

## Automating Production of Cross Media Content for Multi-channel Distribution <u>www.AXMEDIS.org</u>

# DE5.0.1.1 AXMEDIS Major Tools User Manuals

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Abstract: This document contains the user manuals of the major tools provided by AXMEDIS

**Keyword List:** Authoring, content editing, content processing, players, GRID, content production, fingerprint estimation, content descriptors, metdata editor, metadata mapper, programme and publication, scheduler, workflow, DRM editor, license editor, plug ins, adaptation, etc.

## **Table of Content**

1 INTRODUCTION	
2 AXMEDIS EDITOR (DSI)	9
2.1 MAIN FUNCTIONALITIES	9
2.2 RELATIONSHIP WITH OTHER TOOLS	
2.3 DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS	
2.3.1 Register the user and certificate the tool	
2.3.2 Edit configuration	
2.3.3 Create a new AXMEDIS Object	
2.3.4 The Activities Window	
2.3.5 The Basic Steps window	
2.3.6 Adding object reference	
2.3.7 Adding embedded object	
2.3.8 Adding Dublin Core metadata	
2.3.9 Open an existing object	
2.3.10 Extract an embedded resource	
2.3.11 Modifying an AXMEDIS Object stored on Database	
2.3.12 The Query dialog	
2.3.13 The resource property dialog	
2.3.14 The Content processing plugins	
2.4 THE AXMEDIS EDITOR MENUS	
2.4.1 The File menu	
2.4.2 Edit menu	
2.4.3 The Resource Viewer menu	
2.5 AXMEDIS RESOURCE VIEWER (DSI)	
2.5.1 Main functionalities	
2.5.2 Relationship with other tools	
2.5.3 Image Viewer - Detailed description of the functionalities and Screenshots	
2.5.4 Audio Player - Detailed description of the functionalities and Screenshots	
2.5.5 Video Player - Detailed description of the functionalities and Screenshots	
2.5.6 Document Viewer - Detailed description of the functionalities and Screenshots	
2.5.7 SMIL Player - Detailed description of the functionalities and Screenshots	
<ul> <li>2.5.8 MPEG4 Player - Detailed description of the functionalities and Screenshots</li> <li>2.6 AXMEDIS METADATA EDITOR (UNIVLEEDS)</li> </ul>	
2.6 AAMEDIS METADATA EDITOR (UNIV LEEDS) 2.6.1 Main functionalities	
2.6.2 Relationship with other tools	
2.6.3 Detailed description of the functionalities and Screenshots	
2.6.3.1 Adding Metadata Elements	
2.6.3.2 Inserting Metadata Elements	
2.6.3.3 Deleting Metadata Elements	
2.6.3.4 Editing Metadata Elements	
2.7 AXMEDIS METADATA MAPPER EDITOR (UNIVLEEDS)	
2.7.1 Main functionalities	
2.7.2 Relationship with other tools	
2.7.3 Detailed description of the functionalities and Screenshots	
2.7.3.1 Creating a Transformation XSLT to map Metadata	
<ul> <li>2.7.3.2 Creating a Transformation XSLT to map Metadata</li> <li>2.7.3.3 Transforming Metadata using the XSLT</li> </ul>	
2.8 AXMEDIS VISUAL AND BEHAVIOUR EDITOR (EPFL)	
2.8 AXMEDIS VISUAL AND BEHAVIOUR EDITOR (ELTEL)	
2.8.2 Relationship with other tools	
2.8.3 Detailed description of the functionalities and Screenshots	
AXMEDIS	2
	2

	2.8.3.1 General Comma	ands	
	2.8.3.2 Tree view part		
		t	
		part	
		OR (FUPF)	
		S	
		ther tools	
		of the functionalities and Screenshots	
		w Editor (IRC)	
		ties	
		n other tools	
		ion of the functionalities and Screenshots	
		ON INFORMATION EDITOR (FHGIGD)	
		ties	
	2.11.2 Relationship with	n other tools	
		ion of the functionalities and Screenshots	
		tection Information	
	2.11.3.2 Editing of Prote	ction Information	
3	<b>AXMEDIS PC PLAYER</b> (	DSI)	
		38	
		THER TOOLS.	
		N OF THE FUNCTIONALITIES AND SCREENSHOTS	
4	AXMEDIS PDA PLAYER	R (TISCALI, DSI)	
	4.1 MAIN FUNCTIONALITIE	S	125
		THER TOOLS	
		N OF THE FUNCTIONALITIES AND SCREENSHOTS	
_			
5		NTROL (DSI)	
	5.1 MAIN FUNCTIONALITIE	S	
		THER TOOLS	
		N OF THE FUNCTIONALITIES AND SCREENSHOTS	
		Ctrl	
		Interface	
		nterface	
		age	
	-	-	
6		R (FUPF)	
		S	
		THER TOOLS	
	6.3 DETAILED DESCRIPTION	N OF THE FUNCTIONALITIES AND SCREENSHOTS	
7	AXMEDIS DRM VIEWE	R (FUPF)	
		S	
		THER TOOLS	
		N OF THE FUNCTIONALITIES AND SCREENSHOTS	
0			
8		R (DSI)	
		S	
	8.1.5 MS Windows Firew	all Alert at startup	
	8.1.5 MS Windows Firew 8.1.6 Configuration	/all Alert at startup	
	<ul><li>8.1.5 MS Windows Firew</li><li>8.1.6 Configuration</li><li>8.1.7 Tools, Viewers and</li></ul>	all Alert at startup	

