



**Automating Production of Cross Media Content  
for Multi-channel Distribution**

[www.axmedis.org](http://www.axmedis.org) IST-2-511299

# AXMEDIS

## Overview and Applications

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<http://www.axmedis.org/>

version 1.1  
date: May 2006

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### What is AXMEDIS ?

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- **A project of the European Commission, proposed by a set of companies to solve problems in the area of e-commerce of digital content**
  - ◆ approved by the EC for reaching a fixed set of objectives
  - ◆ partially funded by the EC and partially from the Companies involved
- **The major aim is**
  - ◆ *to create the AXMEDIS Platform/Framework on the basis of new technologies and*
  - ◆ *to make accessible this platform for SME, research centers, and any other partner interested in*
- **The affiliation allows to access at the knowledge and tools (source code) produced**
- **Started the 1st September 2004**
- **Value of about 14 Meuro**
- **About 120 people are working on AXMEDIS every day**

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**AXMEDIS Consortium**

Members and partners include:

- LABLITA - Laboratorio Linguistico
- HP invent
- BORDAS
- tiscali
- Nathan
- GIUNTI labs - the X-learning Company
- COMVERSE - Total Communication comes to life
- eutelsat
- EXITECH
- Fraunhofer IGD - Institut Graphische Datenverarbeitung
- UNIVERSITY OF LEEDS
- UNIVERSITY OF READING
- UNIVERSITY OF PISA
- EPFL - ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
- ASSOCIAZIONE DEI FONOGRAFICI ITALIANI (A.F.I.)
- ACCADEMIA NAZIONALE DI SANTA CECILIA
- CONCORDIA DISCORDIA
- UNIVERSITÀ STUDIUM S. UNIVERSITÀ
- xim
- ON DEMAND DISTRIBUTION
- IGD
- PISA RICERCHE
- Information Society

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**AXMEDIS purpose**

**Content:**

- Producers
- Providers
- Aggregators
- Packager
- Integrators
- Promoters
- Distributors
- ..

**axmedis Tools and Solutions Models and technologies**  
*Content authoring, processing, protection, distribution, controlling and usage*

- Supporting both B2B and B2C distribution
- Reducing costs for Content Production, processing, etc
- Enabling Multichannel Distribution
- Enabling Interoperable Distribution of content
- Enabling e-commerce of secure digital content

**Create a unified European platform for content packaging, protection and distribution in terms of DRM and interoperability (convergence)**

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## Main Objectives

- →
  - ◆ reducing distribution and aggregation costs for content production and management by
  - ◆ Convergence of the media, interoperability of content
  - ◆ Flexibility in the business and transaction models
  - ◆ DRM applications and interoperability among distribution channels
  - ◆ Integration of cultural heritage, educational content with business content
  - ◆ Harmonization of B2B and B2C areas for DRM
  - ◆ Massive processing in content production and distribution, and in license processing and event tracking
  
- **Increase accessibility to the European audio visual content for its exploitation for entertainment, valorisation, etc.**
- **Create a unified European platform for content distribution in terms of DRM and interoperability**



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## AXMEDIS B2B Distribution and Sharing



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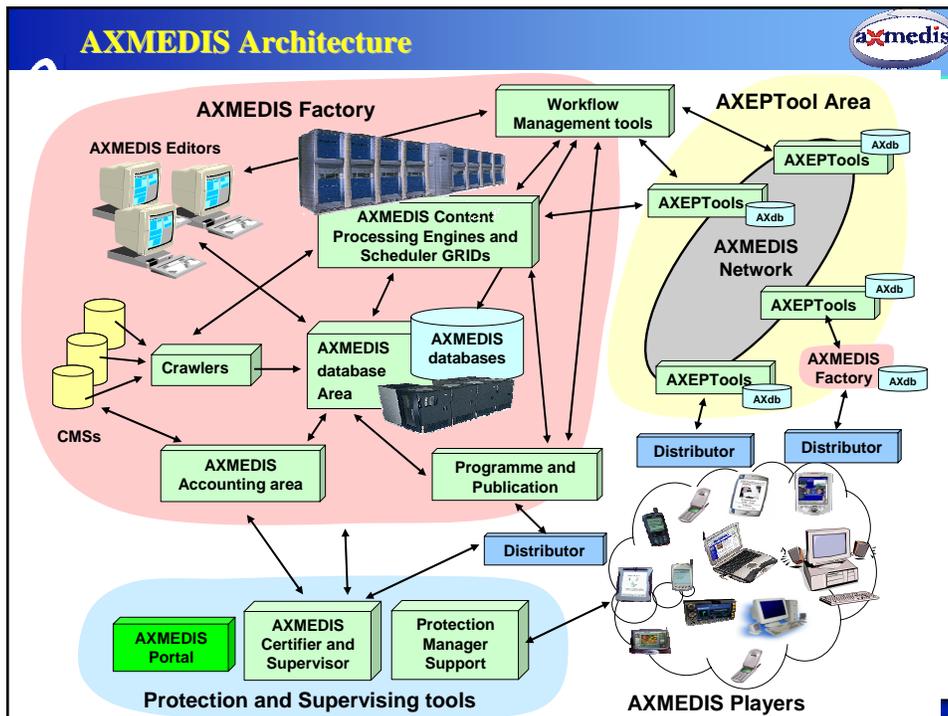

