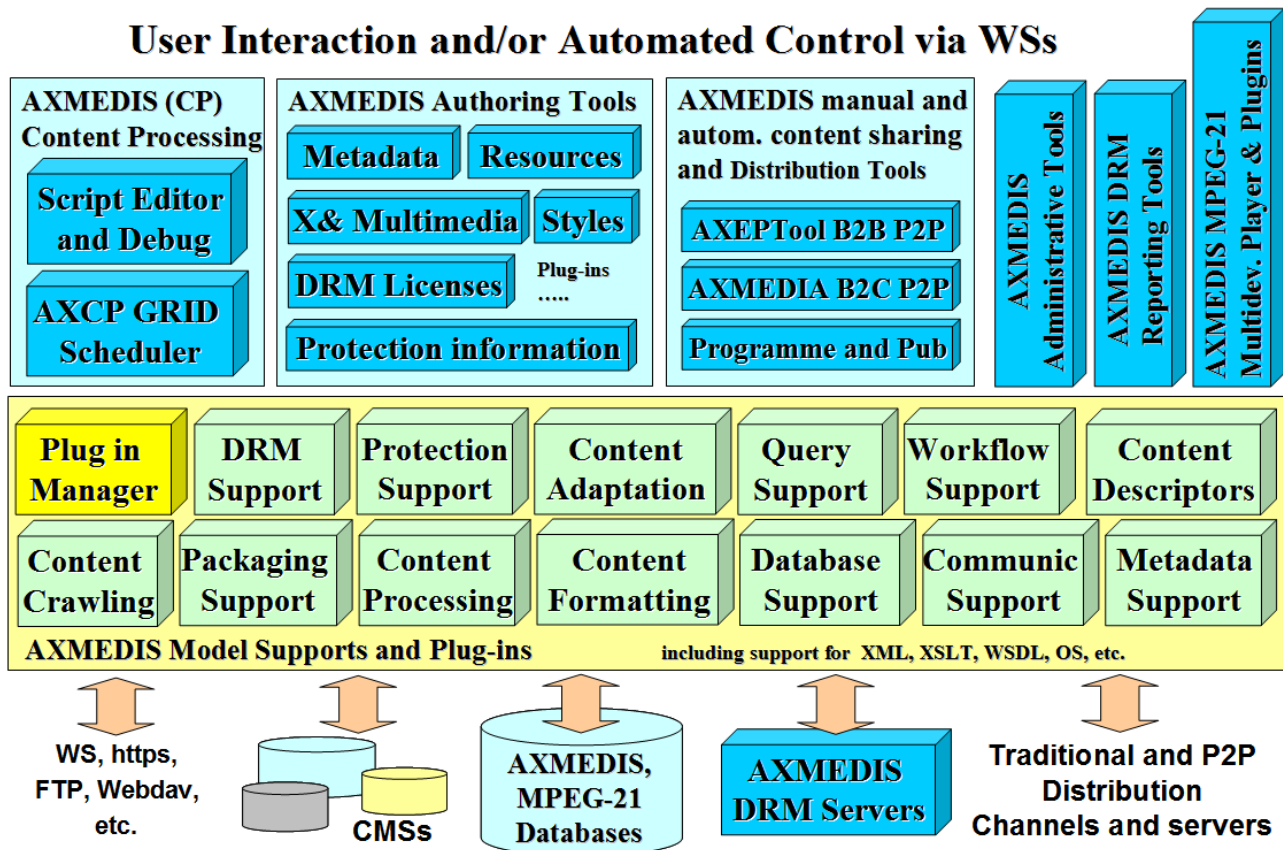
- Completing and validating cross media content model and tools for managing any kind of content model and protecting it with the support of MPEG-21 DRM. The model goes beyond the state of the art of the intelligent content. AXMEDIS Model integrates in a unique model aspects: structure, metadata, classification, semantics, intelligence, content behavior, communication, reactivity, protection, IPR, interoperability, etc.;
- **Development of a set of basic enabling technologies** in WP4 and WP5 as a results of the research activity such as: cross media model, protection models and tools, workflow integration, GRID language for cross media content processing, database modeling for MPEG-21 and AXMEDIS, license formalization and DRM interoperability, formatting algorithms based on SMIL descriptors and genetic algorithms, integrated P2P architecture with fast seeding, adaptation and transcoding algorithms and processing tools (for video, audio, documents, and images), multichannel distribution, architecture and tool for AXMEDIS/MPEG-21 editing, architecture and tools for AXMEDIS/MPEG-21 playing with rights enforcement, algorithms and support for protecting complex cross media content, streaming of MPEG-21/AXMEDIS objects, etc.
- **Publication of the specification of AXMEDIS framework for.**
 - AXMEDIS cross media model
 - AXMEDIS editors and tools, workflow, metadata, etc.