8.3       DEFAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSIOTS       151         8.3.1       Creating a new rule       151         8.3.2       Creating an ew rule       151         8.3.3       Loading an existing rule       153         8.3.4       Editing a rule       153         8.3.5       Debugging Rule functionalities       154         8.3.6       Activating a rule       155         8.3.6       Activating a selection Parameter       159         8.3.7       Creating a selection form/to the Selection Archive       159         8.3.1       Load and Save a selection from/to the Selection Archive       159         8.3.1       Load and Save a selection from/to the Selection Archive       159         8.3.1       Load and Save a selection from/to the Selection Archive       160         8.4       HOW TO CREATE A RULE, A SMALL TUTORIAL       160         8.4.1       EXAMPLE 2 - Rule with Parameters (Simple rule)       160         8.4.2       EXAMPLE 2 - Rule with Parameters (Simple rule)       166         8.4.3       EXAMPLE 3 - Rule for creating AXMEDIS Object.       167         9.2       Rei Arthosing with Oriter FOOLS       167         9.3       Remotes Executors Table       167         9.3	8.2	RELATIONSHIP WITH OTHER TOOLS	
8.3.2       Creating a new rule       151         8.3.3       Loading an existing rule       153         8.3.4       Editing a rule functionalities       154         8.3.5       Debugging Rule functionalities       154         8.3.6       Activating a rule       155         8.3.7       Creating a selection Parameter       156         8.3.8       Fiding a selection Parameter       159         8.3.9       Testing a query       159         8.3.10       Load and Save a selection from/to the Selection Archive       159         8.3.11       Load and Save a selection from/to the File System       160         8.4       HOW TO CREATE A RULE, A SMALL TUTORIAL       160         8.4.1       EXAMPLE 2 – Rule with Parameters       166         8.4.2       EXAMPLE 2 – Rule with Parameters       166         8.4.3       EXAMPLE 2 – Rule with Parameters       167         9.1       MAIN FUNCTIONALITIES       167         9.2       RELATIONSHIP WITH OTHER FOOLS       167         9.3       Relation Stable       167         9.3       Relation Stable       167         9.3       Reles Constructors Table       167         9.3       Relesolos Table       177 <td></td> <td></td> <td></td>			
83.3       Loading an existing rule       152         83.4       Leiding a rule       153         83.5       Debugging Rule functionalities       154         83.6       Creating a selection Parameter       156         83.7       Creating a selection Parameter       159         83.8       Editing a selection Parameter       159         83.10       Load and Save a selection from/to the File System       160         83.11       Load and Save a selection from/to the File System       160         83.12       Conclusion       160         84.1       LOAd NTO CREATE A RULE, A SMALL TUTORIAL       160         84.1       EXAMPLE 1 – Rule with Parameters (Simple rule)       160         84.3       EXAMPLE 3 – Rule for creating AXMEDIS Object       165         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALTIES       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3       DEFILE ENGINE - RULE SCHEDULER (DSI)       167         9.3       Remote Executors Table.       169         9.3       Remote Executors Table.       167         9.3.2       Rule Properies Dialog.       171         9.3.3       Re	8.3	B.1 Editing on AXCP Rule	
8.3.4       Editing a rule       153         8.3.5       Debugging Rule functionalities       154         8.3.6       Activating a rule       155         8.3.7       Creating a selection Parameter       159         8.3.8       Editing a selection Parameter       159         8.3.9       Testing a query       159         8.3.10       Load and Save a selection from/to the Selection Archive       159         8.3.11       Load and Save a selection from/to the File System       160         8.3.12       Conclusion       160         8.4       HOW TO CREATE A RULE, A SMALL TUTORIAL       160         8.4.1       EXAMPLE 2 – Rule without parameters (Simple rule)       160         8.4.2       EXAMPLE 2 – Rule without parameters (Simple rule)       160         8.4.3       EXAMPLE 2 – Rule without parameters (Simple rule)       160         8.4.4       EXAMPLE 2 – Rule without parameters (Simple rule)       167         9.1       MAIN FUNCTIONALITIES       167         9.2       RELATIONSHIP WITH OTHER TOOLS       167         9.3       Reture DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3       Reture DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Menu	8.3		
8.3.5       Debugging Rule functionalities       154         8.3.6       Activating a rule       156         8.3.7       Creating a selection Parameter       159         8.3.8       Editing a selection from/to the Selection Archive       159         8.3.10       Load and Save a selection from/to the Selection Archive       159         8.3.11       Load and Save a selection from/to the File System       160         8.3.12       Conclusion       160         8.41       EXAMPLE 1 – Rule without parameters (Simple rule)       160         8.42       EXAMPLE 2 – Rule with Parameters (Simple rule)       160         8.41       EXAMPLE 3 – Rule for creating XAMEDIS Object       166         8.42       EXAMPLE 3 – Rule for creating XAMEDIS Object       167         9.1       Man FUNCTIONALITIES       167         9.2       Relation State Burn Orthe FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Menu bar       167         9.3.2       Rule Solos Table       170         9.3.3       Renote Executors Table       171         9.3.4       Rule Solos Table       171         9.3.5       Rule Properties Dialog       171         9.3.6       Rule Parameters       172         <			
83.6       Activating a rule.       156         83.7       Creating a selection Parameter       159         83.8       Fidting a selection Parameter       159         83.9       Testing a query.       159         83.10       Load and Save a selection from/to the Selection Archive.       159         83.11       Load and Save a selection from/to the File System       160         83.12       Conclusion       160         84.1       Low TO CREATE A RULE, A SMALL TUTORIAL.       160         84.1       EXAMPLE 1 – Rule without parameters (Simple rule)       160         84.2       EXAMPLE 3 – Rule for creating AXMEDIS Object.       167         9.1       MAIN FUNCTIONALITIES.       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3       Menu bar       167         9.3       Remote Executors Table.       171         9.3.4       Remote Executors Table.       171         9.3.5       Rule Stops Table.       171         9.3.6       Rule Stops Table.       171         9.3.7       Logs Dialog.       171         9.3.8       Suspend Rule Dialog.       171         9.3.9       Logs Dialog.       171         9.3.1<			
83.7       Creating a selection Parameter       156         83.8       Testing a query       159         83.9       Testing a query       159         83.10       Load and Save a selection from/to the Selection Archive       159         83.11       Load and Save a selection from/to the Selection Archive       159         83.11       Load and Save a selection from/to the File System       160         84       How TO CREATE A RULE, A SMALL TUTORIAL       160         84.1       EXAMPLE 1 – Rule with parameters (Simple rule)       160         84.2       EXAMPLE 3 – Rule for creating AXMEDIS Object       164         84.3       EXAMPLE 3 – Rule of the Parameters       167         9.1       MAIN FUNCTIONALITIES       167         9.2       RELATIONSHIP WITH OTHER TOOLS       167         9.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Remote Executors Table       169         9.3.3       Remote Executors Table       170         9.3.4       Auxitiary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Rule Dialog       171         9.3.7       Logs Dialog       171         9.3.1			
8.3.8       Editing a selection Parameter       159         8.3.9       Testing a query       159         8.3.10       Load and Save a selection from/to the Selection Archive       159         8.3.11       Load and Save a selection from/to the File System       160         8.3.12       Conclusion       160         8.3.12       Conclusion       160         8.4       How TO CREATE A RULE, A SMALL TUTORIAL       160         8.4.1       EXAMPLE 2 – Rule with Parameters (Simple rule)       160         8.4.2       EXAMPLE 3 – Rule for creating AXMEDIS Object       166         8.4.3       EXAMPLE 5 – Rule SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALTHES       167         9.2       RELATIONSHIP WITH OTHER TOOLS       167         9.3.1       Menu bar       167         9.3.2       Reule Evolutos Table       169         9.3.3       Menu bar       167         9.3.4       Auxiliary dialogs       171         9.3.5       Renote Executors Table       169         9.3.1       Auxiliary dialogs       171         9.3.4       Auxiliary dialogs       171         9.3.5       Renote Executors Table       171         9.3.6			
8.3.9       Testing a query.       159         8.3.10       Load and Save a selection from/to the Selection Archive.       159         8.3.11       Load and Save a selection from/to the File System.       160         8.3.12       Conclusion       160         8.4       How TO CREATE A RULE, A SMALL TUTORIAL.       160         8.4.1       EXAMPLE 1 - Rule with parameters.       160         8.4.2       EXAMPLE 3 - Rule of rereating AXMEDIS Object.       165         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALITIES.       167         9.2       REATIONSHIP WITH OTHER TOOLS.       167         9.3       DEFAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS.       167         9.3.1       Remote Executors Table.       169         9.3.2       Rules/Jobs Table.       169         9.3.3       Remote Executors Table.       170         9.3.4       Auxiliary dialogs.       171         9.3.5       Rule Dialog.       171         9.3.6       Reactue Dreating Parameters.       171         9.3.7       Logs Dialog.       171         9.3.8       Rule Zonora Table.       171         9.3.9       Preferences Dialog.			
83.10       Load and Save a selection from/to the File System.       159         83.11       Load and Save a selection from/to the File System.       160         83.12       Conclusion       160         84.1       HOW TO CREATE A RULE, A SMALL TUTORIAL.       160         84.1       EXAMPLE 1 – Rule with parameters (Simple rule)       160         84.2       EXAMPLE 3 – Rule with Parameters.       164         84.3       EXAMPLE 3 – Rule with Parameters.       166         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALITIES.       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3.1       Menu bar.       166         9.3.2       Rules/lobs Table       167         9.3.3       Remote Executors Table.       167         9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog.       171         9.3.6       Executor Profile Dialog.       171         9.3.7       Rule Properties Dialog.       171         9.3.8       Suspend Rule Dialog.       171         9.3.9       Preferences Dialog.       171         9.3.1       Attivating and stopping a rule       173 <td></td> <td></td> <td></td>			
83.11       Load and Save a selection from/to the File System.       160         83.12       Conclusion       160         84.1       HOW TO CREATE A RULE, A SMALL TUTORIAL.       160         84.1       EXAMPLE 1 – Rule without parameters (Simple rule)       160         84.2       EXAMPLE 2 – Rule with parameters (Simple rule)       160         84.3       EXAMPLE 3 – Rule for creating AXMEDIS Object.       165         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALITIES       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.2       Rules/lobs Table       169         9.3.3       Remote Executors Table       169         9.3.4       Rules/lobs Table       171         9.3.5       Rule Properties Dialog       171         9.3.6       Rule properties Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Suspend Rule Dialog       171         9.3.10       Configuration Parameters       172         9.3.12       Conclusion			
8.3.12       Conclusion       160         8.4       How To CREATE A RULE, A SMALL TUTORIAL       160         8.4.1       EXAMPLE 1 – Rule without parameters (Simple rule)       160         8.4.1       EXAMPLE 2 – Rule with Parameters.       164         8.4.3       EXAMPLE 3 – Rule with Parameters.       164         8.4.3       EXAMPLE 3 – Rule for creating AXMEDIS Object.       165         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALITIES.       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3       Menu bar       167         9.3       Menu bar       167         9.3.1       Menu bar       167         9.3.2       Rules/Jobs Table       160         9.3.3       Rule for portice Dialog       171         9.3.4       Auxiliary dialogs       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suppend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rul			
8.4       How to CREATE A RULE, A SMALL TUTORIAL		•	
84.1       EXAMPLE 1 – Rule with Qrameters (Simple rule)       160         84.2       EXAMPLE 3 – Rule for creating AXMEDIS Object       165         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALITIES       167         9.2       RELATIONSHIP WITH OTHER TOOLS       167         9.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Menu bar       167         9.3.3       Remote Executors Table       167         9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.1       Activating and stopping a rule       173         9.3.10       Conclusion       173         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       174         9.3.12       Conclusion       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174      <			
8.4.2       EXAMPLE 3 – Rule with Parameters.       164         8.4.3       EXAMPLE 3 – Rule for creating AXMEDIS Object.       165         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALITIES.       167         9.2       ReLATIONSHIP WITH OTHER TOOLS.       167         9.3.1       Menu bar       167         9.2.2       Relactions of the FUNCTIONALITIES AND SCREENSHOTS       167         9.3.2       Rules/Jobs Table       166         9.3.3       Remote Executors Table       169         9.3.4       Auxiliary dialogs.       171         9.3.5       Rule Properties Dialog.       171         9.3.6       Rule Dialog.       171         9.3.7       Logs Dialog.       171         9.3.8       Suspend Rule Dialog.       171         9.3.9       Preferences Dialog.       171         9.3.10       Configuration Parameters.       172         9.3.11       Activating and stopping a rule.       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES.       174         10.2       RELATIONSHIP WITH OTHER TOOLS.       174         10.4       HOW TO USE THE			
84.3       EXAMPLE 3 – Rule for creating AXMEDIS Object.       165         9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       Man FUNCTIONALITIES.       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Menu bar       167         9.3.2       Relexitobs Table       167         9.3.3       Remote Executors Table       167         9.3.4       Auxiliary dialogs.       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       174         10.1       MAN FUNCTIONALITIES       174         10.2       ReLATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10			
9       AXMEDIS RULE ENGINE - RULE SCHEDULER (DSI)       167         9.1       MAIN FUNCTIONALITIES       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Menu bar       167         9.3.2       Rules/Jobs Table       169         9.3.3       Remote Executors Table.       169         9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         10       AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)       174         10.1       MAIN FUNCTIONALITIES       174         10.2       ReLATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       HOW TO USE THE GRID AND RULE EXECUTOR INALIAND, A SMALL TUTORIAL			
9.1       MAIN FUNCTIONALITIES       167         9.2       RELATIONSHIP WITH OTHER TOOLS.       167         9.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Menu bar       169         9.3.2       Rules/Jobs Table       169         9.3.3       Remote Executors Table       169         9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Conclusion       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.2       ReLATIONSHIP WITH OTHER TOOLS       174         10.3       Detrailed Discorption or the FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How To USE THE GRID AND RULE EXECUTOR (DSI)       174         10.4       Rule execution in the AXCP GRID environment.       175         10.4.1			
9.2       RELATIONSHIP WITH OTHER TOOLS	9 A2	XMEDIS RULE ENGINE - RULE SCHEDULER (DSI)	
9.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       167         9.3.1       Menu bar       167         9.3.2       Rules/Jobs Table       169         9.3.3       Remote Executors Table       170         9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.1       Activating and stopping a rule       173         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       HOW TO USE THE GRID AND RULE EXECUTOR (DSI)       175         10.4.1       Rule execution by means the stand alone version of the Rule Executor.       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.3       DETAILED DESCRPTION O	9.1	MAIN FUNCTIONALITIES	
9.3.1       Menu bar       167         9.3.2       Rules/Jobs Table       169         9.3.3       Remote Executors Table       170         9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.1       Rule execution by means the stand alone version of the Rule Executor.       178         11.1       MAIN FUNCTIONALITIES       179       11.1         11.3	9.2	RELATIONSHIP WITH OTHER TOOLS	
9.3.2       Rules/Jobs Table       169         9.3.3       Remote Executors Table       170         9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         10 <b>AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)</b> 174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.4       HOW TUSE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution in the AXCP GRID environment.       176 <t< td=""><td>9.3</td><td>DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS</td><td></td></t<>	9.3	DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS	
9.3.3       Remote Executors Table       170         9.3.4       Auxillary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How to USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor       178         11.1       MAIN FUNCTIONALITIES       179         11.2       RELATIONSHIP WITH OTHER TOOLS       179         11.3       DETAILED DESCRPTION OF THE FUN			
9.3.4       Auxiliary dialogs       171         9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       HOW TO USE THE GRID AND RULE EXECUTOR (DSI)       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor.       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES.       179         11.2       RELATIONSHIP WITH OTHER TOOLS.       179         11.3       Detrailed DESCRIPTION OF			
9.3.5       Rule Properties Dialog       171         9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor.       178         11       AXINEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.3       ACTevating P&P Programme       182         11.3.1       Creating a P&P Programme       182         11.3.2       Loading an Existing P&P Programme       183         11.			
9.3.6       Executor Profile Dialog       171         9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         10       AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)       174         10.1       Main FUNCTIONALITIES       174         10.2       RELATIONSHIP WTH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTION ALITIES AND SCREENSHOTS       174         10.4       How TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor       178         11       MAIN FUNCTIONALITIES       179         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       181         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       179         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       179         11.3	2.0		
9.3.7       Logs Dialog       171         9.3.8       Suspend Rule Dialog       171         9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.14       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How to use the GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor.       179         11.1       MAX			
9.3.8       Suspend Rule Dialog.       171         9.3.9       Preferences Dialog.       171         9.3.10       Configuration Parameters.       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       173         9.3.12       Conclusion       173         9.3.12       Conclusion       173         9.3.14       Activating and stopping a rule       173         9.3.15       Conclusion       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How to USE THE GRID AND RULE EXECUTOR MALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES       179         11.2       RELATIONSHIP WITH OTHER TOOLS       179         11.3       DETAILED DESCRI			
9.3.9       Preferences Dialog       171         9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       173         10       AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       HOW TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES       179         11.2       RELATIONSHIP WITH OTHER TOOLS       179         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       181         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       182         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       182 <td></td> <td></td> <td></td>			
9.3.10       Configuration Parameters       172         9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         9.3.12       Conclusion       173         10       AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How To USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor.       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES       179         11.2       RELATIONSHIP WITH OTHER TOOLS.       179         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       181         11.3.1       Creating a P&P Programme       182         11.3.2       Loading an Existing P&P Programme       182         11.3.3       Editing a P&P Programme       182         11.3.4       Queryi		$\mathcal{U}$	
9.3.11       Activating and stopping a rule       173         9.3.12       Conclusion       173         10       AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       HOW TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor.       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES.       179         11.2       RELATIONSHIP WITH OTHER TOOLS.       179         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       181         11.3.1       Creating a P&P Programme       182         11.3.2       Loading an Existing P&P Programme       182         11.3.3       Editing a P&P Programme       182         11.3.4       Querying for AXMEDIS Objects in the P&P Editor       184         11.3.4       Querying for AXMEDIS Objects in the P&P Editor       185 <td></td> <td></td> <td></td>			
9.3.12       Conclusion       173         10       AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)       174         10.1       MAIN FUNCTIONALITIES.       174         10.2       RELATIONSHIP WITH OTHER TOOLS.       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How to USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor.       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES.       179         11.2       RELATIONSHIP WITH OTHER TOOLS.       181         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       182         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       181         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       182         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       182         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       182         11.3       DETAILED DESCRIPTON OF THE FUNCTIONALITIES AND SCREENSHOTS <td< td=""><td></td><td></td><td></td></td<>			
10       AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)       174         10.1       MAIN FUNCTIONALITIES       174         10.2       RELATIONSHIP WITH OTHER TOOLS       174         10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       HOW TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES       179         11.2       RELATIONSHIP WITH OTHER TOOLS       179         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       181         11.3.1       Creating a P&P Programme       182         11.3.2       Loading an Existing P&P Programme       182         11.3.4       Querying for AXMEDIS Objects in the P&P Editor       184         11.3.5       Testing a complete P&P Programme       185         11.3.6       Activating and Stopping a P&P Programme       186         11.3.7       Configuring the P&P Editor       186         11.3.7       Configuring the P&P Editor			
10.1MAIN FUNCTIONALITIES17410.2RELATIONSHIP WITH OTHER TOOLS17410.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS17410.4HOW TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL17510.4.1Rule execution in the AXCP GRID environment17510.4.2Rule execution by means the stand alone version of the Rule Executor17811AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)17911.1MAIN FUNCTIONALITIES17911.2RELATIONSHIP WITH OTHER TOOLS17911.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor18611.3.7Configuring the P&P Editor18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS18812.3RELATIONSHIP WITH OTHER TOOLS18812.4MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS18812.3RELATIONSHIP WITH OTHER TOOLS <t< td=""><td></td><td></td><td></td></t<>			
10.2RELATIONSHIP WITH OTHER TOOLS	10	AXMEDIS RULE ENGINE - RULE EXECUTOR (DSI)	
10.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       174         10.4       How to use the GRID and Rule Executor stand alone, a SMALL TUTORIAL       175         10.4.1       Rule execution in the AXCP GRID environment.       175         10.4.2       Rule execution by means the stand alone version of the Rule Executor.       178         11       AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)       179         11.1       MAIN FUNCTIONALITIES.       179         11.2       RELATIONSHIP WITH OTHER TOOLS.       179         11.3       DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS       181         11.3.1       Creating a P&P Programme       182         11.3.2       Loading an Existing P&P Programme       182         11.3.3       Editing a P&P Programme       183         11.3.4       Querying for AXMEDIS Objects in the P&P Editor       184         11.3.5       Testing a complete P&P Programme       185         11.3.6       Activating and Stopping a P&P Programme       186         11.3.7       Configuring the P&P Editor       186         11.3.7       Configuring the P&P Editor       186         12       AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)       188         12.1       MAIN FUNCTIONALITIES <td>10.1</td> <td>MAIN FUNCTIONALITIES</td> <td></td>	10.1	MAIN FUNCTIONALITIES	
10.4HOW TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL17510.4.1Rule execution in the AXCP GRID environment.17510.4.2Rule execution by means the stand alone version of the Rule Executor.17811AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)17911.1MAIN FUNCTIONALITIES.17911.2RELATIONSHIP WITH OTHER TOOLS.17911.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor.18411.3.5Testing a omplete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor.18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS18812.3RELATIONSHIP WITH OTHER TOOLS18812.4MAIN FUNCTIONALITIES18812.5RELATIONSHIP WITH OTHER TOOLS18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS18813.4QUERY TOOLS18814.5RELATIONSHIP WITH OTHER TOOLS188	10.2	RELATIONSHIP WITH OTHER TOOLS	
10.4.1Rule execution in the AXCP GRID environment	10.3		
10.4.2Rule execution by means the stand alone version of the Rule Executor.17811 <b>AXMEDIS PROGRAMME &amp; PUBLICATION EDITOR (UNIVLEEDS)</b> 17911.1MAIN FUNCTIONALITIES.17911.2RELATIONSHIP WITH OTHER TOOLS.17911.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor.18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor.18612 <b>AXMEDIS PROGRAMME &amp; PUBLICATION ENGINE (UNIVLEEDS)</b> 18812.1MAIN FUNCTIONALITIES.18812.2RELATIONSHIP WITH OTHER TOOLS.188	10.4	HOW TO USE THE GRID AND RULE EXECUTOR STAND ALONE, A SMALL TUTORIAL	
11AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)17911.1MAIN FUNCTIONALITIES17911.2RELATIONSHIP WITH OTHER TOOLS17911.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS188			
11.1MAIN FUNCTIONALITIES.17911.2RELATIONSHIP WITH OTHER TOOLS.17911.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor.18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS188	10	.4.2 Rule execution by means the stand alone version of the Rule Executor	
11.1MAIN FUNCTIONALITIES.17911.2RELATIONSHIP WITH OTHER TOOLS.17911.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor.18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS188	11	AXMEDIS PROGRAMME & PUBLICATION EDITOR (UNIVLEEDS)	
11.2RELATIONSHIP WITH OTHER TOOLS.17911.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS188			
11.3DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS18111.3.1Creating a P&P Programme18211.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS188			
11.3.1       Creating a P&P Programme       182         11.3.2       Loading an Existing P&P Programme       182         11.3.3       Editing a P&P Programme       183         11.3.4       Querying for AXMEDIS Objects in the P&P Editor       184         11.3.5       Testing a complete P&P Programme       185         11.3.6       Activating and Stopping a P&P Programme       186         11.3.7       Configuring the P&P Editor       186         12       AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)       188         12.1       MAIN FUNCTIONALITIES       188         12.2       RELATIONSHIP WITH OTHER TOOLS       188			
11.3.2Loading an Existing P&P Programme18211.3.3Editing a P&P Programme18311.3.4Querying for AXMEDIS Objects in the P&P Editor18411.3.5Testing a complete P&P Programme18511.3.6Activating and Stopping a P&P Programme18611.3.7Configuring the P&P Editor18612AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)18812.1MAIN FUNCTIONALITIES18812.2RELATIONSHIP WITH OTHER TOOLS188			
11.3.3       Editing a P&P Programme       183         11.3.4       Querying for AXMEDIS Objects in the P&P Editor       184         11.3.5       Testing a complete P&P Programme       185         11.3.6       Activating and Stopping a P&P Programme       186         11.3.7       Configuring the P&P Editor       186         12       AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)       188         12.1       MAIN FUNCTIONALITIES       188         12.2       RELATIONSHIP WITH OTHER TOOLS       188			
11.3.4       Querying for AXMEDIS Objects in the P&P Editor.       184         11.3.5       Testing a complete P&P Programme       185         11.3.6       Activating and Stopping a P&P Programme       186         11.3.7       Configuring the P&P Editor       186         12       AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)       188         12.1       MAIN FUNCTIONALITIES       188         12.2       RELATIONSHIP WITH OTHER TOOLS       188			
11.3.5       Testing a complete P&P Programme       185         11.3.6       Activating and Stopping a P&P Programme       186         11.3.7       Configuring the P&P Editor       186         12       AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)       188         12.1       MAIN FUNCTIONALITIES       188         12.2       RELATIONSHIP WITH OTHER TOOLS       188			
11.3.6       Activating and Stopping a P&P Programme       186         11.3.7       Configuring the P&P Editor       186         12       AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)       188         12.1       MAIN FUNCTIONALITIES       188         12.2       RELATIONSHIP WITH OTHER TOOLS       188			
11.3.7       Configuring the P&P Editor       186         12       AXMEDIS PROGRAMME & PUBLICATION ENGINE (UNIVLEEDS)       188         12.1       MAIN FUNCTIONALITIES       188         12.2       RELATIONSHIP WITH OTHER TOOLS       188			
12.1       Main functionalities			
12.1       Main functionalities	12	AXMEDIS PROCRAMME & PUBLICATION ENCINE (UNIVEREDS)	199
12.2 Relationship with other tools			
12.3 DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS			
	12.3	DETAILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS	

