axmedis

Automating Production of Cross Media Content for Multi-channel Distribution

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AXMEDIS Framework

The AXMEDIS Framework is an open solution which builds on technologies and tools to:

- reduce costs and increase efficiency for content production, protection, management and distribution. It offers effective automation for:
  - integrating your Content Management Systems (CMSs) with distribution systems by automating the communication and maintenance of content and information between the two;
  - content gathering and ingestion processes from local and remote CMSs as well as file systems;
  - composition, supporting parallel processing, GRID technology, and optimisation techniques for content ingestion, production, protection and formatting;
  - managing the workflow processes at content-factory level and between content-factories with the support of OpenFlow and BizTalk Workflow Management systems;
  - the overall process allowing content production on demand.
- support the whole value chain, including composition, packaging, integration, aggregation, synchronisation, formatting, adaptation, transcoding, indexing. Additional features include the integration of both protected and non-protected components within an object, definition of relationships with other resources, metadata integration and remapping/transcoding, protection, license production and verification;
- allow the convergence of the media and interoperability of content to enable multi-channel distribution. The framework supports content distribution:
  - on different channels such as satellite data broadcast, Internet, cellular/mobile network, wireless and traditional media support such as CDs, DVDs;
  - via different communication technologies, particularly with Peer-to-Peer (P2P) for both B2B (Business-to-Business) and B2C (Business-to-Consumer) levels;
  - to different devices such as PC, PDA, interactive TV (i-TV), set-top box (STB), etc.;
  - with different transaction models on the same channels and content, and with flexibility.
  - adopt new methods and tools for flexible and interoperable
  - Digital Rights Management (DRM) in order to facilitate a smooth transition from paper contracts to digital licenses.
  - exploitation of MPEG-21 REL (Rights Expression Language) with specific extensions and enhancements;
  - support of different business and transaction models and their integration;
  - integration/interoperation of different DRM models such as MPEG-21 REL and ODRL OMA (Open Mobile Alliance).
- harmonise B2B and B2C areas for DRM, bringing the DRM model in the B2B area, supporting production and protection models in the whole value chain;
- increase content accessibility via the AXMEDIS P2P platform at B2B level, which can integrate content management systems and workflows.

AXMEDIS Content Model

AXMEDIS content model is designed to support all types of cross-media content; from simple multimedia files to software components such as games, for all kinds of applications, from personal to global scale usages including leisure, education, entertainment, infotainment as well as the management of protected content for government, healthcare, business, etc.

AXMEDIS is an open format which is capable of integrating any kind of cross-media format (e.g. video, images, animations, games, learning objects, multimedia, audiovisual, document, audio, etc.) in digital format with any kind of metadata including identification, classification, categorisation, indexing, descriptors, annotations,

AXMEDIS Architecture

relationships and play activities, and protection aspects. The AXMEDIS format permits the combination of content components and their secure distribution in respect of their intellectual property rights, supporting a large variety of DRM rules and models according to concepts of interoperability among DRM models (mainly, but not only, based on MPEG-21, with both binary and XML formats). AXMEDIS is open to all DRM models and solutions.
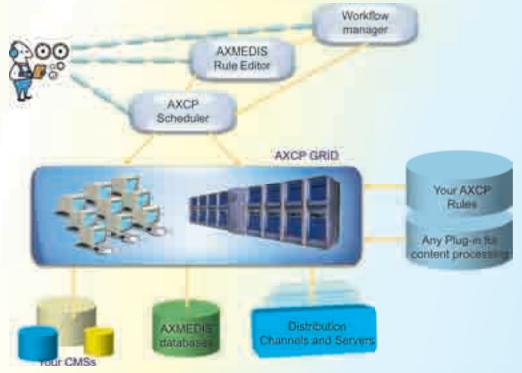
Key Components

- AXMEDIS Factory: for automatically collecting content from legacy CMSs, producing the content, programming and scheduling the production process, processing metadata, composing and formatting content, collecting content information from content usage, producing licenses to harmonise the production with workflow applications in the factory and among geographically distributed factories, etc. The AXMEDIS Factory is scalable in the sense that it can satisfy the needs of small and large content producers, integrators, and distributors. The factory is supported by tools for automating the production process and to perform manual editing;

- AXMEDIS Distribution tools: for automating the content publication and acquisition in the business area allowing the interconnection of AXMEDIS Factories by means of the AXEPTools which is a secure and legal P2P tool. It is also possible to make distributed queries among connected AXMEDIS Factories to search for content and to automatically publish and acquire/update content from/to the business partners, etc. The tools in this area also allow scheduling of content distribution and publication towards external web services for example those of front end distribution servers;
- AXMEDIS Players: for content playback and execution on several different platforms (PC, PDA, mobiles, AXMEDIS Mozilla Plug in, AXMEDIS Active X), to build specific and customised content players, for distributing

and sharing content among final users by means of secure P2P tools such as AXMEDIA P2P tool;
- AXMEDIS Protection and Supervising tools: for registering users, certificating users, authenticating devices and tools, monitoring all the activities performed on the AXMEDIS content on AXMEDIS players and tools, processing licenses, managing black lists, and collecting and reporting the information about content usage and rights exploitation, etc.

Content Processing

AXMEDIS framework and the AXMEDIS Content Processing (AXCP) based on GRID technology offers automated features and functionalities, supporting convenient scripting interface to enable automation and control with:
- Content Ingestion and Gathering:
  - from Content Management Systems (CMS such as ORACLE, XML databases, Tamino, MySQL, MSSQL, HP DMP, ODBC, etc.), file system, and protocols;
  - by processing resources and coupling them with metadata;
  - via Web Services, FTP, HTTP, WebDAV, SMB, Gopher, NNTP, and other models.
- Content Storage and Retrieval:
  - AXMEDIS database, MPEG-21 database;
  - other AXMEDIS content Factories by means of the AXEPTool.
- Content Processing:
  - digital resources adaptation, extraction of descriptors, transcoding, synchronisation, metadata processing, estimation of fingerprint, watermarking, indexing, content summarisation, etc.; for videos, images, documents, audio files, etc.;
  - metadata manipulation, mapping and adaptation: Dublin core, MPEG-7, etc.;