- AXMEDIS content processing area with GRID language for media processing, scheduler, fault tolerant architecture, content processing algorithms, adaptation, fingerprint, communication, access to databases, etc.
- AXMEDIS P2P network (including AXEPTools, AXMEDIA for P2P clients and related servers),
- AXMEDIS database and query support
- AXMEDIS protection models and tools, including the domain management aspects
- AXMEDIS players and tools for PC, PDA, Mobiles, STB,
- Programme and Publication Tools, integration with AXMEDIS content processing, and with Satellite distribution
- Demonstrators of the AXMEDIS framework and platform for distribution and other activities,
- AXMEDIS database and query support, access to AXMEDIS certifier and supervisor, AXCS, for reporting and statistics
- AXMEDIS protection models and tools, PMS client and Server, AXMEDIS Certifier and Supervisor, registration, certification of users, certification authority
- AXMEDIS players and tools, usage of OSMO MPEG-4 and SMIL players (PC stand alone based, PC based on Active X, PC based on Mozilla Plug in, PDA based)
- AXMEDIS framework and platform Demonstrators
- management of the User Group, collection of questionnaires and usage of them for improving requirements, specification and tools,
- Completion of the AXMEDIS results and related Exploitation plan, also taking into account the new partners,
- Realization of a spinoff company, namely AxMediaTech, with the aim of exploiting AXMEDIS results: that means to maintain and improve the framework. To this end the AxMediaTech is going to continue the affiliation/licensing programme and will realize some commercial version of some of the major tools.
- **Assessment of project evolution and results.**
 - Identification and usage of metrics and reference parameters to measure work progressed and results achieved in relation to planned work and time schedule,
- **Dissemination and general demonstration, training:**
 - Produced dissemination material (flyer, press cutting, DVD, CD, project presentation, tutorial, video, posters, web pages, etc.) and published them on the web, and distributing them in different occasions, from conferences to fairs and other manifestations,
 - Produced training documentation and material, and organisation and deploy of training courses as tutorial days,
 - Organized the AXMEDIS 2005 conference held in November-December 2005, Florence, Italy,
 - Organized the AXMEDIS 2006 conference held in Leeds, UK, December 2006,
 - Organized the Workshop on Content Production, April, 2007, Rome, Italy,
 - Organized the AXMEDIS 2007 conference to be held in Barcelona, November 2007-,
 - Production and demonstration of several videos for the major AXMEDIS tools, distribution of them via AXMEDIS P2P and on YouTube,
 - Production of 3 special videos for promoting AXMEDIS as interoperable model, automated technical solution for content production and cost reduction solution.
 - Dissemination of results via several conference attendance/organisation, articles submission, development and distribution of supportive dissemination material (CD, DVDs, posters, flyers, etc.)
 - Promotion of the AXMEDIS at IBC2007, with a special WEB page, press promotion, advertising, invitation, production of dissemination material, presentation of major AXMEDIS products,