13	AXMI	EDIS PROGRAMME & PUBLICATION ENGINE MONITOR (UNIVLEEDS)	190
13.1	MA	IN FUNCTIONALITIES	190
13.2		ATIONSHIP WITH OTHER TOOLS	
13.3	B Det	AILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS	190
-	3.3.1	Running the Monitor	
	3.3.2	Status Information	
1	3.3.3	Programme Managements	190
14	AXM	EDIS WORKFLOW AND WORKFLOW MANAGER - OPENFLOW (IRC)	191
14.1	Ma	IN FUNCTIONALITIES	191
14.2		ATIONSHIP WITH OTHER TOOLS	
14.3		AILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS	
15	AXMI	EDIS WORKFLOW AND WORKFLOW MANAGER – MICROSOFT BIZTALK (IRC)	200
15.1	I MA	IN FUNCTIONALITIES	200
15.2		ATIONSHIP WITH OTHER TOOLS	
15.3		AILED DESCRIPTION OF THE FUNCTIONALITIES AND SCREENSHOTS	
16		EDIS PLUGINS	
16.1		DIO ADAPTATION PLUGIN (EPFL)	
	6.1.1	Main functionalities	
	6.1.2	Relationship with other tools	
	6.1.3	Detailed description of the functionalities and Screenshots	
	16.1.3.		
	16.1.3.2		
160	16.1.3.		
		DIO DESCRIPTOR PLUGIN (EPFL)	
	6.2.1 6.2.2	Main functionalities Relationship with other tools	
	6.2.3	Detailed description of the functionalities and Screenshots	
1	16.2.3.	•	
	16.2.3.2	2 Segmentation into Silence / Speech / Noise / Music	
	16.2.3.3		
16.3	16.2.3.4 MI	4 Tempo detection LTIMEDIA ADAPTATION PLUGIN (EPFL)	
	6.3.1	Main functionalities	
	6.3.2	Relationship with other tools	
	6.3.3	Detailed description of the functionalities and Screenshots	
	16.3.3.	EXTRACT MEDIA TRACK	
	16.3.3.2		
	16.3.3.		
	16.3.3.4 16.3.3.5		
	16.3.3.0		
	16.3.3.7	7 DELAY TRACK	232
	16.3.3.8		
	16.3.3.9		
16.4		/PTLIB PLUGIN (DIPITA)	
	6.4.1	Main functionalities	
	6.4.2	Relationship with other tools	
1	6.4.3	Detailed description of the functionalities and Screenshots	
16.5	5 LAN	IGUAGE GUESSER PLUGIN (DIPITA)	
	6.5.1	Main functionalities	
	6.5.2	Relationship with other tools	
	6.5.3	Detailed description of the functionalities and Screenshots	
16.6		GIARISM DETECTION PLUGIN (DIPITA)	
	6.6.1 6.6.2	Main functionalities	
	6.6.3	Relationship with other tools Detailed description of the functionalities and Screenshots	
16.7		CUMENT DESCRIPTOR EXTRACTOR PLUGIN (DIPITA)	
- 0. /	200		···· - · -