## Main technical objectives

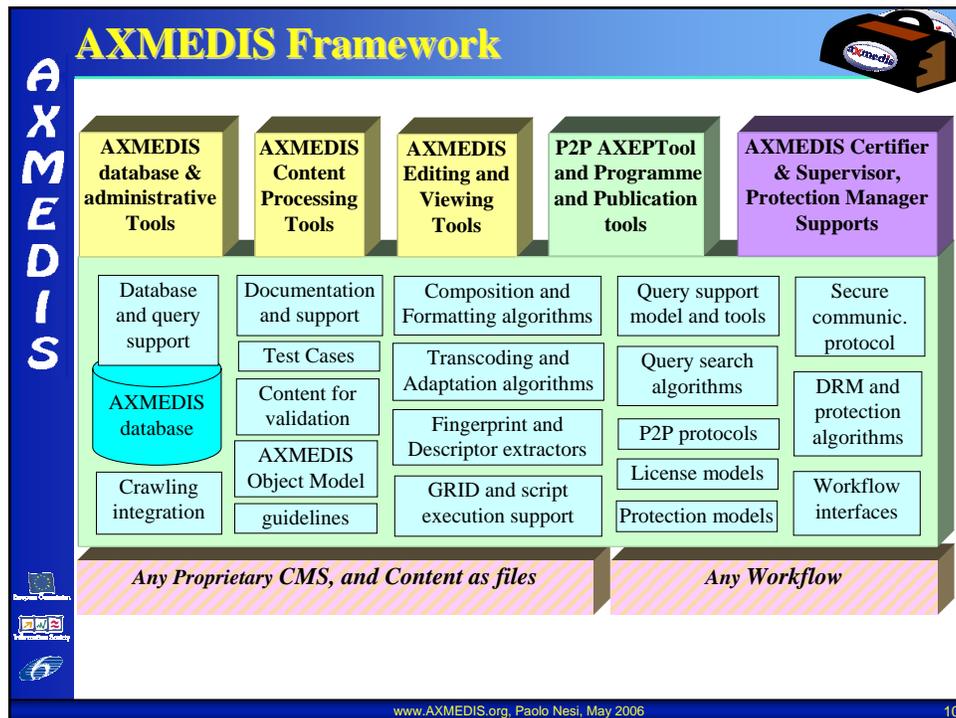
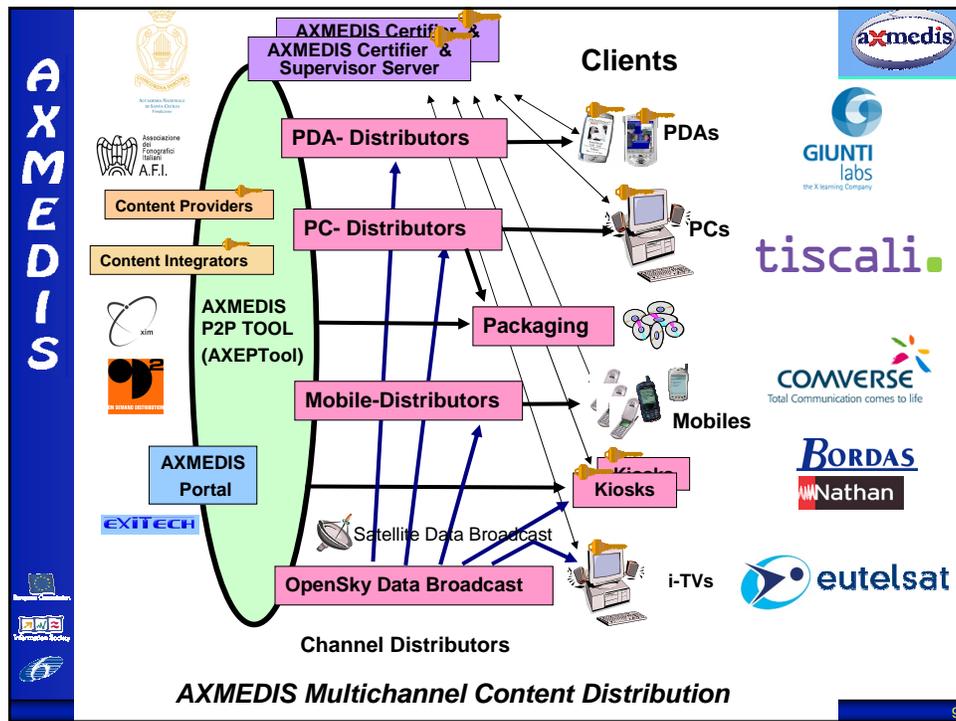
- **developing and providing new methods and tools for innovative and flexible content production, protection and distribution**
  - ◆ Exploiting MPEG-21 and overcoming its limitations, Digital Rights Management (DRM)
  - ◆ Allowing file sharing via secure/legal P2P for both B2B and B2C in the respect of IPR
  - ◆ Supporting different business and transaction models
  - ◆ Allowing tracking and monitoring of content usage
  - ◆ Enabling Interoperability of MPEG-21 REL and ODRL of OMA
  - ◆ Exploiting GRID technology for massive processing
  - ◆ Integrating present CMSs and solution with AXMEDIS framework and tools



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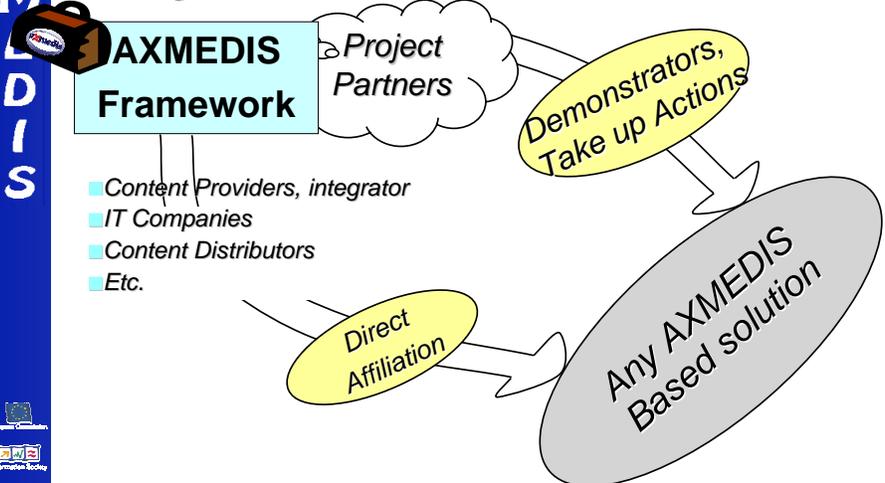