- Production of the dissemination report and plan
- Promotion and publication of the demonstrative AXMEDIS cross media finder portal, to also collect user generated content and transform them in MPEG-21 automatically.
- Production of the AXMEDIS show case as DVD including: technical reports, demonstration tools, example of content, technical notes, dissemination material, and videos.
- **AXMEDIS Framework and its demonstration**
 - Completed implementation of AXMEDIS Framework, tools, documentation and components
 - Distribution of a several versions of AXMEDIS tools (they have been downloaded in several thousands fro the AXMEDIS portal) for:
 - content production (manual and automated), AXMEDIS Editor, AXMEDIS content production tools, AXMEDIS workflow support
 - content playing, with related AXMEDIS content for demonstration (in AXMEDIS format), AXMEDIS player for PC, WEB, PDA, STB, and Mobiles
 - content protection and DRM, AXMEDIS DRM tools
 - P2P content distribution and sharing, AXMEDIS P2P tools
 - content managing on databases, AXMEDIS database
 - maintenance of a stable AXMEDIS P2P network with the major AXMEDIS partners as supernodes of the network, distribution of content on the stable AXMEDIS P2P network
 - maintenance of AXMEDIS stable services:
 - AXMEDIS User Registration and certification
 - AXMEDIS Tools certification
 - AXMEDIS PMS, for the AXMEDIS DRM licensing
 - AXMEDIS Certifier and Supervisor, for the AXMEDIS DRM
 - AXMEDIS maintenance support for the partners: production, P2P, DRM , etc.
 - Production of a set of documents for promoting the AXMEDIS framework:
 - AXMEDIS for all,
 - user manual of major AXMEDIS tools,
 - user manual of the AXMEDIS content processing GRID java script language,
 - user manual for the P2P network tools,
 - technical notes as white papers, one document for each major tool area and one paper for each demonstrator,
 - cross media finder portal,
 - AXMEDIS tools catalogue,
 - etc.
- **Affiliation programme**
 - promotion of the Affiliation programme
 - acceptance and integration of new affiliated partners, providing them access to the AXMEDIS Framework,
- **Content production and modeling**
 - Production of content production guidelines, and of content for validation of AXMEDIS MPEG-21 tools and distribution channels,
 - Production of content and tools for test and validation, they have been downloaded in many instances from the AXMEDIS portal,
- **Demonstration and AXMEDIS Framework Exploitation**
 - Specification and realization of the demonstrators for multichannel distribution via internet (PC), via kiosks (PC and PDA), towards mobiles, via satellite data broadcast (PC and STB/PVR, media centers), VOD, DVB-T, etc.
- **WEB portal:**

- Effective AXMEDIS portal with tools to be downloaded, videos, demonstrators, show cases, trials, content, examples, technical notes, etc.,
- Effective Cross Media Finder portal to directly test content production, protection and distribution, with the integrated AXMEDIS player for cross media content on Internet Explorer and/or Firefox Mozilla,
- AXMEDIS Wiki portal for providing promotional documentation about AXMEDIS Framework,
- powerful search engine to provide it to users of the AXMEDIS portal to search into public and/or private documentation,
- Integration of a BLOG for collecting impressions from the public attracted on the AXMEDIS portal,

User Interaction and/or Automated Control via WSs



1.4 Results achieved

The main results achieved in this third year are:

- Improvement of the AXMEDIS Framework and maintenance, AXMEDIS framework guidelines, source code repository for AXMEDIS framework (several versions collected), source code validation;
- Completion and finalization of a set of components and tools which permits the implementation of a large set of possible configurations for automated content production, protection and multichannel distribution with and without DRM: VOD, IPTV, mobile distribution, PDA distribution, etc.;
- Completion of a solution for multichannel distribution with interoperable terminals and content (including DRM support): PC, PDA, STB, Mobile, P2P, etc.;
- tools for automated content composition and formatting, definition of GRID rule formalization, language (and integrated development environment) for content composition and formatting,

initial results in terms of composition and formatting algorithms development and application, SMIL profile, SMIL templates, genetic algorithms for style parameters optimizations;