16.7.1	Main functionalities	
16.7.2	Relationship with other tools	
16.7.3	Detailed description of the functionalities and Screenshots	
16.8 Doc	CUMENT ADAPTATION PLUGIN (DIPITA)	
16.8.1	Main functionalities	
16.8.2	Relationship with other tools	
16.8.3	Detailed description of the functionalities and Screenshots	
	DIO FP PLUGIN (FHGIGD)	
16.9.1	Main functionalities	
16.9.2	Relationship with other tools	
16.9.3	Detailed description of the functionalities and Screenshots	
	12ANY - AUDIO FP PLUGIN (FHGIGD)	
16.10.1	Main functionalities	
16.10.2	Relationship with other tools	
16.10.3	Detailed description of the functionalities and Screenshots	
16.11 V 16.11.1	/IDEO FP PLUGIN (FHGIGD) Main functionalities	
16.11.1	Relationship with other tools	
16.11.2	Detailed description of the functionalities and Screenshots	
	Generic Resource Files FP Plugin (FHGIGD)	
16.12.1	Main functionalities	
16.12.2	Relationship with other tools	
16.12.2	Detailed description of the functionalities and Screenshots	
	/IDEO DESCRIPTOR PLUGIN (FHGIGD)	
16.13.1	Main functionalities	
16.13.2	Relationship with other tools	
16.13.3	Detailed description of the functionalities and Screenshots	
16.14 V	IDEO ADAPTATION PLUGIN (FHGIGD)	
16.14.1	Main functionalities	
16.14.2	Relationship with other tools	
16.14.3	Detailed description of the functionalities and Screenshots	
16.15 V	Vorkflow Editor Plugin (IRC)	
16.15.1	Main functionalities	
16.15.2	Relationship with other tools	
16.15.3	Detailed description of the functionalities and Screenshots	
	Vorkflow Rule Editor Plugin (IRC)	
16.16.1	Main functionalities	
16.16.2	Relationship with other tools	
16.16.3	Detailed description of the functionalities and Screenshots	
	Vorkflow Engine Plugin (IRC)	
16.17.1	Main functionalities	
	Relationship with other tools	
16.17.3	Detailed description of the functionalities and Screenshots	
	INGTONE ADAPTATION PLUGIN (IRC)	
16.18.1 16.18.2	Main functionalities Relationship with other tools	
16.18.3	Detailed description of the functionalities and Screenshots	
16.18.3		
16.18.3		
16.18.3		
16.18.3	.4 Clip Function	
	MAGE PROCESSING PLUGIN (DSI)	
16.19.1	Main functionalities	
16.19.2	Relationship with other tools	
16.19.3	Detailed description of the functionalities and Screenshots	
16.19.3		
16.19.3 16.19.3	1	
16.19.3		
16.19.3		
16 19 3	0	295

16.19.3.7	Blur	
16.19.3.8	GaussianBlur	
16.19.3.9	Median	
16.19.3.10	Mirror	
16.19.3.11	Noise	
16.19.3.12	Despeckle	
16.19.3.13	Equalize	
16.19.3.14	Enhance	
16.19.3.15	ExtractChannel	
16.19.3.16	Grayscale	
16.19.3.17	Magnify	
16.19.3.18	Minify	
16.19.3.19	Modulate	
16.19.3.20	Monochrome	
16.19.3.21	Negate	
16.19.3.22	Normalize	
16.19.3.23	OilPaint	
16.19.3.24	Quality	
16.19.3.25	Quantize	
16.19.3.26	Raise	
16.19.3.27	ReduceNoise	
16.19.3.28	Replace	
16.19.3.29	FloodFill	
16.19.3.30	Roll	
16.19.3.31	Rotate	
16.19.3.32	Scale	
16.19.3.33	Shear	
16.19.3.34	Shade	
16.19.3.35	Spread	
16.19.3.36	SetOpacity	
16.19.3.37	SubImage	
16.19.3.38	GetInfo	
16.19.3.39	SetMaskColour	
16.19.3.40	Paste	
16 19 3 41	Test	317

### 1 Introduction

This deliverable aim is to describe the User Manuals of AXMEDIS tools. These tools are the following:

- AXMEDIS Editor
- AXMEDIS Player
- AXMEDIS DRM Editor
- AXMEDIS DRM Viewer
- AXMEDIS ContProc Rule Editor
- AXMEDIS Rule Scheduler
- AXMEDIS Prog&Pub Editor
- AXMEDIS Prog&Pub Engine
- AXMEDIS Prog&Pub Monitor
- AXMEDIS Workflow and Workflow Manager
- AXMEDIS Plugins

In the rest of this deliverable, the User Manual of these tools are described.

### 2 AXMEDIS Editor (DSI)

#### 2.1 Main functionalities

The AXMEDIS Editor is used to create AXMEDIS Objects embedding "raw" digital resources or other AXMEDIS Objects.

The AXMEDIS Editor allows to:

- create a new AXMEDIS Object
- add resources (images, videos, documents, etc.)
- add AXMEDIS Objects from file or from database
- manipulate the AXMEDIS Object structure (remove any element, move the elements)
- save to file
- upload to database
- load an AXMEDIS Object from file
- load an AXMEDIS Object from database
- view the resources with the internal viewers
- manipulate the resources using the Content Processing Plugins
- associate metadata to the AXMEDIS Object (using the Metadata Editor),
- define the Potential Available Rights for the Object (using the internal DRM Editor)
- create a SMIL presentation for the resources inside the Object (using the Visual Editor and Behaviour Editor)
- define the protection information for the object (using the Protection Editor)
- see the status of the object in the Workflow process (using the Workflow Viewer)
- be launched from the workflow to do a specific job and when the user finishes it can notify the activity completion and thus to proceed to the next step in the production process.

#### 2.2 Relationship with other tools

The AXMEDIS Editor:

- uses the AXMEDIS Database to search/retrieve for content and to store content
- can be launched form the Workflow engine and interact with it
- uses the content processing plugins to manipulate the digital resource

#### 2.3 Detailed description of the functionalities and Screenshots

This section aims to describe the use of the AXMEDIS Editor to create AXMEDIS objects embedding "raw" digital resource or other AXMEDIS objects.

Initially section 2.3.3 shows a short tutorial to create a new AXMEDIS object.

Subsequently the next sections will show all the features available in the Editor more in detail. The menus and the integration of the AXMEDIS Editor with a database will also be explained.

#### 2.3.1 Register the user and certificate the tool

When the AXMEDIS Editor is opened for the first time, a window asking to register the new user will be showed (see the figure below).

🐼 AXMEDIS Editor	
File Edit View Window Help	
12 2 2 2 3 9 2 X 6 2 🗮 🛠 🛠	
Register         Image: A contract of the second s	
Welcome	

By clicking the "Yes" button the certification procedure will start and a web page will be opened asking mandatory information to be filled in for the correct user registration. By clicking the "OK" button these information will be sent and collected by the AXCS and a confirmation email will be sent to the user at the email address specified in the field "Email".

~	ortal - Windows Internet Explorer	
http://axcs.a	xmedis.org:8080/Registrat 🗙 🍫 🔀 Live Search	P.
e Edit View Favorites	Tools Help	•
AXMEDIS Registr	ation Portal	ge 🔹 🌍 Tools 👻
a <mark>)(</mark> medis	AXMEDIS Registration phase 1	
Nickname:	Nicknane	*
Reference Name:	Nicola	*
Company:	DSI	*
Address:	Via S. Marta 3	*
City:	Florence	*
Zip code:	50100	*
Country:	ITALY	*
Telephone:	+3900000000	*
Fax:	+3900000000	*
Mobile:	+3900000000	*
Email:	mitolo@dsi.unifi.it	*
www:	www.dsi.unifi.it	*
*: requested email will be automa	tically sent for phase 2.	
	Ok Reset	
	Internet	🔍 100% 🔻

The email received contains an URL to be clicked for the confirmation of the procedure: this is necessary to control the correctness of the specified email address. After the confirmation, another email will be received containing the user certificate (a .p12 file) and a password necessary to import the certificate. The User Certificate have to be saved on the hard disk before starting the importation procedure. AXMEDIS 10 To import the certificate select in the AXMEDIS Editor the menu Help/Import User Certificate...

🚳 AXMEDIS Editor		
File Edit View Window	Help	
	Import User Certificate Tool certification Copy user id	
	Show activities Guide to AXMEDIS Editor About AXMEDIS Editor	
7		

Select the .p12 file received and press the **Open** button.

🌆 AXMEDIS Edi			
File Edit View	Window Help		
Import user ce	rtificate	2 🛛	
Look in:	🞯 Desktop		
My Recent Documents Desktop	axmedis_user	laces 9_Client nt Manager IAZIONI I-MAESTRO	
My Computer	DivX Movies	Type: Personal Information Exchange Date Modified: 22/03/2007 11.05 Size: 3,49 KB	
	File name:	axmedis_user_cer1.p12   Open	
My Network Places	Files of type:	Files (".p12)     Cancel       Open as read-only	/

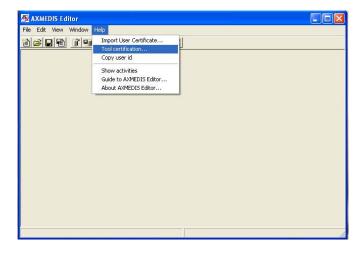
Insert the password received by email to continue the registration procedure and press the **OK** button..

