AXMEDIS Tutorial on Distribution

version 2.5
date: December 2006

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Leeds - 14/12/2006

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Tutorial presentation (I)

- Rationale
  - Open to all and based on AXMEDIS 2005 Content distribution tutorial
  - Adopts examples selected to explain both the process modifications and related benefits
  - Limits & constraints are pointed out to keep a fair and concrete perspective.
Tutorial presentation (II)

- Intended audience
  - Business Managers
  - Technical Managers
  - Research Managers

- Prerequisites
  - Basic knowledge of Distribution cycle, channels & tools
  - Basic knowledge of marketing, legal & protection aspects

Objectives & Outcomes (I)

- Objectives
  - Recall overall content production process
  - New tools location in the process
  - Hints & suggestions on environment set-up
  - AXMEDIS distribution framework presentation
  - Practical examples provision
Objectives & Outcomes (II)

Outcomes
- AXMEDIS database know-how
- AXMEDIS Certifier & Supervisor know-how
- AXMEDIS Accounting & Reporting know-how
- AXEPTool know-how
- B2B/C distribution integration within AXMEDIS Factory know-how
- AXMEDIS Programme & Publication know-how
- AXMEDIS On-Demand services know-how
- AXMEDIS distribution framework usage know-how

The context
Content Distribution & AXMEDIS
**The context**

- **Objectives**
  - Recall overall process and distribution location in it
  - New tools location in the process
  - Hints & suggestions on environment set-up

- **Outcomes**
  - AXMEDIS relation to standard content distribution context know-how

**The process**

1. Idea (1)
2. Market survey (2)
3. Design (3)
   - In-house (3a)
   - External (3b)
4. Approval (4)
5. Abort

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**1.** There is no model

**2.** There is a clearance problem impacting on editing

**3.** There is a problem that may affect the testing process and require product re-design

**4.** There is a problem that requires re-design

**5.** There is a problem that requires altering the finalisation process

**6.** There is a clearance problem on formats that is worth re-designing the process
AXMEDIS Environment

Environment set-up (I)

- **Preliminary actions**
  - Retrieve install requirements & documentation
  - Organise work environment following requirements (HW/SW)
  - Organise needed space and infrastructure

- **Select and download tools**
  - Identify needed tools and related install pack
  - Download the install pack
Environment set-up (II)

- **Install tools**
  - Follow install pack instructions (automatic configuration recommended)

- **Configure tools**
  - Insert required data for custom configurations or wherever needed

- **Get acquainted with user interface & commands**
  - Read available documentation, suggestions, tips and FAQs
  - Look at provided examples

AXMEDIS Distribution - Part (I)  
Core Components
Distribution core components

**Objectives**
- Recall basic AXMEDIS database (AXDB) concepts
- Recall basic query support concepts
- Recall basic protection & certification concepts
- Expose basic accounting & reporting concepts

**Outcomes**
- AXMEDIS database management know-how
- AXMEDIS protection & certification usage know-how
- AXMEDIS accounting & reporting usage know-how

Core components
AXMEDIS Database (AXDB)

- Support for both generic & standardized metadata sets (Dublin Core…)
- User selectable metadata set depending on what is relevant for user’s business
- Automatic indexing based on user-selected metadata for each object that is stored
- Multilingual metadata management to improve effectiveness & efficiency of search & retrieve processes

AXDB Architecture

[Diagram showing the AXDB architecture with layers: Relational Database Abstraction Layer, Object Oriented Abstraction Layer, Database Interface, WebServices, Database Web Administrative Interface, Tools via Java calls, Public layers, Internal layers]
Query Support Facts

- Unified language for querying (platform independent)
- Unified language for results

- Management of complex queries on
  - Metadata (author, creators, titles, bit-rate…)
  - Rights (Can I use it in Italy?, Can I burn a DVD? …)

- Support for different data sources
  - Query on AXMEDIS Factory Database
  - Query on own Content Management System
  - Query on P2P network (B2B level)
  - Query on another Query Support (i.e. for Kiosk)

AXMEDIS Query User Interface

- Heading – contains
  - checkbox to address query locations

- Form – contains
  - Dublin core Metadata
  - other general metadata and
  - Available Rights with a sub
  - set of the MPEG 21 Metadata.

- Actions – contains controls to
  - reset all values provided, or to
  - submit queries
Query Support @work

Query Support Web Service

AXDB QS Adaptor  CMS Crawling QS Adaptor  P2P Network QS Adaptor

CMS  AXDB  P2P B2B network

PAR DB

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GUI look and usage
Query Support Results

- **Objects**
  - Object IDs
  - How to recover objects (from P2P network…)
- **Rights related information like**
  - What Can I do with the object
  - Where can I use the object
  - Who can distribute the object
- **Objects related metadata like**
  - Length
  - Creators
  - Bit rate

Protection & Control Process

A Distributor

Post license

New Protected Object: Post ProtInfo (WS)

