Publishable Executive Summary

AXMEDIS

Automating Production of Cross Media Content for Multi-channel Distribution

www.AXMEDIS.org

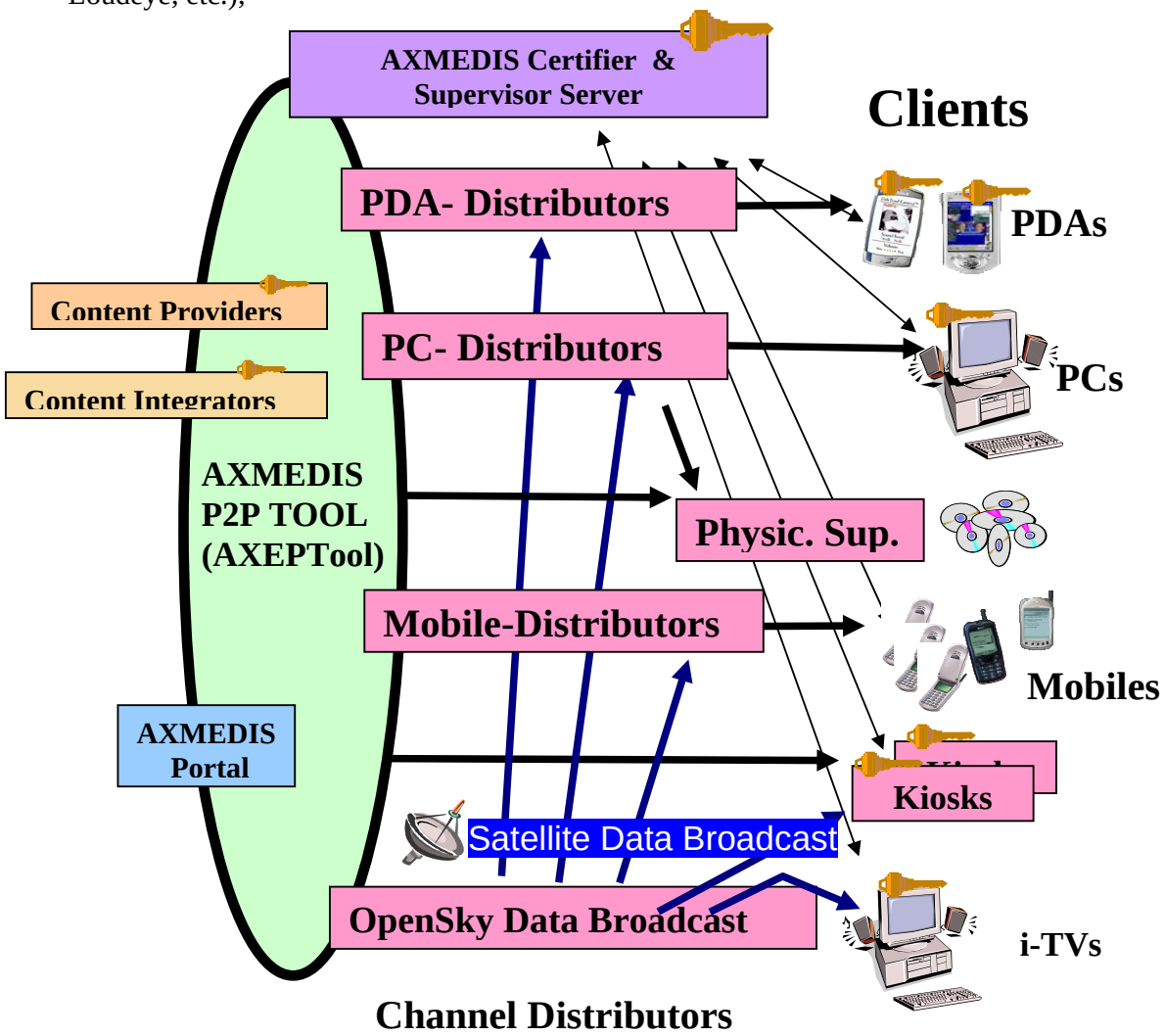
Current market and end-users demand the content industry to reduce prices without reducing the qualities of the products. This is where the AXMEDIS project comes in to offer novel solutions and new possibilities in order to support the setting up of viable and sustainable business activities with e-content. Production costs have to be substantially reduced while retaining (or even improving) product quality. Content providers, aggregators and distributors need innovative tools to increase efficiency. One possible solution is to automate, accelerate and restructure the production process in order to make it faster and cheaper. AXMEDIS aims to reach these goals by: (i) reducing content production costs, accelerating the process with automatic content composition and formatting and workflow support, (ii) reducing distribution and aggregation costs, increasing accessibility, thanks to a P2P platform at B2B level integrating content management systems and workflow, (iii) providing algorithms and tools for innovative and flexible Digital Rights Management, exploiting MPEG-21 and even overcoming its limits; supporting several business and transactions models. AXMEDIS consortium is creating a framework comprising innovative methods and tools to speed up and optimise content production, protection and distribution, enabling real *production-on-demand*. AXMEDIS will realise demonstrators, 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. The most relevant result will be achieved transforming demonstrators into sustainable business models for products and services during the last project year. Additional demonstrators will be 2-3 associated projects launched as take up actions. The project also foresees support activities such as: training, management, assessment and evaluation, dissemination and demonstration at conferences and fairs.