AXMEDIS Editor
File Edit View Window Help 習ど見習 『明記』 & 画像 象文文
Import User Certificate
Enter password:
OK Cancel

A message confirming the correctness of the registration procedure will be showed. Press the  $\mathbf{OK}$  button to continue.

🕵 AXMEDIS Editor 📃 🗖	X
File Edit View Window Help	
2 <b>2 2 3 4 6 6 8 4 4</b>	
Import User Certificate	
(1) The user certificate has been correctly imported.	
Username and password will be used to register AXMEDIS Objects with the AXCS Server	
ОК	

After the user registration it is necessary to certificate the tool. Open the menu **Help\Tool certification...** 



Immediately a message will be showed confirming the correctness of the tool certification.

AXMEDIS Editor		
File Edit View Wind	ow Help	
12121	9 🗁 🔏 🖻 🕮 🛠 🛠	
	Certification 🛛	
	The tool has been certified	
	OK	

After this the user will be able to create protected AXMEDIS objects from scratch using the AXMEDIS Editor.

#### 2.3.2 Edit configuration

The configuration menu allows to edit the configuration parameters of the AXMEDIS Editor. By clicking in the **File/Configuration...** menu a new window will be showed containing some parameters related to different databases.

File	Edit	Resource Viewer	Window	Help	
徻	New				Ctrl+N
B	Open.				Ctrl+O
1	Open	from database			
	<u>S</u> ave				Ctrl+S
	Save	<u>a</u> s			Ctrl+A
	Save	as Mpeg21			
9	Save	on database			
	<u>C</u> lose				Alt+C
	Notify	Workflow activity	completion	n	
	Config	juration			
	Plugir	IS			
	Rece	nt files			
	<u>E</u> xit				Alt+X

The following figure shows the configuration window containing the following fields to be configured:

- the **Database** server name
- the **PMS** server name
- the **Workflow** server name
- the **AXCS** server name, username and password.

By clicking the **Advanced** button a more complete window will be opened containing many different parameters to be configured.

odules	Paramete	rs		Close
LE_NAME KMEDIS_PLUGIN_MANAGER	Name	Туре	Value	CIUSE
ATABASE KMEDIS SELECTION	0	string	F:WARIAZ~1\AXMEDI~1\AXMEDI~1.AXM	
BJECT_CREATOR	1	string	C:\objs\kandinsky-example.axm	
SOURCE_PARAM	2	string	F:\VARIAZ~1\AXMEDI~2\AXMEDI~1.AXM	
ASCLIENT RTINFO	3	string	F:\VARIAZIONI\AXMEDIS example with frames\axm	
KCSOBJREG ORKFLOW ORKFLOW-PENDING DZILLA_BROWSER	4	string	C∖\Program Files\AXMEDIS Tools\axmedis-objects\fi	
TADATA_EDITOR_VIEWER	<			

The most significant modules and relative parameters to be configured are the following:

- AXMEDIS\_PLUGIN\_MANAGER
  - **PLUGINS\_PATH**, the folder containing the AXMEDIS plugins are
- DATABASE
  - **User**, the username to access in the database
  - **Passwd**, the relative password
  - o LoaderWSEndPoint, web service end point to load AXMEDIS objects
  - o ServerWSEndPoint, web service end point to save AXMEDIS objects
  - **FTPPath**, ftp site where to upload the AXMEDIS objects when saving (e.g. ftp://axdbf.axmedis.org)
  - o LockWSEndPoint, web service end point to lock/unlock AXMEDIS objects
- AXMEDIS\_SELETION
  - **MAIN\_QUERY\_SUPPORT\_WSDL**, the WSDL to query the database
- OBJECT\_CREATOR
  - **AXCID**, the ID of the object creator. If empty the AXUID received during user registration is used
  - Name, the name of the object creator
  - URL, the URL of the object creator
  - **Company**, the company of the object creator
  - CompanyURL, the URL of the company of the object creator
  - Nationality, the nationality of the object creator
- RESOURCE\_PARAM
  - IMAGE\_TIMER (s), the time duration used in the slide show presentation
  - COLOUR, the background colour used in the resource viewer
- RESOURCE\_EXTENSIONS
  - <file extension>, the mimetype associated with the file extension
- PMSCLIENT
  - PMSClientEndpoint, the end point used when connecting to PMS server
- CERTINFO
  - **USERPWD**, the user password received after the registration and used to read the user certificate
- AXCSOBJREG
  - **AXCSObjeRegEndpoint**, the end point used for AXMEDIS object ID request and registration
  - AXCSObjeRegUsr, the user name used to request the AXMEDIS object ID
  - AXCSObjeRegPsw the password
- WORKFLOW
  - workflowUrl, the URL of the workflow server
  - o gatewayUrl, the URL of the workflow gateway used to request workflow information
- WORKFLOW-PENDING
  - o information related to the pending workflow operations

- METADATA\_EDITOR\_VIEWER
  - MetadataView\_CSS, the CSS for the metadata viewer
  - **SCHEMA\_PATH**, the path where to find the schema files
  - **<xml namespace>**, schema file associated with the namespace
- SMIL PARAM
  - **HEIGHT, WIDTH, COLOR**, are the default values for the root layout element in the visual editor
  - o ZOOM, default zoom factor for the behavioural view in the visual editor

Below the left and right part of the Configuration windows, a number of buttons are present.

By clicking the **Add** button in the left part of the window it is possible to add a new configuration module, as showed in the figure below.

Modules	Parameter	rs		
AXMEDIS_PLUGIN_MANAGER	Name	Tune	Value	
DATABASE AXMEDIS_SE Add Module				$\mathbf{X}$
UBJECT_CH RESOURCE_ Insert new module: RESOURCE_ PMSCLIENT CERTINFO				
AXCSOBJREI WORKFLOW WORKFLOW	OK	Cancel	1	
MOZILLA BR	10010			
METADATA_EDITOR_VIEWER	<			
Add Bemove	Ad	u	Edit	Bemove

The **Remove** button permits to delete a module.

The right part of the window contains three button.

To add a parameter to a selected module press the **Add** button. As showed in the figure below, to add a parameter it is necessary to specify the following three information:

- the parameter name
- the parameter type (*double*, *int32* or *string*)
- the parameter value

Set Para	m			X
Parameter				
Туре	string			•
Value	double int32			
	string			
		OK	Cancel	

To edit a parameter select the parameter in the right window and press the **Edit** button.

To remove a parameter select the parameter in the right window and press the **Remove** button.

#### 2.3.3 Create a new AXMEDIS Object

To create a new AXMEDIS object select **File/New** from the Menu or use the D button on the toolbar

AXMEDIS Editor		
File Edit Resource Viewer Window Help		
12289 <u>1797</u> <u>× 166</u>		
AXMEDIS View MPEG21 View	Resource Viewer Metadata Editor Visual Editor DRM Editor Protection Editor Workflow Viewer	Activities 🔀
Full		Open AXMEDIS Object from file
E - 4 Object [] - A XOID [um:axmedis:00000:obj:7a9b]		
AXMEDIS Info		Open AXMEDIS Object     from database
		Create AXMEDIS Object from resource files
		Create AXMEDIS Object from query on database
		Basic steps:
		1. Request final AXOID
		2a. Add resources
		2b. Add objects
		3. Edit Dublin Core
		. Edit Presentation
	00:00:00	
< >	••••••••••••••••••••••••••••••••••••••	5. Edit DRM
		]

The AXMEDIS Editor will appear divided in three main parts:

- the Tree view window on the left, that provides a view of the AXMEDIS object structure; selecting the MPEG-21 panel it is possible to see the hierarchical view of the MPEG-21 structure of the object;
- the Panels View window in the middle, which shows the selected panel; below these panels a combo box is present showing all the resources available in the object and facilitating the applications of all the different features to them;
- the Activities windows on the right, that helps to find easily the main features of the Editor and to guide the user in the basic steps to create a new objects. If necessary this windows can be closed by clicking on the x button in the high-right corner to enlarge the Resource View window.

In the Tree window initially are present only three items:

- the **AXOID**, that is the unique AXMEDIS Object Identification number
- the **AXMEDIS Info** item, double clicking on it will show information about the object creator, the creation date, etc.
- the **Dublin Core** item, containing the metadata information in Dublin Core standard format

The first thing to do to create a new object is to add a number of digital resources initially stored in the hard disk as single files.

To add a resource from a file on the local hard disk select the 🖭 button from the toolbar and select the file to be added:

Choose a file						? 🔀
Cerca in:	🚞 Ritratti		•	<b>(-)</b>	r 🗐	
Documenti recenti Desktop Documenti	bocconi_ritratt braue.jpg burri_ritrato.jpg caudnamo.jpg caudnasio_ritrato kokoschka_ritra bokoschka_ritrato.jp caudnsio_ritrato. komucha_ritratto. caudnasio_ritrato. caudnasio	ng tto.jpg 39 o.jpg jpg jpg				
Risorse del computer	<u>N</u> ome file: <u>T</u> ipo file:	kandinskij_ritratto.jpg All Files(*.*) I Apgi in sola lettura			•	<u>A</u> pri Annulla

It is possible to add a resource also using the drag-and-drop feature, dragging the resource in the tree window. The AXMEDIS Editor is capable to automatically recognize all the most important file formats for documents (txt, doc, pdf, rtf, etc.), images (gif, tiff, png, jpg, etc.), audio (wma, mp3, wav, etc.), video (mpeg, mpg, etc.) and to play them using the internal player.

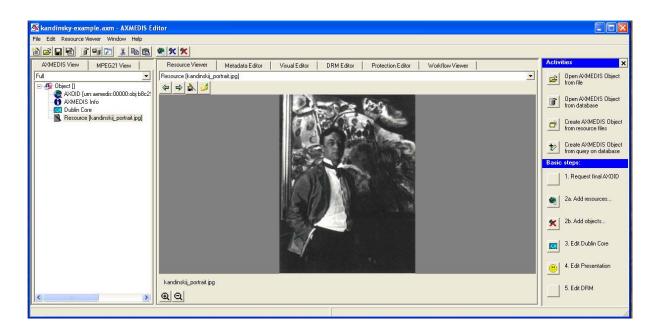
Finally it is possible to add a resource using the contextual menu with a right click on the tree window and selecting **Add/Embedded Resource**...