## AXMEDIS Framework



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- Exploitation of AXMEDIS research and innovation
- To guarantee the return of investment



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## TISCALI Distribution with AXMEDIS Technology



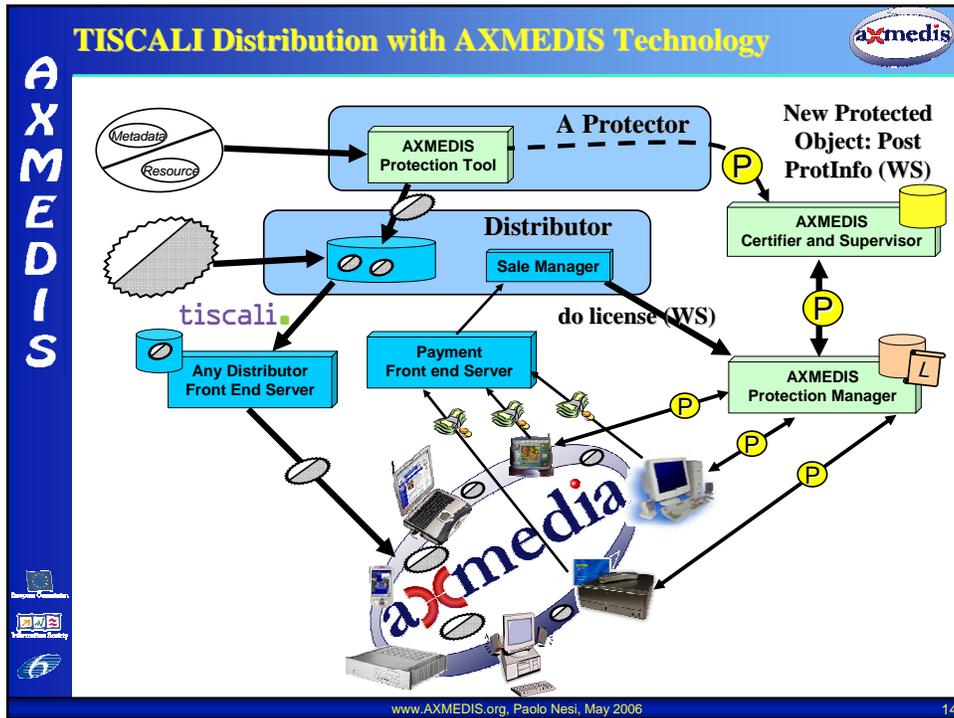
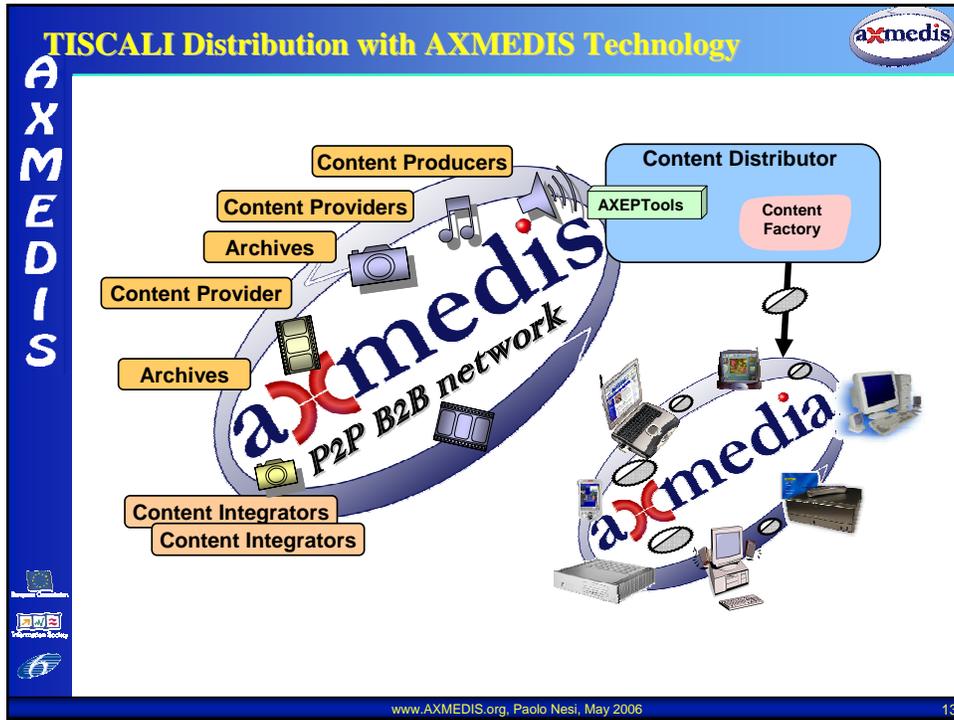
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- **B2C distribution**
- **AXMEDIS objects with**
  - ◆ Video and Audio Files
- **Licenses and Protection Information not in the object**
- **The AXMEDIS Objects may be**
  - ◆ shared among consumers with AXMEDIA Tool a P2P tool
  - ◆ Visualized and played on AXMEDIS players free downloaded
- **The users have to perform the registration of**
  - ◆ themselves on an AXMEDIS portal
  - ◆ any AXMEDIS player tool they would use
  - ◆ Mainly on PC and Media Centres
- **License allows**
  - ◆ Content sharing on AXMEDIA
  - ◆ Content play
  - ◆ Content Adaptation...
  - ◆ Content Migration on other P2P channels...
  - ◆ Content Migration on any other AXMEDIS terminal