AXMEDIS Protection Tool

AXMEDIS License Editor

AXMEDIS Protection Manager

AXMEDIS Certifier and Supervisor

AXMEDIS Compliant Players
Protection Manager Support

- **Objectives**
  - Provide the licensing functionality to the system
    - Verification, storage, management, authorisation of user actions
  - Connect clients to AXMEDIS Certifier and Supervisor through secure channels
    - Keep track of user actions, even off-line

- **Outcomes**
  - Several levels of control and governance: PMS Client, PMS Domain and PMS Server
  - Allow on-line and off-line operation to the users

Certifier & Supervisor

- **AXMEDIS certifier and supervisor provides**
  - A single point for user registration and certification both at Consumer and Business level
  - A single certified point for collecting event reporting logs both for accounting and marketing purposes

- **AXMEDIS certifier and supervisor added value**
  - Security by certifying users
  - Control on content usage by registering transaction
  - Accessing statistical information useful for marketing and planning of activities
2) Check user and tool
3) Generate certificate

1) First execution of a tool
4) Install certificate
**AXCS Verification Service**

1) Consume content
2) Verify user and tool (including history of actions)
3) Authorise user
4) User authorised, content consumption allowed

**AXCS Statistics & Reporting Service**

- **Statistic and Reporting Web Service**
- **CAMART**
- **AXCS DB Manager**
- **AXCS DB**
Accounting & Reporting (I)

- **ANONYMOUS LOGS** – Extract logs for statistical or marketing purposes for creating:
  - usage statistics per metadata field (country, content kind, dimension…)
  - publication programs based on certain statistics
  - publication catalogues based on certain statistics

- **Note that**: all logs are in anonymous format, that is no ID are present

Accounting & Reporting (II)

- **NAMED LOGS** - Extract log for administrative purposes like:
  - Billing customers (how many times user XYZ has played this song)
  - Distributing/collecting rights revenues (how many times this song has been played in Italy and who has to pay)

- **Note that**: only the log that are related to objects for which some right is owned
Accounting & Reporting (III)

Architectural details

Each Factory has a single user on AXCS

Many factory users with different privileges

Factory side
AXCS side

Statistics Reporting Web Service
AXCS DB

AXDB

Statistical Client

Reporting Client
CAMART WS

All

All

AXMEDIS Certifier and Supervisor

AXMEDIS Certifier and Supervisor

AXMEDIS Certifier and Supervisor
An example

Practice section

- Query Support
  - Make a query
  - Select items within results

- Protection manager, Certifier & Supervisor
  - Registering AXMEDIS Users
  - Using protected content

- Accounting & reporting statistics
  - Select logs
  - Read logs
AXMEDIS Distribution - Part (II)

Distribution specific & Supporting Tools

AXMEDIS Publishing Tools

- Objectives
  - Introduce AXMEDIS distribution tools
  - Explain their relation with the content distribution chain

- Outcomes
  - Understanding of AXEPTool
  - Understanding of Programme & Publication (P&P)
  - Understanding of AXMEDIS Query on demand
  - Understanding of AXMEDIS distribution mechanism
AXEPTool

**AXEPTool – Definitions**

- AXEPTool comprises a core library & a daemon
- AXEPTool uses P2P protocols.
- AXEPTool uses AXMEDIS protection model
- AXEPTool can be used to:
  - accept connections
  - search and load content over AXMEDIS network
  - distribute AXMEDIS objects in safe manner
**AXEPTool – Services**

- **AXEPTool offers**
  - P2P solution based on BitTorrent client and tracker
  - Making queries with the same Query support interface
  - Download objects with resume/suspend mechanism
  - Publishing of objects
  - Connection with the AXMEDIS content processing GRID for automating publishing and downloads of objects

- **AXMEDIA P2P tool:**
  - Derived from AXEPTool as simplified P2P tool for final users
  - P2P content sharing as above
  - No direct download/publishing

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**Programme & Publication**
P&P overview

**AXMEDIS P&P Editor**
Users create and edit programmes for the multi-channel publication of AXMEDIS objects

**Programme and Publication Engine**

**Distribution Servers**

**AXMEDIS Database Manager**
AXMEDIS databases

**On-Demand**
Request to play/view and AXMEDIS object

P&P Area Tools

- **Programme & Publication**
  - Editor (GUI) to
    - Edit programmes
    - Search
    - Test & Activate
  - Engine to
    - Link to Content Processing area
    - Link to Distribution Servers
    - GUI monitor

- **On-Demand**
AXMEDIS P&P Engine

P&P Engine Work Table

- Program ID: starting time; "programme"; "self" condition;
- ...;

P&P Engine Programme Thread

- Check: On-Demand?
- Parse Programme
- AxCP processing if necessary
- Configure Work Table entry
- Update or reorder Work Table
- Wait for signal to proceed...