ACMEDIS	MPEG21			Resource View N
- 🔂 AVME - 🔝 Dubin			a-280840ee0c99]	
	Open Properties Update from databa	se		
	Add Request definitive A	Add  Request definitive AXOID		 G211dentifier
	Out Copy Paste	Ctrl+X Ctrl+C Ctrl+Y	Generic Metadata from MPE Dublin Core AVMEDIS Info	G21Type
	Delete Move up	Delete Ctrl+Up	Embedded Resource	
	Move down	Ctrl+Down	New Object	
	Recreate tree		New Object with Resource. Embedded Object from file Referred Object from file Embedded Object from DB.	
			Referred Object from DB	

When a resource is correctly embedded, it appears in the tree window with an icon identifying the type of the resource followed by the prefix *Resource* and the resource name closed by square brackets.

Double clicking on the resource opens the ImageViewer:

#### DE5.0.1.1 AXMEDIS Major Tools User Manuals



#### 2.3.4 The Activities Window

The Activities window permits a simply access to basic features using intuitive shortcuts.



If not visible, it is possible to open the Activities window by clicking in the **Help/Show activities** menu.



The available features in the Activities window are the following:

- Open AXMEDIS Object from file
- Open AXMEDIS Object from database
- Create AXMEDIS Object from resource files
- Create AXMEDIS Object from query on database

Clicking on **Den AXMEDIS Object from file** simply opens a window to select and load an AXMEDIS object from the disk.

Clicking on **Open AXMEDIS Object from database** the Query dialog is open. See section 2.3.12 for more details about the Query dialog.

AXMEDIS

Clicking on Create Object from resource files opens a new dialog to help a user to create a new AXMEDIS object from scratch.

New Axmedis file	
Resource	Select
Dublin Core metadata	
creator  description	
Upload into database	
OK Cancel	

The **Resources** box permits to add external resource selecting them from the disk. Pressing the + button a new resource is added, otherwise pressing the – button the resource is deleted.

The **Dublin Core metadata** box permits to add metadata of the object before his creation as AXMEDIS object.

Ticking the **Upload into database** option the object is automatically uploaded into the database. Pressing OK the new object is created and, eventually, uploaded into the database.

Clicking **Create AXMEDIS Object from query on database** opens a new dialog to help a user to create a new AXMEDIS object from scratch using existing objects stored in the database.

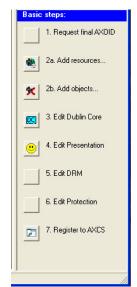
Creates Axmedis file with objects of the DB	×
AXMEDIS Objects	
AXOID	Query
+ -	
F Referred Objects	
Dublin Core metadata	
title 💌	
creator 💌	
description	
±.	
🔽 Upload into database	
DK Cancel	

The functioning is very similar to the previous.

The only difference is in the first box now named **AXMEDIS Objects** that permits to add an object querying it from the database. Pressing the **Query** button the Query dialog is open. See section 2.3.12 for more details about the Query dialog.

#### 2.3.5 The Basic Steps window

Below the **Activities** window a number of numbered buttons are showed to help users to create a new object showing the necessary steps to be followed, the **Basic Steps** window.



The first button **Request final AXOID** have the aim to request the final ID of the AXMEDIS object. This procedure can be done in any moment but in any case before the step no. **7.Register to AXCS**.

Press the button **2a.Add resources...** to add digital resources into the object or the button **2b.Add objects...** to add embedded AXMEDIS objects.

By pressing the button **3.Edit Dublin Core** the Metadata Editor will be showed (see section 2.3.8 for additional information).

By pressing the button **4.Edit Presentation**, the Visual Editor will be opened (see section 2.8 for additional information).

By pressing the button **5.Edit DRM** the DRM editor will be opened (see section 2.9 for additional information).

By pressing the button **6.Edit Protection** the Protection Editor will be opened (see section 2.11 for additional information).

The button **7.Register to AXCS** is for the last operation to be performed before the content distribution and permits to send the protection information to the AXCS after the object protection.

#### 2.3.6 Adding object reference

Using this feature it is possible to add into an AXMEDIS object a reference to another object stored into the database.

This feature is accessible in the toolbar pressing the  $\mathbf{M}$  button or **Edit/Add/Referred Object from DB** in the menu selecting.

🌆 mozart.axm -	AVMEDIC Editor				
	New Resource View	olassa uradan u	-1-		
	9 🗼 🖻 🛍 🗶	ダダ トヨ			
AXMEDIS	MPEG21			Resource Vie	
Full			•		
🔂 AXMED 🔃 Dublin (			⊶ed0c98030568]		
	Add		Generic Metadata from XML		
	Request definitive AXC		Generic Metadata from XML Generic Metadata from MPEG211dentifier Generic Metadata from MPEG21RelatedIdentifier		
	Cut         Ctrl+X           Copy         Ctrl+C           Paste         Ctrl+V		Generic Metadata from MPEG21Type Dublin Core AXMEDIS Info		
	Delete Move up	Delete Ctrl+Up	Embedded Resource Referred Resource		
	Move down	Ctrl+Down	New Object		
	Recreate tree		New Object with Resource Embedded Object from file Referred Object from file Embedded Object from DB Referred Object from DB		
			Referred Object from DB		

Selecting this option, a query dialog is open. The dialog permits to execute a search into the database using a number of pre-defined fields. If you need more information about the Query dialog see section 2.3.12 It is possible to search an object by using the following parameters:

- Object creator
- Title
- Coverage
- Format
- Type
- Subject
- Description
- Creation Date
- AXInfo information (such as Status, Distributor, Owner and Access Mode)

For example, to search into the database an AXMEDIS object containing a comedy film, it is necessary to write this parameter into the Type field, select into the Info Results box the information that will appear in the results (for example the creator and the title), and press the Submit button.

Query			ACTIVO THOMAT			X
Available Sources	AXMEDIS Query	Query Result				
AXEPTOOL     CNS     CNS     AXMEDIS DB     All Sources      Logic Operator Selector     and     Info Result	Dublin Core Creator: Coverage: Type: Description: Creation Date From:		commedia	Title: Format: Subject	CONTAINS CONTAINS CONTAINS	 Calendar
Mo Destaite DCMHzite DCMHzitet DCMHzitet DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption DCMHzesciption	Axinfo Status: Owner: Axinfo/DCMI Qu	CONTAINS  CONTAI		Distributor: Access Mod Reset Submit	CONTAINS E: CONTAINS	
			Ok	Close		

A new dialog will appear where it is necessary to insert the User Name and the password to access the database.

Login on Query S	Support 🛛 🔀
Username est	
Password	
🔽 Sav	e password
ОК	Cancel

Reference AXMEDIS Query Query Result Available Sources Results table AXEPTOOL CMS Creator Nigel Cole Buster Keaton William Dieterle Nigel Cole H. C. Potter Willis Goldbeck Buster Keaton NULL Preston Sturges NULL Jean Becker NULL Andrew V. McLaglen Edward Sedgwick Henry Koster Creator Title Object Id AXMEDIS DB L'Erba di Grace La palla numero 13 urn:axmedis:00000:obj:005978ae-4dee-4afc-ad34-2595d118a3c6 urn:axmedis:00000:obj:12a9b8b8-1d31-4ce7-bc27-4b3f7de6f3bf Umaxmedis:000001:obj:47547171-165a1-1221-04158480417494004 umaxmedis:000001:obj:4294752-e553-408-84d1-047c0ba5c2ba umaxmedis:000001:obj:4293346-ed4b-4706-b000-49391a8290 umaxmedis:000001:obj:6d891555-b678-42c6-8c37-7eabe1b2814a Il tesoro del santo L'Erba di Grace Follie di Jazz (Second Chorus) Love Laughs at Andy Hardy Logic Operator Selector and -II Navigatore The perils of Pauline The sin of Harold Diddlebock urn:axmedis:00000:0b):75db7db5-r2cb-4267-bb10-ca51cr6910 urn:axmedis:00000:ob):7efbbdc5-f28b-4239-9391-9bdf27e454 urn:axmedis:00000:ob):85fbc66f-d380-4646-b4be-4afcff1309e Info Result La mia brunetta prefer I ragazzi del Marais L'uomo in più McLintock! Il cameraman The Inspector General umaxmedis:00000:obj:84da49151956-418-916249208642c3555 umaxmedis:00000:obj:844625d-885c4495-baa5/070467b82c66 umaxmedis:00000:obj:971930:bd-3584-b17-b6ad-9325b47b632 umaxmedis:00000:obj:971930:bd-9164-4107-b64330383333 umaxmedis:00000:obj:971934b3bb-016-4147c-bb14-31098833335 umaxmedis:00000:obj:971934b3bb-016-4147c-bb14-35049357594 umaxmedis:00000:obj:9219268-1643-4711-8846-85469593600 DCMI:subject DCMI:type DCMI:description DCMI:coverage DCMI:format DCMI:date DCMI:date AXINFD:Access\_Moc AXINFD:Access\_Moc < AXINF0:0wner > Ok Close

Pressing OK the query is sent to the database and the results are shown in a new window

At this point it is possible to select the object in the list and press the OK button to continue. It is also possible to select more than only one object pressing the <SHIFT> or the <CTRL> keys and selecting all the needed objects.

After pressing OK, the selected objects are added in the Editor as reference objects (identified by the **ref** prefix).

File Edit Resource View Editors/Viewers Players Window Help	
≌⊫≓∎ ፪ฃ ≵®® ⊈XX ▶■॥ ⇔⇒	
AXMEDIS MPEG21	Re
Full	
🖃 🍕 Object []	
- 😪 AXOID (urn:axmedis:00000:obj:827a130e-abfc:4034-b191-304505df0d21) - 🔒 AXMEDIS Info	
🙀 ref::Object [urn:axmedis:00000:obj:2/637171-b6a1-4221-bef3-8ad814249bc8]	
- 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	

In the Panels window, immediately below the name of each tabs, a combo box is present allowing to select the different resources available in the object.

n - AXMEDIS Editor 1	
	Resource Viewer Metadata Editor Visual Editor DRM Editor Protecti ()
	Plesource [Eine Kleine Nachtmusik-formal-scheme-EN.doc]
301-d058-40e2-adc2-9900b9a26dea]	Resource (mozatkarajan mo3) Resource (MKI page - ITA) Resource (MKI page - ITA) Resource (MKI page - ESP
mal-scheme-EN.doc]	Resource MXIK page = DKG Resource [pathtwa_01_04 png] Resource [pathtwa_05 03 png]
	Resource [paritius_06_04.png] Resource [paritius_12_06.png] Resource [paritius_12_06.png]
	Resource [partitura_25_04.png] Resource [partitura_25_04.png]

#### 2.3.7 Adding embedded object

Using this feature it is possible to add into an AXMEDIS object another object stored into the database.

This feature is accessible in the toolbar pressing the  $\mathbb{M}$  button or in the menu selecting **Edit/Add/Embedded Object from DB**. The procedure is very similar to what explained in the previous section.

Selecting this option, a query dialog is open. The dialog permits to execute a search into the database using a number of pre-defined fields. If you need more information about the Query dialog see section 2.3.12 It is possible to search an object using the following parameters:

- Object creator
- Title
- Coverage
- Format
- Type
- Subject
- Description
- Creation Date
- **AXInfo information** (such as Status, Distributor, Owner and Access Mode)

For example, to search into the database a comedy film, it is necessary to write this parameter into the **Type** field, select into the **Info Results** box the information that will appear in the results (for example the creator and the title), and press the Submit button.