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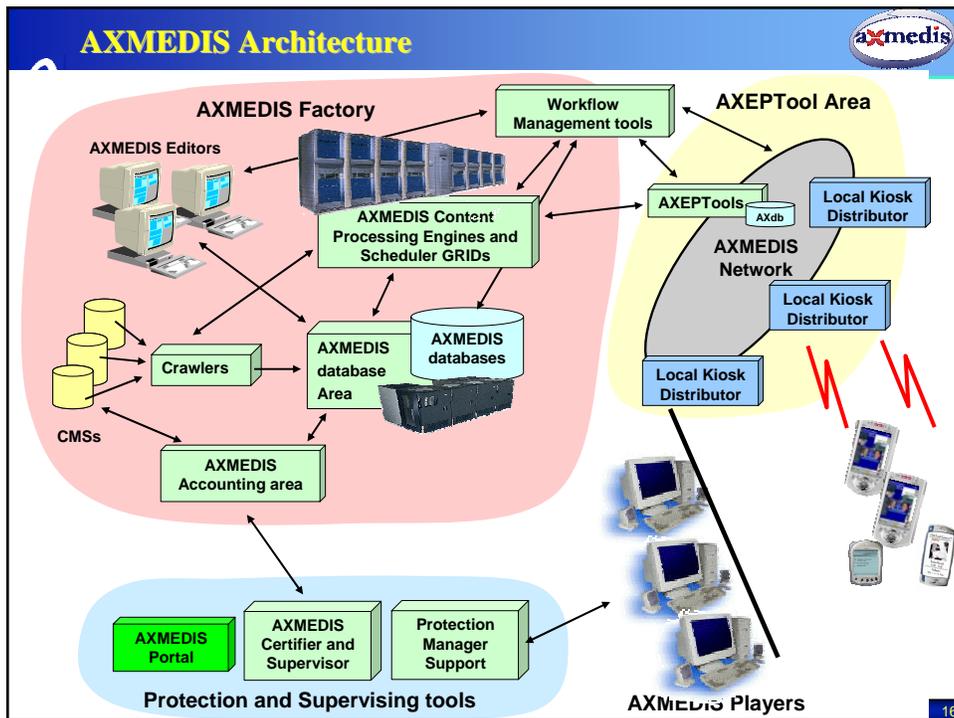

### ILABS Distribution with AXMEDIS technology

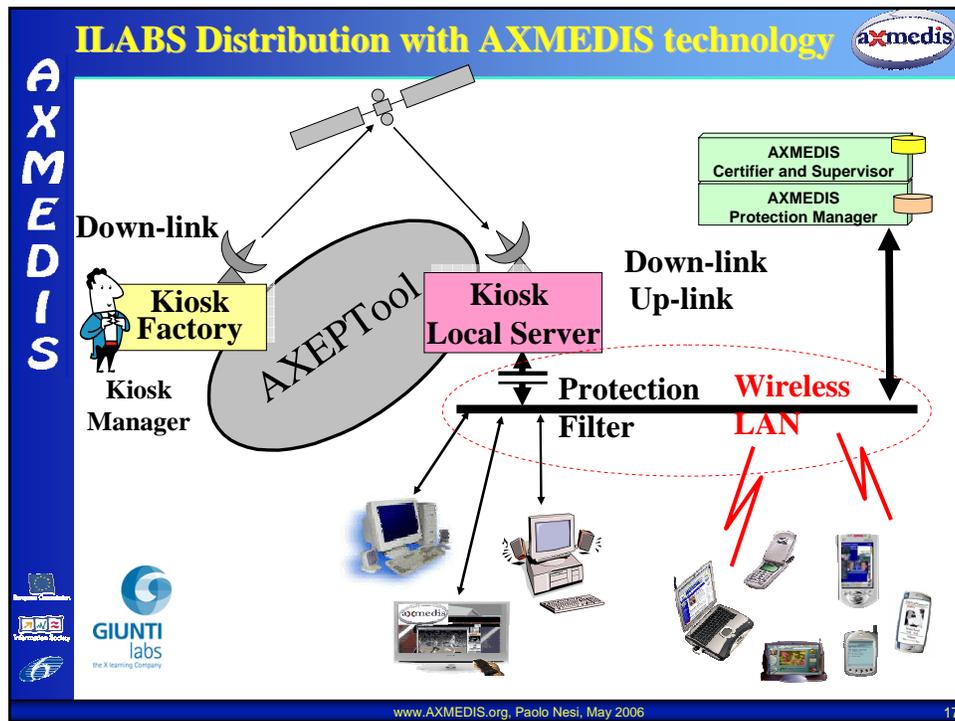
- **B2B and B2C distribution**
- **AXMEDIS objects with**
  - ◆ Educational and cultural content,...
  - ◆ Video, images, document, audio, animations, etc.
- **Licenses and Protection Information not in the object**
- **The AXMEDIS Objects may be**
  - ◆ Visualized and played on AXMEDIS players free downloaded
- **The users have to perform the registration of**
  - ◆ themselves on an AXMEDIS portal
  - ◆ any AXMEDIS player tool they would use
  - ◆ Mainly on PDA and mobiles
- **License allows**
  - ◆ Content play
  - ◆ Content Adaptation...
  - ◆ Content Migration on any other AXMEDIS terminal, in some cases