Objectives

The main objectives in support of this aim are:

- Study and refine integrated processes for “automatic” cross-media production and distribution, supporting interoperability on content, composition, protection (DRM, Digital Rights Management), etc., to make possible the realisation of solutions for content on demand;
- Creation of a common model for interchanging cross media content and components among Content Providers and Content Distributors, supporting copyright law, interoperability for Content Formats and DRM models. Safeguarding the owner’s rights during the content production process and considering the value chain;

- Establishing modalities and tools for managing, distributing and sharing cross media content and components among producers, publishers, distributors to reach the final users via a multi-channel architecture: i-TV, PC, PDA, Cellular phones, Kiosk, etc.;
- Realisation of a set of demonstrators: (i) integration of Content Management Systems with AXMEDIS solutions including P2P framework, (ii) accelerating content production, composition and formatting, and P2P sharing at B2B level, (iii) content production and distribution on-demand for i-TV, (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) realisation of two to three "take-up" actions for demonstrating the exploitability of the AXMEDIS solution;
- 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. Most of these collections are in the archives of the project partners such as ANSC, ILABS, SEJER (VIVENDI), or are distributed by them, such as those distributed by OD2 (with content provided by UNIVERSAL, SONY, EMI, WEA, WARNER, The Orchard, Loudeye, etc.);



The AXMEDIS consortium (consisting of leading European digital content producers, integrators, aggregators, and distributors; and also information technology companies and research groups) is to create 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 can include any other digital formats and it can exploit and expand MPEG-4, MPEG-7, MPEG-21, as well as other *de facto* standards.

AXMEDIS is to organise and realise a set of demonstrators to function as real components in activities such as production, protection and distribution organised by the leading distributor partners. This is to achieve and realise a real-life distribution chain validated by the activities of end-users. The demonstrators are to focus upon tools for: (i) content production and B2B distribution; (ii) content production and distribution to end-users via different channels including interactive TV (i-TV), personal computer (PC), kiosk, mobile, PDA and others.

AXMEDIS will offer assistance and technical support to companies interested in using the platform and adopting the AXMEDIS solutions. This support action will be provided through activities such as training, management, assessment and evaluation, dissemination and demonstration at conference and fairs.

Furthermore, the AXMEDIS consortium will grant the sum of 1 million Euro to companies and research institutes interested in developing real solutions by exploiting AXMEDIS technologies (this is referred to as *take up actions*).