- Completion of the AXMEDIS cross media data model and MPEG-21, with complete modeling of structural, behavioral, functional, user interface, communication, operating system, profiling, etc., integrated functionalities;
- Completion of transformations from protected to non protected objects and vice-versa, AXMEDIS file format as ISOMEDIA file format;
- AXMEDIS Editor/authoring tools including: metadata editor and viewer, hierarchy editor, MPEG-21 editor, SMIL visual Editor, DRM Editor, protection editor, behavior editor, etc.;
- AXMEDIS player tools including: video player, audio player, SMIL player, DOC viewer, OSMO MPEG4 player, HTML player, metadata viewer, DIP/DIM AXMEDIS javascript/ behavior player to enforce intelligence into the players, etc. They have been enforced into different integrated players for: PC, Active X player for IE, Mozilla plugin for Firefox, STB/PVR player for Linux, PDA player for Windows Mobile 5 and 6, and AXMEDIS mobile player in Java, etc.;
- AXMEDIS PC player with customizable skins, development of a set of them: oval., vintage, ANSC, classic, etc.;
- AXMEDIS content processing tools, based on JavaScript for production and processing content via GRID technology, development of an integrated development environment for producing and testing GRID rules, scheduler for putting in execution jobs/processes on GRID nodes, control of CPU Node usage, control of GRID operation via web service, allocation of job/processes considering: starting time, process needs and profile, GRID node profile, etc.; addition of several functionalities such as: manipulation of additional format, production of emails and SMS, management of protected content, integration of DIA processing, etc.
- AXMEDIS protection processor for AXMEDIS tools (editors, players and GRID nodes), supporting IPMP of MPEG-21 and much more;
- AXMEDIS database, and query support, for indexing, query and retrieval of AXMEDIS objects including PAR (potentially available rights);
- content crawler integrated with AXMEDIS Content processing engine to access to many databases and communication channels;
- Integration of MPEG-21 DIA profiling and related taking decision engine for content adaptation mainly for the mobile cases;
- algorithms for estimating and using content fingerprint, performing adaptation and transcoding, exploiting fingerprinting for content recognition and identification;
- AXMEDIS P2P architecture, including Query Support, catalogues for content and object tracker, performance analysis of the P2P network;
- AXMEDIS DRM integration and completion including, PMS and Certifier and Supervisor, registration portal, certification authority;
- Accounting managing and reporting tool, and statistical reporting and set up;
- Formalization of contractual and legal aspects, from contract to license and related mutual processing, verification of licenses;
- Verification of DRM and distribution for mobiles, OMA usage from AXMEDIS content processing; Integration analysis of AXMEDIS DRM with standards and commercial solutions such as OMA;
- Business models for distribution via satellite data broadcast, integration with AXMEDIS content factory EUTELSAT (satellite data broadcast);
- Domain Management with PMS domain, study and improvement of OMA and MPEG-21 Domains;
- Editorial formats for PC, PDA, Mobiles and STB;
- Content for test and validation, integrated version of content, formatting guidelines and styles;

- full end-to-end demonstrators show case for content production, protection and distribution called Cross Media Finder (PC via client server and P2P), VOD from server and P2P, with and without DRM, also direct production of AXMEDIS content from resources uploaded from the Final users;
- full end-to-end demonstrators show case for content production, protection and distribution of TISCALI (PC via client server and P2P), VOD from server and P2P, with DRM support;
- full end-to-end demonstrators show case for content production, protection and distribution of ILABS (mobiles, kiosks and PDA), with DRM support;
- full end-to-end demonstrator show case in which the content is selected from the P2P and distributed via Satellite to the PC and/or MBI STB. The content can be full AXMEDIS cross media content, with DRM support;
- Workflow support (OpenFlow and BizTalk) for interfacing AXMEDIS tools with workflow tools and governing real content production factories;
- full end-to-end BBC demonstrator show case in which the DVB-T free on air is recorded from the EPG, and the additional content is downloaded from the P2P to be assembled to create and AXMEDIS object with recording and the additional content. This show case, also includes the capabilities of using the AXMEDIS domain in the DRM;
- full end-to-end Telecom Italia demonstrator show case in which the AXMEDIS content processing and backoffice automation are used for producing content for MPEG-21 distribution and OMA, both with DRM;
- full end-to-end Demonstrator show case in which the AXMEDIS DRM is used as CAS for protecting and DRMing the content distributed via DVB-T towards traditional kretel/Motorola STB, the demonstrator of TEO, with DRM support;
- full end-to-end Demonstrator show case in which the AXMEDIS cross media content is distributed on demand in Estonia, ELTEO, with DRM;
- Set up of AXMEDIS public stable services for
 - AXMEDIS P2P network with the major AXMEDIS partners as supernodes of the network, distribution of content on the stable AXMEDIS P2P network for B2B-P2P and C2C-P2P,
 - AXMEDIS DRM: User Registration and certification, Tools certification, PMS (license server), Certifier and Supervisor;
 - AXMEDIS Cross Media Finder, a demonstrative portal in which the user may access to a full collection of AXMEDIS objects, upload and generate them, accessing to licensed AXMEDIS objects.
- Distribution of AXMEDIS tools such as: AXMEDIS Editor, PC players, content processing tools, DRM editor, programme and publication, P2P client tools, PDA player, etc.; They can be tested by using the above mentioned facilities and content included into the packages and the additional AXMEDIS content and Rules that can be downloaded from the portal;
- Distribution of technical informative material including: AXMEDIS specification, AXMEDIS technical notes, user manuals, flyers, white papers, slides, etc.;
- Activities of dissemination and demonstration including: AXMEDIS 2006 and 2007 conference, workshop on content production 2007, IBC 2007, etc.;
- Production and distribution of dissemination material: DVD, CD, reports, documents, reports, examples, videos, flyers, etc. Most of them have distributed/downloaded in thousands of copies;
- Improvement of the WEB portal services: more informative content, more easy to get downloads, more hits, more velocity and reliability;
- Realization and deploy of training activities as tutorial days and workshops, and distribution of related training material from the WEB portal and at the events.