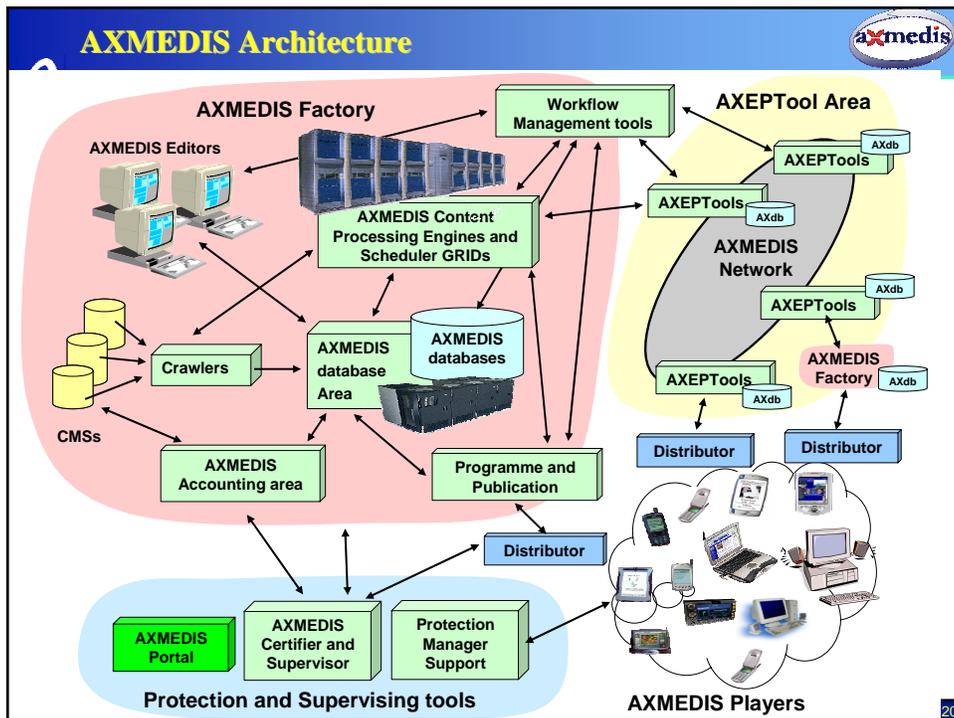
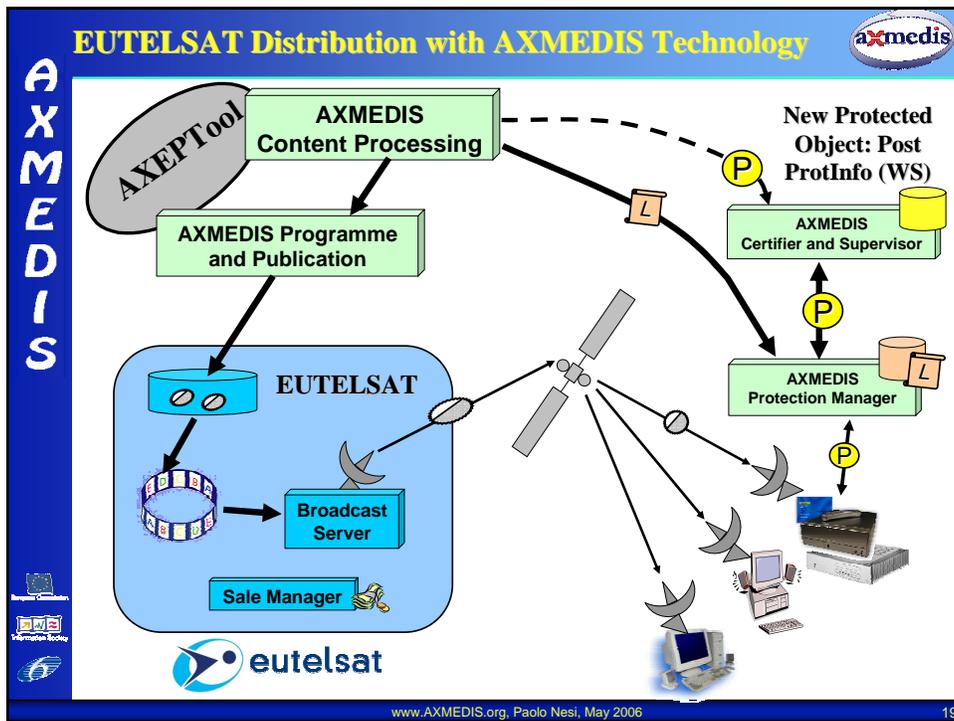
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- ### EUTELSAT Distribution with AXMEDIS technology
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- **B2B and B2C distribution**
  - **AXMEDIS objects with**
    - ◆ Any kind of content,...
    - ◆ Video, images, document, audio, animations, etc.
  - **Licenses and Protection Information not in the object**
  - **The AXMEDIS Objects may be**
    - ◆ Visualized and played on AXMEDIS players free downloaded
  - **The users have to perform the registration of**
    - ◆ themselves on an AXMEDIS portal
    - ◆ any AXMEDIS player tool they would use
    - ◆ Mainly on PC for TV and/or i-TV
  - **License allows**
    - ◆ Content play
    - ◆ Content Adaptation...
    - ◆ Content Migration on any other AXMEDIS terminal, in some cases
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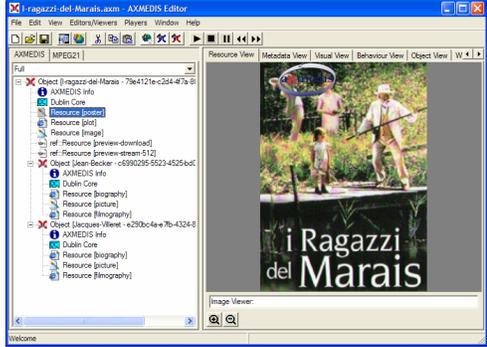