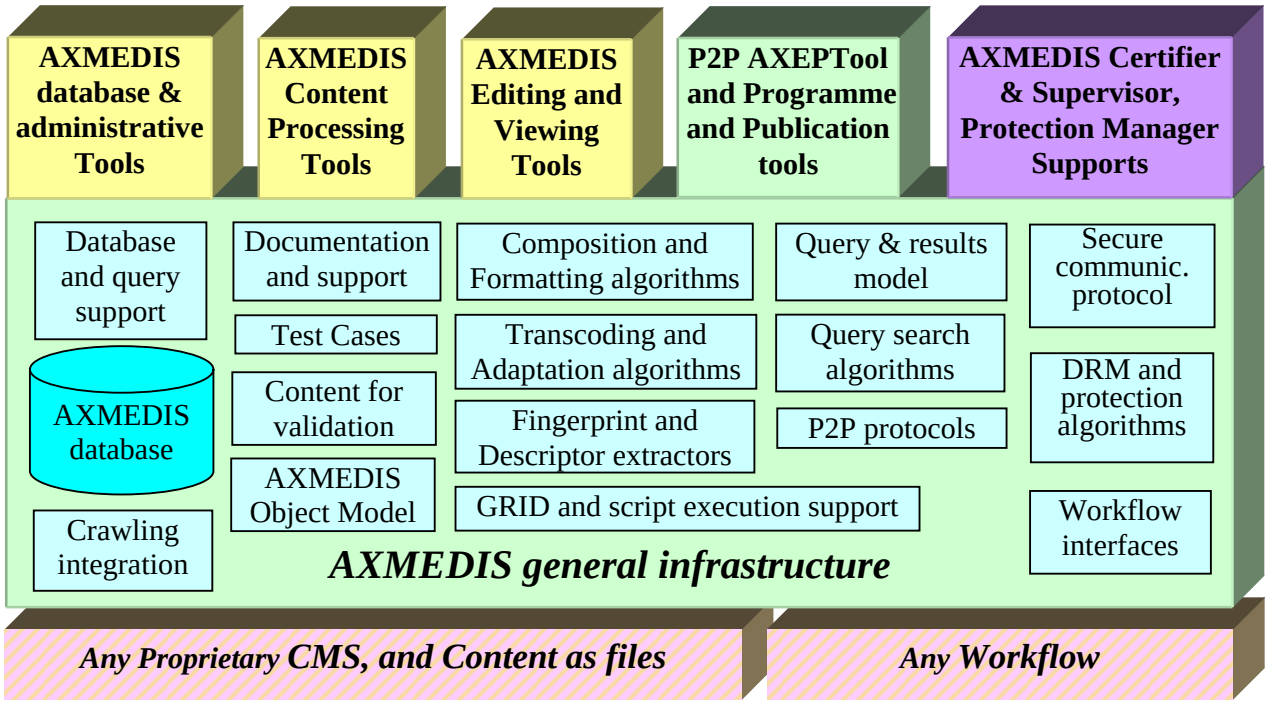
AXMEDIS Consortium

AXMEDIS Partner/Contractor	ACRONYM	COUNTRY
Distributed Systems and Internet Technology Lab, Department of Systems and Informatics, University of Florence, DISIT Lab. (co-ordinator)	**DSI-DISIT**	Italy
Dipartimento di Italianistica, University of Florence	**DIPITA**	Italy
Associazione dei Fonografici Italiani	**AFI**	Italy
Fondazione Accademia Nazionale di Santa Cecilia	**ANSC**	Italy
Comverse Ltd	**COMVERSE**	Israel
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
On Demand Distribution PLC	**OD2**	UK
Tiscali S.p.A.	**TISCALI**	Italy
Fundacio Universitat Pompeu Fabra	**FUPF**	Spain
Xim Limited	**XIM**	UK
Societa Consortile a Responsabilita Limitata Centro di Ricerca, Sviluppo e Studi Superiori in Sardegna	**CRS4**	Italy
ACit - Advance Concepts for Interactive Technology GmbH	**ACIT**	Germany
Bordas and Nathan of Sejer	**SEJER**	France
University of Leeds	**UNIVLEEDS**	UK
University of Reading	**IRC**	UK
Consorzio Pisa Ricerche	**CPR**	Italy
Exitech S.r.L.	**EXITECH**	Italy

Work Performed

After the first 12 months of activity we can see the first effective results. In fact, form the scientific and technical viewpoint, the consortium has:

- Formalized project and tools requirements
- Formalised the research methodology and detailed research activity to be carried out
- Collected and formalized detailed requirements and use cases. They have been considered as a valuable document for the DMP project of Dr. Leonardo Chiariglione,
- Produced and defined test cases and the content for their validation based on collected needs and requirements,
- Produced a first version of the specification of AXMEDIS framework addressing the identified needs and requirements. This document has been published and includes:
    - Specification of AXMEDIS editors and tools
    - Specification of the AXMEDIS content processing area with GRID, Scheduler, etc.
    - Specification of the AXEPTools for P2P on B2B distribution
    - Specification of the AXMEDIS database and query support
    - Specification of the AXMEDIS protection models and tools
    - Specification of the AXMEDIS players and tools
    - Specification of the Programme and Publication Tools
    - Specification of the Demonstrators of the AXMEDIS framework and platform