AXMEDIS Query On Demand

AXMEDIS Factory

AXMEDIS Editors

Processing Engines and Scheduler GRIDs

AXMEDIS databases

Programme and Publication

AXMEDIS Players

Protection and Supervising tools

AXMEDIS Certifier and Supervisor

AXMEDIS database Area

AXMEDIS Accounting area

AXMEDIS Distributor

AXMEDIS Factory

AXMEDIS Editors
Query On Demand – Rationale

- The user wants to select & download specific content according to some wish
- AXMEDIS provides a simple search mechanism
  - Simple queries are enriched using information on client device and distribution channel
  - User can select a specific content or refine the query
- The P&P Engine adapts On-Demand content to fit with the user’s device (client profile)
  - Content production on-demand based on client & distribution profile

Query On Demand – Procedure

- Queering
  - User can enter a query using a simple web interface
  - Simple queries are enriched using information about “client device” and “distribution channel”
  - A list of matching contents is presented to the user
  - User can either select a specific content or refine the query
- Content retrieving/using
  - Content is produced on demand based on client & distribution profile (if not yet available)
  - Content is downloaded and played on the client device
Practice section

Programme and Publication (P&P)
- P&P Editor
  - Create and edit a P&P programme
  - Querying for Content
  - Activating a programme
- P&P Engine
  - Distribute an activated P&P Programme
  - GUI Monitor

AXMEDIS Distribution - Part (III)

Distribution examples
AXMEDIS Distribution Examples

- **Objectives**
  - Introduce AXMEDIS distribution scenarios
  - Explain their aim and scope
  - Analyze how AXMEDIS tools have been integrated
  - Analyze how AXMEDIS tools have been used

- **Outcomes**
  - Understanding AXMEDIS distribution mechanism
  - Understanding AXMEDIS distribution channels
  - Understanding benefits coming from adoption of AXMEDIS distribution mechanism

AXMEDIS Distribution Scenarios

AXMEDIS for B2B Cooperative Content Production
Distribution via Web

**Aim:**
- Demonstrate some real scenarios where the AXMEDIS framework could be applied for content distribution via web
  - Search content in the AXMEDIS P2P Network (business network)
  - Import acquired contents in the distributor catalogue
  - Distribute content via web

**Overview:**
- Distributor interfaces within the AXMEDIS framework
- Tools and functionalities
- Search and retrieve content from the P2P network
- Publish content in the Distributor catalogue
- End User content license acquisition process

Web Distribution & AXMEDIS

- AXMEDIS Factory
  - AXMEDIS Editors
  - Processing Engines and Scheduler GRIDs
- AXMEDIS databases
- Programme and Publication
- AXMEDIS Players
- Protection and Supervising tools
- AXMEDIS Portal
- AXMEDIS Editors
- AXMEDIS Factory
- Workflows and Management tools
- AKEPTools
- AKEPTools
- AXMEDIS Factory
- AXMEDIS Players
- AXMEDIS Editors
Aim:
- Introduce the kiosk demonstrator
  - In relation to AXMEDIS framework
  - As a distribution channel

Overview:
- The Kiosk within AXMEDIS Architecture
- Content distribution and access to kiosk
- Content selection, acquisition and fruition
Kiosk within AXMEDIS

- AXMEDIS Kiosk Factory
- AXMEDIS Editors
- Processing Engines and Scheduler GRIDs
- AXMEDIS databases
- Programme and Publication
- AXMEDIS Account area
- AXMEDIS Certifier and Supervisor
- Protection Manager Support
- AXMEDIS database

AXMEDIS Players

Mobile & kiosk scenarios

- Content delivery to user
- Content delivery to distributor
- Content sharing via AXEPTool

- AXMEDIS Kiosk Factory
- AXMEDIS Editors
- Processing Engines and Scheduler GRIDs
- AXMEDIS databases
- Programme and Publication
- AXMEDIS Account area
- AXMEDIS Certifier and Supervisor
- Protection Manager Support
- AXMEDIS database

AXMEDIS Players

- AXMEDIS Network
- AXEPTool Area
- AXEPTool
- AXMEDIS Network
- AXMEDIS Players
- AXMEDIS Players
- AXMEDIS Players

- Content delivery to user
- Content delivery to distributor
- Content sharing via AXEPTool

AXMEDIS: www.axmedis.org

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Satellite Distribution

- **Aim:**
  - Introduce the Satellite Data Broadcast (SDB) Demonstrator
    - In relation to AXMEDIS framework
    - As a distribution channel

- **Overview:**
  - The SDB within AXMEDIS Architecture
  - SDB overall use-case
  - Content production and distribution in the SDB system
    - Server side
    - Client side

Web Distribution & AXMEDIS
Satellite Data Broadcast (I)

Satellite Data Broadcast (II)
Demos

- MediaClub
  - MediaClub within AXMEDIS Architecture
  - Tools and functionalities
  - Search and retrieve content from the P2P network
  - Publish content in the catalogue
  - End User content license acquisition process

- Kiosk
  - The Kiosk within AXMEDIS Architecture
  - Catalogue production at the kiosk factory
  - Content distribution and access to kiosk
  - Content selection, acquisition and fruition

- Satellite Distribution
  - Satellite Distribution within AXMEDIS Architecture
  - Tools and functionalities
  - Content distribution interfaced with the P&P
  - Content selection, acquisition and fruition for User

Distribution via Internet

- Server side

- Client side
Kiosk Distribution

- From factory to client

Mobile Distribution

- Server side
- Client side
Satellite Distribution

- From factory to client

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- OMA [www.openmobilealliance.org](http://www.openmobilealliance.org)

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