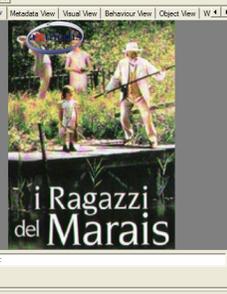
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## AXMEDIS Editor

- **The AXMEDIS Editor is an application allowing**
  - ◆ manual production of AXMEDIS objects
  - ◆ inspection of automatically produced objects
  - ◆ finishing AXMEDIS objects pre-produced automatically
- **It integrates many Editors & Viewers to handle all the aspects of the AXMEDIS Objects production**
  - ◆ Resource
  - ◆ Metadata
  - ◆ DRM
  - ◆ Protection
  - ◆ Presentation
  - ◆ Workflow
  - ◆ Annotation
  - ◆ ...





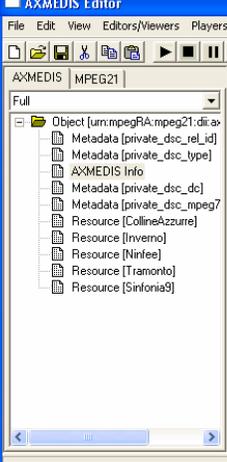
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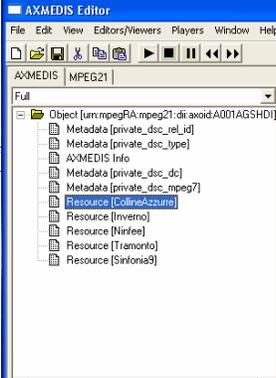
## AXMEDIS Editor

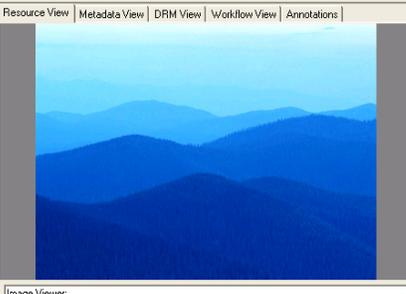


```

<ax:AXInfo xmlns:ax="urn:axmedis:01">
  <ax:ObjectCreator>
    <ax:AXCID>... a creator ID ...</ax:AXCID>
    <ax:ObjectCreatorName>J. Doe</ax:ObjectCreatorName>
    <ax:ObjectCreatorURL>mailto:jd@invideo.com</ax:ObjectCreatorURL>
    <ax:ObjectCreatorCompany>InVideo</ax:ObjectCreatorCompany>
    <ax:ObjectCreatorCompanyURL>http://www.invideo.com</ax:ObjectCreatorCompanyURL>
    <ax:ObjectCreatorNationality>US</ax:ObjectCreatorNationality>
  </ax:ObjectCreator>
  <ax:AccessMode>read_write</ax:AccessMode>
  <ax:CreationDate>2004-12-27T15:00:00</ax:CreationDate>
  <ax>LastModificationDate>2004-12-27T16:43:00</ax>LastModificationDate>
  <ax:Version>2</ax:Version>
  <ax:Revision>1</ax:Revision>

```





AXMEDIS



## Capabilities

- Content Ingestion and Gathering
- Content Retrieval
- Content Storage
- Content Processing
- Content Composition
- Content Formatting
- Content Protection
- Content Licensing
- Content Publication and Distribution



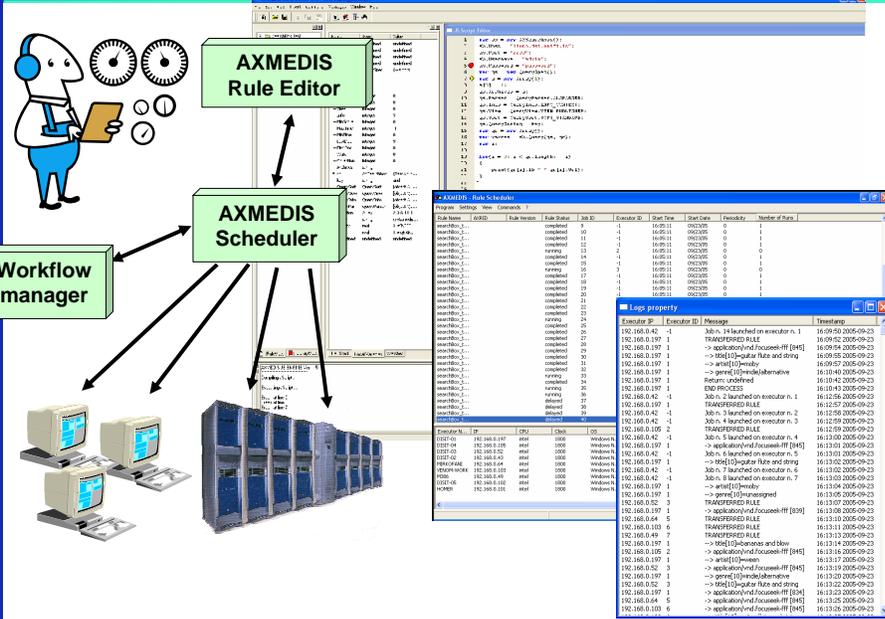
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## AXMEDIS Content Processing GRID