AXMEDIS Query	Query Result					
		commedia	Title: Format: Subject:	CONTAINS CONTAINS CONTAINS	• • •	Calendar
AxInfo Status: Owner:	CONTAINS  CONTAI	Reset	Distributor:	I CONTAINS CONTAINS	•	
	Dublin Core Creator: Coverage: Type: Description: Creation Date From: AsInto Status: Dwner:	Dublin Core Creator: CONTAINS Coverage: CONTAINS Type: CONTAINS Description: Creation Date From: Ashnlo Status: CONTAINS Owner: CONTAINS	Dublin Control No.      Creator:     CONTAINS      Coverage:     CONTAINS      Type:     CONTAINS      Commedia     Description:     Creation Date     From:     Calendar     AxInfo     Status:     CONTAINS      CONTAINS      Reset     Reset	Dublin Coe       Creator:     CONTAINS ▼       Type:     CONTAINS ▼       Type:     CONTAINS ▼       Description:     Creation Date       From:     Calendar       To:     AxInfo       Status:     CONTAINS ▼       ONTAINS ▼     Distributor:       Dwner:     CONTAINS ▼       Reset     Submit	Dublin Core Creator: Coverage: CONTAINS Tritle: Coverage: CONTAINS Format: CONTAINS Type: CONTAINS Commedia Subject: CONTAINS Description: Creation Date From: Calendar To: Calendar To: Contains Distributor: CONTAINS Distributor: CONTAINS Distributor: CONTAINS CONTAINS Reset Submit	Dublin Coe         Creator:       CONTAINS ▼         Coverage:       CONTAINS ▼         Type:       CONTAINS ▼         Type:       CONTAINS ▼         Description:       Creation Date         From:       Calendar         AxInfo       Status:         CONTAINS ▼       Distributor:         CONTAINS ▼       Access Mode:         Qwner:       CONTAINS ▼         Reset       Submit

A new dialog will appear where it is necessary to insert the User Name and the password to access into into the database.

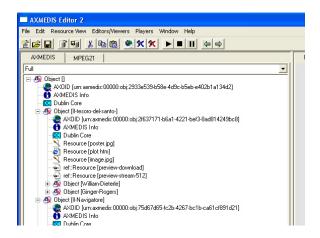
Login on Query Support 🛛 🛛 🔀						
Username 🚺	est					
Password x	IKK					
V	Save password					
OK Cancel						

Pressing OK the query is sent to the database and the results are shown in a new window

AXEPTOOL	AXMEDIS Query Que Results table	ry Result	
CMS	Creator	Title	Object Id
AXMEDIS DB All Sources	Nigel Cole Buster Keaton	L'Erba di Grace La palla numero 13	urn:axmedis:00000:obj:005978ae-4dee-4afc-ad34-2595d118a3c6 urn:axmedis:00000:obj:12a9b8b8-1d31-4ce7-bc27-4b3f7de6f3bf
	William Dieterle	Il tesoro del santo	urn:axmedis:00000:obj:2f637171-b6a1-4221-bef3-8ad814249bc8
ogic Operator Selector	Nigel Cole H.C. Potter Willis Goldbeck	L'Erba di Grace Follie di Jazz (Second Chorus) Love Laughs at Andy Hardy	urn:axmedis:00000:obj:429cfc2c-e563-40e8-adc1-c07c0ba5c2ba urn:axmedis:00000:obj:4e5a3346-ed4b-4706-b000-49a991aa829d urn:axmedis:00000:obj:6d891556-b678-42c6-8c3f-7eabe1b2814a
lana -	Buster Keaton	Il Navigatore	urn:axmedis:00000:obj:75d67d65-fc2b-4267-bc1b-ca61cf891d21
nfo Result	NULL Preston Sturges	The perils of Pauline The sin of Harold Diddlebock	urn:axmedis:00000:obj:7efbbdc5-f28b-4239-9391-9bdf27e45490 urn:axmedis:00000:obj:85fbc66f-d380-4646-b4be-4afcff1309e8
CMI:title	NULL	La mia brunetta preferita	urn:axmedis:00000:obj:8bda8451-89bc-41e9-b2b9-08be9cca595c
DCM:creator DCMI:subject DCMI:subject DCMI:description DCMI:description DCMI:doterage DCMI:date DCMI:date SINFD:0xcreas_Moc XINFD:0xmer ♥	Jean Becker NULL Andrew V. McLaglen Edward Sedgwick Henry Koster	I ragazzi del Marais L'uomo in più McLinkocki Il cameraman The Inspector General	um:axmedis:000001:db):8446256-dc:86-4195-bas5-070467b8c26f um:axmedis:000001:db):9795964-0584-4b17-b864-9329647b7657a um:axmedis:000001:db):949545beb-011e-447-bbf4-31098833235 um:axmedis:000001:db):808e51cc-2ad0-4270-b774-5559a157c594 um:axmedis:000001:db):42:32ea8-1643-4711-88d6-a54a69a360ce

At this point it is possible to select the object in the list and press the OK button to continue. It is also possible to select more than only one object pressing the <SHIFT> or the <CTRL> keys and selecting all the needed objects.

After the OK pressing, The selected objects are added in the Editor as embedded objects (identified by the **Objejct** prefix).



#### 2.3.8 Adding Dublin Core metadata

Double clicking on the **Dublin Core** item the metadata editor is opened:

It is possible to add a new metadata element choosing it from the **Add Child Element** box and then by pressing the Add button.

#### DE5.0.1.1 AXMEDIS Major Tools User Manuals

Selecting the Title element from the list it is possible to enter the value in the **Content Type**. To confirm definitely the changes it is necessary to press the **Commit Update** button and confirm the commitment in the next dialog box by pressing the "YES" button.

Please remember that to insert the language element in the **Attribute** box it is necessary to press the *Enter* key to confirm the insertion.

🌆 kandinsky-example.axm - AXMEDIS Editor 1		
File Edit Metadata Editor Window Help		
12 2 2 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1		
AXMEDIS View MPEG21 View	Resource Viewer Metadata Editor Visual Editor DRM Editor Protection Editor Workflow Viewer	
Full	Dublin Core	<b>_</b>
	Image: Second state     Image: Second state         Image: Second state         Image: Second state	
- ∰ Dublin Core - ∑ Resource (kandinski_portrait.jpg)	Cescription []     Metadata Editor Metadata View     Element	
	Description	
	Element Type: Dublin Core	
	Min Occurences: 1; Max	
	Content	
	Content Type:	
	Min Length: ;	
	Kandinsky Portrait	
Com	ommit Metadata	
	Do you wish to commit the edited metadata	
	Name         Type         Value           xmins         Unknown         http://www.w3.org/1999/02/22.rdf-syntax-ns	

Naturally, using the **Add Child Element** box it is possible to add more elements in the **Description** tree. Only after the insertion of all the needed metadata elements it is necessary to confirm the changes pressing the **Commit Update** button, which update the Description elements accordingly:

🐼 AXMEDIS Editor	
File Edit Metadata-View Editors/Viewers Players Window Help	
AVMEDIS         MPEG21           Full         ▼           ■ Ø Object []         ●           ● AVMEDIS Info         ●           ● AVMEDIS Info         ●           ● Resource [kandinski_portrait.jpg]         ●	Resource View Metadata View

Please note that if you select another resource in the tree view all metadata information will be lost if you have not pressed the **Commit Update** button before.

Double clicking on the **AXMEDIS Info** the **Metadata Viewer** shows the AXMEDIS specific information associated with the object:

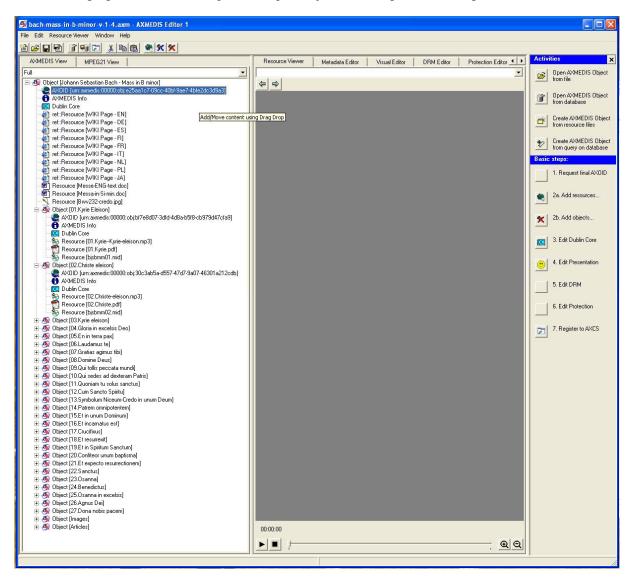
File Eath Metadala Editor Model       Metadala Editor Visual Editor       Diffe Editor       Podecion Editor       Worklow Verwer         AMADDS Verw       MEED21 View       MEED21 View       Metadala Editor       Visual Editor       Diffe Editor       Podecion Editor       Visual Editor       Metadala View       Image: Construction Con	🌆 kandinsky-example.axm - AXMEDIS Editor	
AMEDIS View       MPEC22 View       Resource Viewe       Metadate Editor       Visual Editor       DMACIDIS (Pro- mental States 2000) cbj:56:2981+36:4:31:65:e:238840:e0:058]         AVDID [umramedia: 00000:cbj:56:2981+36:64:31:65:e:238840:e0:058]       Image: The Commet Update       Metadate Editor       Visual Editor       DMACIDIS (Pro- mental States 2000)         AVDID [umramedia: 00000:cbj:56:2981+36:64:31:65:e:238840:e0:058]       Image: The Commet Update       Metadate Editor       Metadate Editor <t< td=""><td>File Edit Metadata Editor Window Help</td><td></td></t<>	File Edit Metadata Editor Window Help	
Full       AMEDIS Into       Interest in the second	12 <b></b>	
Image: Comparison of the comparison	AXMEDIS View MPEG21 View	Resource Viewer Metadata Editor Visual Editor DRM Editor Protection Editor Workflow Viewer
AVDID       Jumamedia       Control Lipbace         With Construction       Control Lipbace       Metadata Educe         Metadata Construction       Metadata Educe       Metadata Educe         Metadata Educe       Metadata Educe       Metadata Educe	Leans Control	AXMEDIS Info
Wave Child Element Use drag and drop in the tree view to move elements	AXOID [urr:axmedis:00000.obj:b8c298e1-a8ab-4311-8bea-280840ee0c99]     AXMEDIS Info     AXMEDIS Info     Dublin Core	Metadata Eldior       Metadata View         DipectCreator       Metadata Editor         Metadata Editor       Metadata View         Element       Ferminian         Content       Element         DipectState       In Content         Content       Content         Content       Content         Content       Content         Content       Type         Value       Value         Winhs       Unknown         Matadata Element       Value         Matadata Element       Value         Matadata Element       Value         Matadata Element       Add         Add       Matadata Element         Add       Content Type:         Mans       Unknown         Work       Content Type:         Matadata Element       Add         Add       Content

The Object Creator information is automatically added getting information from the configuration (**File/Configuration...** from the menu)

The object can be overwritten on the local hard disk using **File/Save** (or using the **b** button on the toolbar) or saved as new file using **File/Save As...** from the menu.