Intentions for use and impact of AXMEDIS results:

The AXMEDIS results are mainly exploitable for

- organizing and automating the content back office activities such as production, preand post production, transcoding and distribution with the aim of reducing related costs. This result is mainly due to the
 - AXMEDIS Content Processing platform, AXCP GRID, solution, tools and language, reliable solution for content processing, allocation of tasks, integration with workflow management systems such as OpenFlow and BizTalk, etc.
 - Availability of a sufficient number of integrated functionalities into the AXCP language and solution including: content processing, CMS access, transcoding, coders, encoders, communication capabilities, information processing, licensing, gathering, etc.;
- enabling the distribution of content on multichannel architectures and introducing cross media models which enforce more interactivity, flexibility, interoperability and intelligence into the content for the final users. This result is mainly due to the:
 - AXMEDIS cross media model and tools,
 - AXMEDIS players for PC, PDA, STB and mobiles (their customization and reuse in source code for creating other players in other platforms or customized players),
 - AXMEDIS Content Processing platform, AXCP GRID platform, for multichannel content production, adaptation, transcoding, etc., thus for backoffice automation;
- enabling the distribution of content with open and interoperable DRMs and content. This is mainly due to:
 - set and implementation of a fully functioning DRM solution for multichannel based on MPEG-21 but integrating several AXMEDIS solutions: AXCS, PMS, AXMEDIS registration portal, AXMEDIS certification authority, etc.;
 - the improvement of the MPEG-21 and its integration with OMA standards at level of transcoding, transcoding of MPEG-21 into OMA and viceversa,
 - usage of the AXMEDIS Content Processing platform, AXCP GRID solution, for the uniform back office management of DRM supported channels. With the AXCP GRID back office, other different DRM models can be easily added,
 - usage of AXMEDIS DRM tools: certification authority, registration portal, PMS (license server), certifier and supervision, etc.
- enabling the distribution of content via P2P setting up B2B, B2C, C2C and B2B2C models. This is mainly due to the AXMEDIS P2P solution based on:
 - AXMEDIS P2P tools and hierarchical architecture derived from BitTorrent with the possibility of its controllability, insertion of hierarchical solution on BitTorrent, improvement of the BitTorrent protocol,
 - AXMEDIS Content Processing platform, AXCP GRID platform, to control and P2P architecture, publication, downloading, seeding, monitoring, and getting statistical information and reporting;
- AXMEDIS Infrastructure and framework per se accessing to
 - advanced State of the Art on content modeling and tools
 - advanced and improvement of standards solutions,
 - knowledge and tools for content production, protection and distribution,
 - tutorials on content: general aspects and state of the art, content production and protection, on distribution tools, on general AXMEDIS aspects, etc.,
 - experience about the usage of the AXMEDIS solutions and tools from several industrial partners such as TISCALI, ILABS, HP, TEO, BBC, SIAE, ELION, XIM, TI, AFI, etc., plus affiliated partners such as: SIAE, APT, RAI, MAATG, etc.