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## AXMEDIS Content Processing capabilities

- **Scripts will be produced by Example (recording commands) on the AXMEDIS Authoring Tools**
- **In AXCP Scripts you can manipulate, produce, adapt and process:**
  - ◆ AXMEDIS/MPEG-21 Objects and features
  - ◆ Digital resources in any format
  - ◆ Descriptors, fingerprint, etc.
  - ◆ Metadata, metadata mapping
  - ◆ Licenses and PAR
  - ◆ Protection Information
  - ◆ Device Capabilities
  - ◆ User Profile and preferences
  - ◆ Etc.
- **And you can automate:**
  - ◆ Load and Save of AXMEDIS objects
    - ➔ From/by the AXEPTool, P2P B2B tools
    - ➔ From/by the AXMEDIS database
    - ➔ From/by other legacy CMS via Crawler and other means
    - ➔ From/by the file system and Local Area Network
  - ◆ Publication of results on distribution channels



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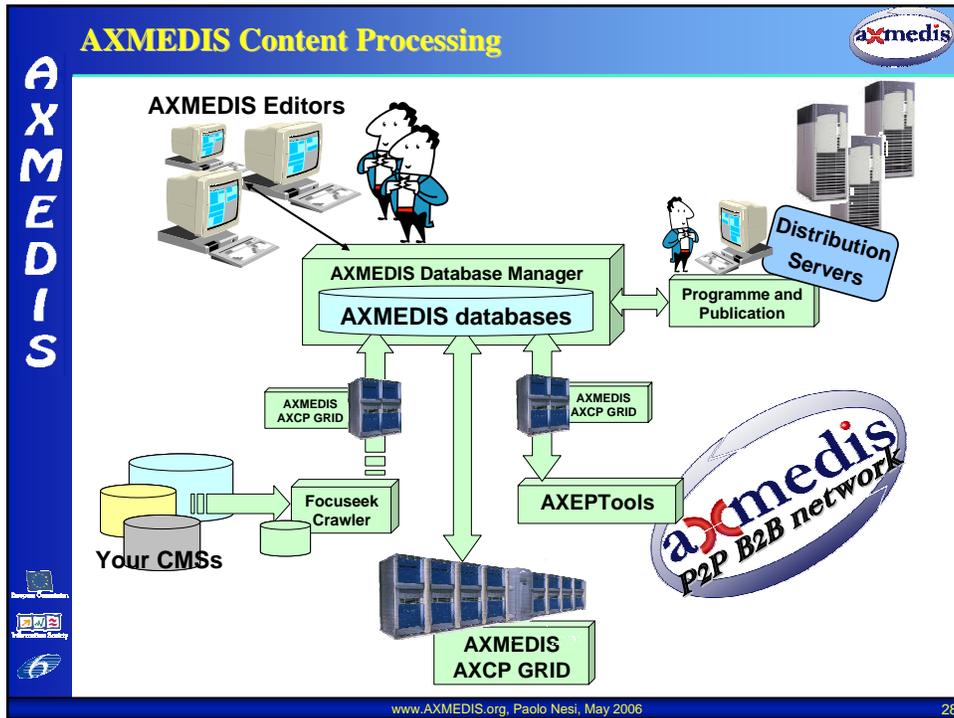
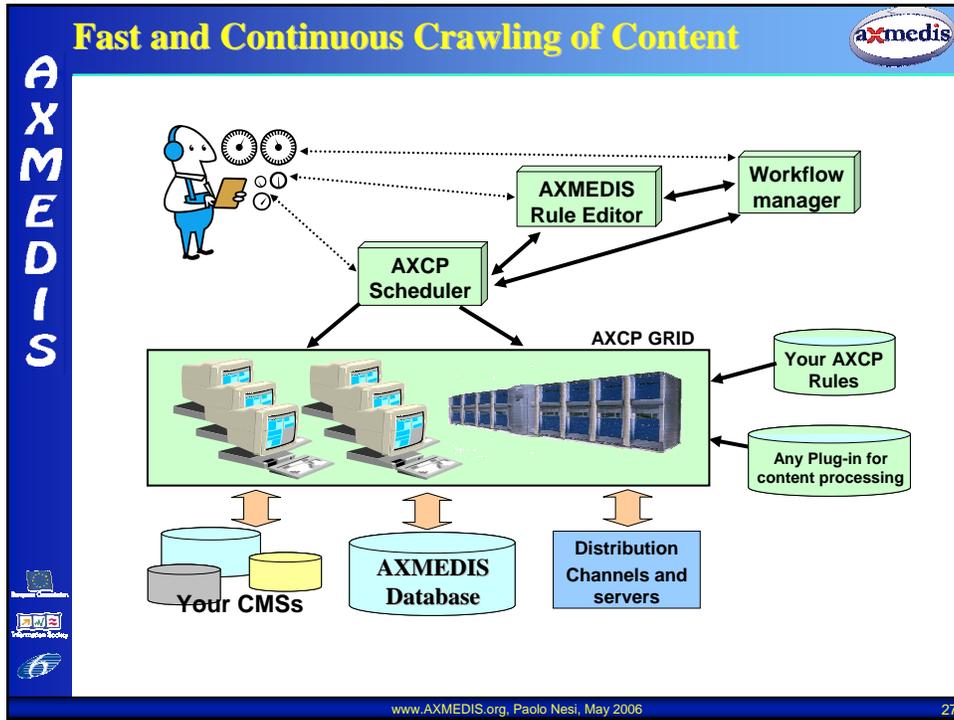
## AXCP processing capabilities