- completed the specification of content for validation,
- completed the specification of training activities,
- identified metrics and reference parameters to measure work done and results achieved in relation to the plan,
- set up and improved the User Group guidelines with models and rules used to identify and manage the user group of external experts,
- produced suitable dissemination material (flyer, press cutting, project presentation, web pages, etc.) and published it on the web,
- started the preparation of the conference that will be held in November-December 2005; related dissemination has been started in January. The location will be in Florence at Convitto della calza, Oltrarno meeting center (www.calza.it). The Call for Paper has been completed.
- started research activities on basic enabling technologies,
- First implementation of the above AXMEDIS Framework,

- started production of content and tools for test and validation,
- specification of the demonstrators for the multichannel distribution via internet, via kiosks, towards mobiles and via satellite data broadcast.

Results achieved

The main results achieved in this first year are:

- the definition of a general architecture for multichannel distribution with interoperable terminals and content with the support of DRM.
- Structure of AXMEDIS Framework, first version of AXMEDIS framework guidelines, CVS for AXMEDIS framework ready to use
- Proof of concepts regarding composition and formatting, definition of the rules syntax for content composition and formatting, first results about composition and formatting algorithms,
- Definition of the AXMEDIS data model
- first version of the AXMEDIS authoring tool,
- first version of the AXMEDIS content processing tools, based on Java Script for processing content and GRID technology.
- first version of the AXMEDIS database, analysis of the query support,
- First version of the Collector Engine,
- First version of algorithms for fingerprint estimation,
- first prototype of the P2P architecture at the basis of the AXEPTool and for P2P on B2C,
- improvement of the MPEG-IPMP, accepted contribution to ISO,
- specification and design of the accounting Managing and reporting tool,
- analysis of contractual and legal aspects,
- first version of the content distribution analysis for internet and DRM,
- Integration analysis of AXMEDIS DRM with standards and commercial solutions,
- verification of DRM and distribution for mobiles,
- analysis of content integration for satellite data broadcast, analysis of strategies and technical details for content distribution via satellite for I-TV,
- DRM and business models for satellite data broadcast, first results of user needs analysis,
- first version of the AXMEDIS Certifier and Supervisor,
- first collection of content for test and validation, integrated version of content, formatting guidelines and styles,
- detailed specification of CMS interface for Administrative integration,
- detailed specification of the demonstrators for distribution content,
- early version of the workflow support for interfacing AXMEDIS tools with workflow tools

Intentions for use and impact

The AXMEDIS results will be mainly exploitable for

- allowing the distribution of content on multichannel architecture
- reducing costs of content production and distribution
- exploiting AXMEDIS Framework and Tools
  - Content Processing (AXMEDIS Content Processing GRID)
    - ➔ Reducing production costs and time
    - ➔ Accelerating: composition, formatting, protection, feature extraction, distributions, publishing, etc.
  - Set up and management of single/multichannel Content Distribution with DRM
  - Customising AXMEDIS Players (PC, PDA, etc.) for creating players/terminals
  - Customising AXMEDIS P2P tools for B2B
- Exploiting AXMEDIS Infrastructure
  - Accessing to advanced State of the Art and standards solutions

- Sharing Content in a B2B Environment (AXEPTool)

We see a set of business opportunities:

- For ALL and for Content Provider/Producers
  - lower costs of production, protection, B2B distribution and promotion
  - simple and direct access at content coming from many content providers, integrators, etc., in easy manner,
  - exploitation of a multi-channel distribution
- For Content Distributors/Mediators to have
  - the possibility of defining several different business models adapting the distribution channel to the users needs and would
- For Content Integrators and Multimedia Publishers to
  - integrate cross media content and automatically managing rights for complex multimedia products
- For Final user to get access to the same content on several platforms and locations, to have content at low price, etc.
- For Collecting Societies to have access at direct reports about the Content exploitation
- For IT companies to access at innovative technologies for content production and distribution, integrated environment

AXMEDIS Contact:

Prof. Paolo Nesi, Ph.D. (coordinator of the AXMEDIS project)
DISIT-DSI, Distributed Systems and Internet Technology Lab
Dipartimento di Sistemi e Informatica
Università degli Studi di Firenze
Via S. Marta, 3
50139 Firenze, Italia
Email: nesi@ingfi1.ing.unifi.it, 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: +39-055-4796363
Cell: +39-335-5668674