The project as also exploited the possibility of “affiliating” new partners in project life due course. Presently a number of affiliations have been performed, see www.axmedis.org . The rational for this is that there are many **reasons to get affiliated to AXMEDIS**, which can be summarized as follow:

- *Reduction of costs* for content gathering, processing, production, protection and distribution;
- Saving money in accessing at innovative technologies for content production and distribution, integrated environment;
- Obtaining access to an *open platform* that can be customized for your production, protection and distribution needs, related training and technical material and documentation;
- Accessing to strongly innovative technology to trial it;
- Adopting a standard model (MPEG-21) for content and licenses modeling and thus for inserting DRM in your business;
- Exploiting and trial of new business models;
- Setting up of one-stop service for content protection and DRM set up;
- Acquiring a larger control about content usage;
- Allowing reporting to your business customers which rights are exploited on their content;
- Allowing the management of rights reporting for multimedia products;
- Creating customized players;
- Exploiting capabilities of secure legal P2P distribution;
- Setting up and create a customized distribution channel interoperable with others;
- Setting up some new service (empowering your present solution) on the basis of AXMEDIS technology;
- Establishing contacts with other business partners interested in exploiting similar technology;
- Allowing using a solution that can be safer and more flexible with respect to state of the art;
- Promoting your AXMEDIS based solutions to the AXMEDIS community and the general public and global sector industry via the AXMEDIS dissemination and promotion channels;
- Promoting your AXMEDIS based solutions at AXMEDIS conferences and workshops;
- Contributing to the AXMEDIS Framework is allowing you to continuing accessing to the framework reducing the costs for its accessibility.

For such reasons **research institutions and technology providers** are interested in getting affiliated with AXMEDIS, in more detail, once affiliated it will be possible for them to:

- access at low cost a the whole AXMEDIS framework by means of which several different configurations and solutions may be built to cover the needs of the value chain actors and tested with low effort;
- access at tools based on MPEG-21 standard;
- exploit the AXMEDIS Framework to make business with it for the reasons reported in the above list;
- collaborate with relevant and well known research institutions and companies of the areas, may be defining collaborative projects and strategic commercial goals;
- develop and test new algorithms and tools with respect to the state of the art solutions, in a very easy and cheap manner;
- add new content models and new DRM models and make them interoperable with MPEG-21 and others already in place on AXMEDIS;
- make visible and promote towards other AXMEDIS partners the produced algorithms, solutions and tools that can be used for content processing and modelling and that can be in some how integrated into the AXFW or proposed on the market. These tools may be provided for dissemination and promotion via AXMEDIS portal as demonstrators with limited capabilities;
- attend AXMEDIS training and tutorial days, access to training material;
- access to mailing list for sharing ideas on the future improvement of the AXMEDIS framework;

- etc.

An updated description of **AXMEDIS Framework** can be obtained from its coordinator. Demonstrations of AXMEDIS tools and of the whole AXMEDIS Framework are provided at AXMEDIS conferences and workshops, and in other occasions listed on AXMEDIS Portal. The AXMEDIS Framework can be accessed by following the Affiliation programme. The Affiliation to AXMEDIS may be performed by subscribing an Affiliation Agreement with an AXMEDIS Contractor among those listed in the above table.

1.5 AXMEDIS Contact:

Prof. Paolo Nesi, Ph.D. (coordinator)

DISIT-DSI, Distributed Systems and Internet Technology Lab

Dipartimento di Sistemi e Informatica

Università degli Studi di Firenze

Via S. Marta, 3

50139 Firenze, Italy

Email: nesi@dsi.unifi.it

Web: <http://www.disit.dsi.unifi.it/>, <http://www.dsi.unifi.it/~nesi>,
<http://www.dsi.unifi.it/~nesi/projects.html>, <http://www.dsi.unifi.it/>

Office: +39-055-4796523

Admin: +39-055-4796567

Fax: +39-055-4796469/363

Cell: +39-335-5668674