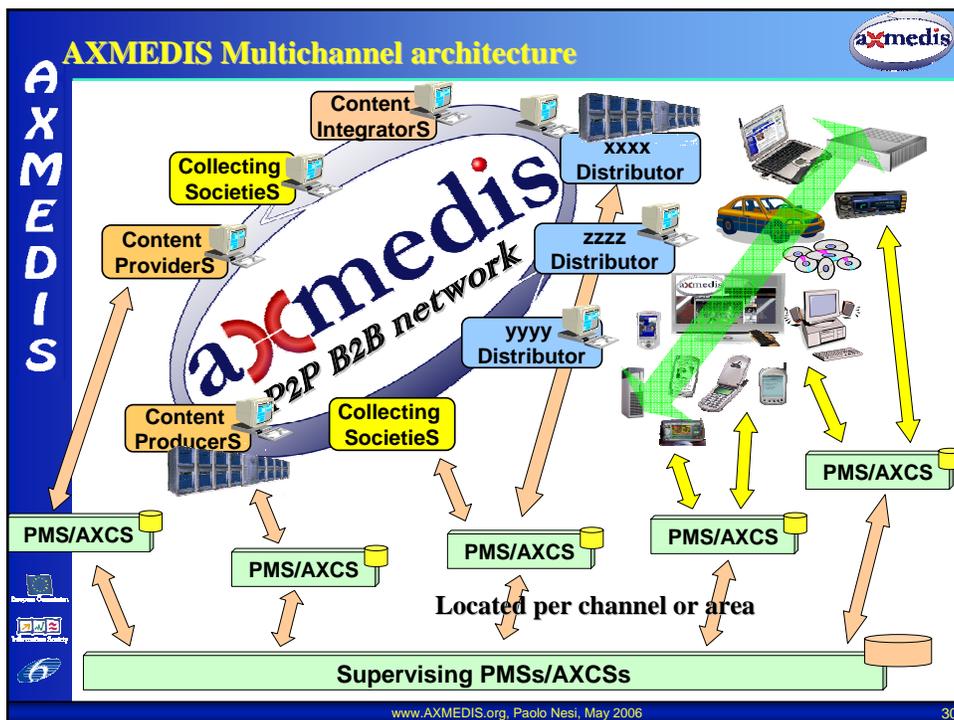
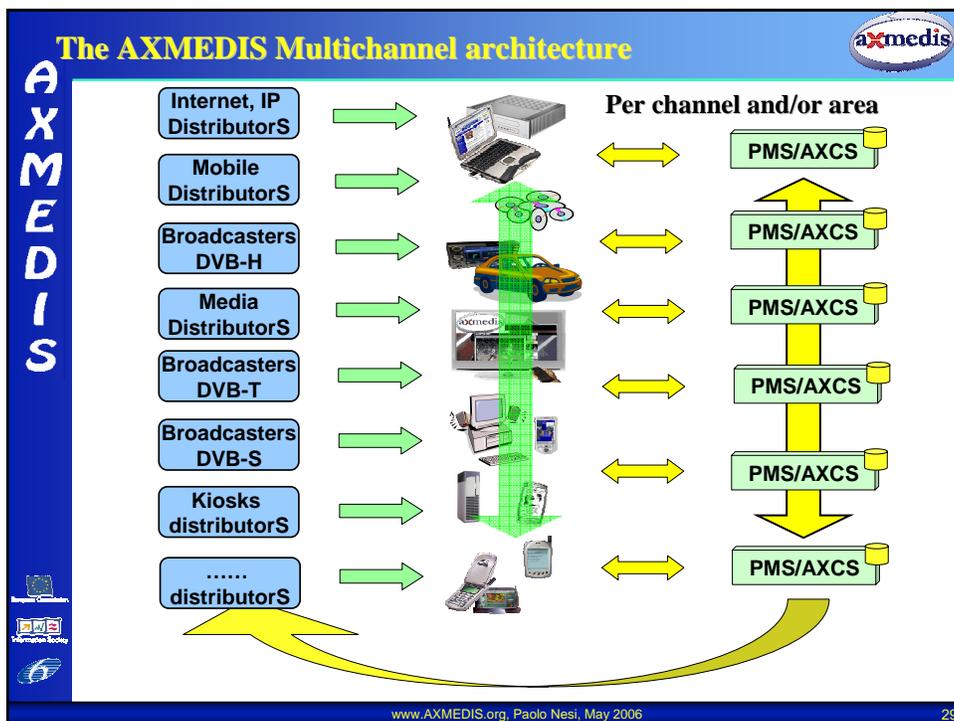
- **Any type of resource in any format**
  - ◆ Also MPEG21, IMS, SCORM, etc.
- **Processing functionalities:**
  - ◆ Production of new objects: composition, etc.
  - ◆ Formatting: SMIL, XSLT, etc.
  - ◆ Synchronization of media, etc.
  - ◆ Adaptation, transcoding, .....
  - ◆ Reasoning on device capabilities and user preferences
  - ◆ Production of licenses
  - ◆ Verification of Licenses against them and PAR
  - ◆ Extraction of descriptors and fingerprints
- **Open to any other module with plug-in technology:**
  - ◆ Burning
  - ◆ Etc.



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## Contact Information

- ***If you like to know more about the AXMEDIS framework and other AXMEDIS technologies and functionalities please do not hesitate to contact the project coordinator:***
- ***Prof. Paolo Nesi, Ph.D.***
  - DISIT-DSI*
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  - Distributed Systems and Internet Technology Lab*
  - University of Florence*
  - Via S. Marta 3, 50139 Firenze, Italy*
  - Email: [nesi@dsi.unifi.it](mailto:nesi@dsi.unifi.it)*
  - Web: <http://www.AXMEDIS.org>*





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