Also the object can be uploaded on the AXMEDIS Database using the 🖼 button on the toolbar or **File/Upload into Database...** from the menu.

The AXMEDIS Editor permits to create very easily complex objects with both simple and nested resources. The following figure shows an example of complex object with a big number of digital resources.



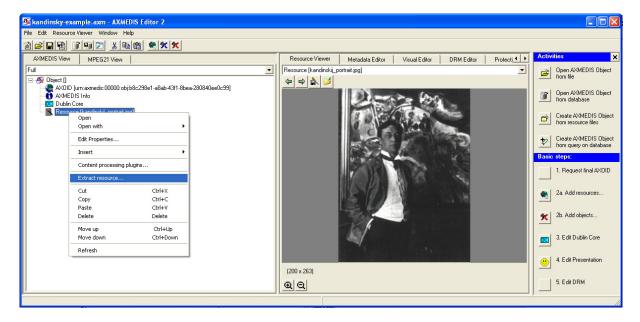
#### 2.3.9 Open an existing object

To open an existing AXMEDIS object select **File/Open...** from the Menu or use the **E** button on the toolbar. The "Select a file" window appears where it is possible to select an AXMEDIS object to be opened.



#### 2.3.10 Extract an embedded resource

The AXMEDIS Editor permits to extract a resource embedded in an object to be saved as external file. Select the resource in the tree window and right click on it to open the contextual menu. Select **Extract resource**, to save the file on the disk.



#### 2.3.11 Modifying an AXMEDIS Object stored on Database

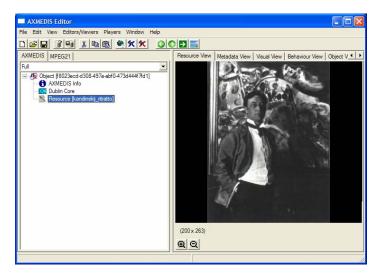
To search for the AXMEDIS object on the Database select the *button* on the toolbar or using **File/Open from Database...** in the menu, the query dialog is opened and it is searched for an object with the title containing "portrait":

					<u> </u>		
Query							
Available Sources	AXMEDIS Query	Query Result					1
CMS	Creator:	CONTAINS 💌		Title:	CONTAINS	▼ portrait	
All Sources	Coverage:	CONTAINS 💌		Format:	CONTAINS	-	
Lavia Davadas Calculas	Type:	CONTAINS 💌		Subject:	CONTAINS	-	
Logic Operator Selector	Description:						
Info Result	From:		Calendar	To:			Calendar
DCMI:title DCMI:creator	- AxInfo Status:			 Distributor:	CONTAINS	<b>.</b>	
DCMI:subject DCMI:type	Owner:			Access Mode:	1		
DCMI:description DCMI:coverage	Owner.			Access Mode.	TCONTAINS	-	
DCMI:format DCMI:date DCMI:date AXINF0:Access_Moc AXINF0:Owner			Reset	Submit	]		
	AxInfo/DCMI Que	PAR Query					
		01	Close	]			

Pressing the Submit button, if the authentication procedure is successfully passed, the query is sent to the database and the results are shown:

Query		
Available Sources AXEPTOOL CMS CMS AXEPTOOL CMS AXMEDIS DB AI Sources Logic Operator Selector and AXINFO:Status DCMI:coverage DC	AXMEDIS Query Query Result AXMEDIS Query Query Result AXMEDIS Query Query Result So Title Object Id So Title AMDE AMDE AMDE AMDE AMDE AMDE AMDE AMDE	
DCMItitle DCMItype	Ok Close	

Pressing OK the object is recovered from the database and opened:



#### 2.3.12 The Query dialog

The Query dialog is the window that permits to start a query into the database to search a specific AXMEDIS object using parameters defined by the user.

Available Sources 1	AXMEDIS Query	Query Result						
AXEPTOOL CMS AXMEDIS DB All Sources Logic Operator Selector 5 and AMINFO:Access_Moc AXINFO:Distributor AXINFO:Distributor AXINFO:Status DCMI:coverage	Dublin Core 2 Creator: Coverage: Type: Description: Creation Date From: 3 AxInfo Status: Owner:	CONTAINS - CONTAINS - EQ - GT 4	Calendar	Title: Format: Subject: To: Distributor: Access Mode:	CONTAINS CONTAINS CONTAINS CONTAINS CONTAINS	Ī	Calendar	
DCMI:creator DCMI:date DCMI:date DCMI:description DCMI:format DCMI:subject	Axinfo/DCMI Qu		Reset	Submit	]			

When the Query dialog is open, the user have to choose the sources where apply the query in the **Available Sources** box (1). The predefined available sources are **AXEPTOOL**, **CMS**, **AXMEDIS DB** and **All** of these.

The search criteria supported by the Query dialog are organized into two main groups, (2) search by **Dublin Core** metadata information (with a specific sub-box for the search by creation date) and search by **AxInfo** information (3). Each group, along with its associated set of search criteria, is exposed on the dialog interface. Using this interface, a user enters a search string in the preferred field and chooses the correct criteria using comparison operators associated with that string (4). The available criteria are:

**GT**, (>) the searched value is greater than the specified value

LT, (<) the searched value is less than the specified value

**EQ**, (=) the searched value is equal to the string specified by the user

**GE**. (>=) the searched value is greater or equal to the searched value

LE, (<=) the searched value is less than or equal to the specified value

**NE**, (!=) the searched value is not equal to the specified value

**STARTWITH**, the searched word start with the string specified by the user

**ENDWITH**, the searched word end with the string specified by the user

**CONTAINS**, the searched word contains the string specified by the user

The **Logic Operator Selector** box (5) specifies the and/or option to be applied for all the fields specified by the user.

Once all the search criteria have been specified, a user chooses the **Info Results** (6) to be showed in the **Query Result**. It is possible to select more that one Info selecting them pressing the <SHIFT> or the <CTRL> keys.

The information available for the results are divided in two groups, the **AXINFO** and the Dublin Core Metadata Information (prefix **DCMI**).

The Reset button delete all the inserted information. The Submit button start the query. After the pressing of the Submit button, it is necessary to insert the Username and the Password in the **Login on Query Support** dialog to authorize the query.

The results of the query are showed in the Query Result tab.

AXEPTOOL	Results table 1			4
CMS	Creator	Title	Object Id	Source Channel
AXMEDIS DB	Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:005978ae-4dee-4afc-ad34-2595d118a3c6	AXDB
All Sources	Buster Keaton	La palla numero 13	urn:axmedis:00000:obj:12a9b8b8-1d31-4ce7-bc27-4b3f7de6f3bf	AXDB
	William Dieterle	Il tesoro del santo	urn:axmedis:00000:obj:2f637171-b6a1-4221-bef3-8ad814249bc8	AXDB
unia Operator Calenter	Nigel Cole	L'Erba di Grace	urn:axmedis:00000:obj:429cfc2c-e563-40e8-adc1-c07c0ba5c2ba	AXDB
gic Operator Selector	H.C. Potter	Follie di Jazz (Second Chorus)	urn:axmedis:00000:obj:4e5a3346-ed4b-4706-b000-49a991aa829d	AXDB
nd 💌	Willis Goldbeck	Love Laughs at Andy Hardy	urn:axmedis:00000:obj:6d891556-b678-42c6-8c3f-7eabe1b2814a	AXDB
	Buster Keaton	Il Navigatore	urn:axmedis:00000:obj:75d67d65-fc2b-4267-bc1b-ca61cf891d21	AXDB
fo Besult	NULL	The perils of Pauline	urn:axmedis:00000:obj:7efbbdc5-f28b-4239-9391-9bdf27e45490	AXDB
	Preston Sturges	The sin of Harold Diddlebock	urn:axmedis:00000:obj:85fbc66f-d380-4646-b4be-4afcff1309e8	AXDB
×INFO:Owner 🛛 📉	NULL	La mia brunetta preferita	urn:axmedis:00000:obj:8bda8451-89bc-41e9-b2b9-08be9cca595c	AXDB
×INFO:Status	Jean Becker	I ragazzi del Marais	urn:axmedis:00000:obj:8e44625d-c88c-4f95-baa5-070467b8c26f	AXDB
CMI:coverage CMI:creator	NULL	L'uomo in più	urn:axmedis:00000:obj:97f93cb0-d584-4b17-b8ed-9329b47b678a	AXDB
CMI:creator CMI:date	Andrew V. McLaglen		urn:axmedis:00000:obj:9afb3beb-0f1e-447c-bbf4-3109883a3a35	AXDB
CMI:date	Edward Sedgwick	Il cameraman	urn:axmedis:00000:obj:a08e51cc-2ad0-42f0-bf74-55d9a157c594	AXDB
CMI:description	Henry Koster	The Inspector General	urn:axmedis:00000:obj:d23f2ea8-1643-4711-88d6-a54a69a360ce	AXDB
CMI:format				
CMI:subject				
CMI:title				

The information showed in the Query Result tab (1) are those selected in the Info Result box (2) followed by the UNR with the object ID (3) and the Source Channel (4).

In the previous figure the results table shows the AXMEDIS objects with Creator and Title fields as selected in the Info Results tab. The string "NULL" indicates that the info is not present in the object.

To load an object into the AXMEDIS Editor it is necessary to select it in the list and to press the OK button. It is also possible to select more than one object pressing the <SHIFT> or the <CTRL> keys and selecting all the needed objects.

After the OK pressing again it is necessary to insert the Username and the Password to Login. For some activities it is possible that a **Lock** dialog will appear asking if the user want to acquire the exclusive lock of the object to prevent any other user to modify the same object until the next upload on the database.



#### 2.3.13 The resource property dialog

The Properties of a resource (and for any other element) can be edited right clicking on the element and selecting **Properties...** from the contextual menu:

🌆 kandinsky-example. axm	- AXMEDIS Editor 2	
File Edit Resource Viewer Win	ndow Help	
12 <b></b>	x 🖻 🖻 🗶 🛠	<b>X</b>
AXMEDIS View MPEG2	1 View	
Full		-
Object []     AXOID [urn:axmedis:[     AXMEDIS Info     Dublin Core     Fiesource [kandinski]	Open	43f1-8bea-280840ee0c99]
	Open with	<u> </u>
	Edit Properties	
	Insert	•
	Content processing p	lugins
	Extract resource	
	Cut	Ctrl+X
	Сору	Ctrl+C
	Paste	Ctrl+V
	Delete	Delete
	Move up	Ctrl+Up
	Move down	Ctrl+Down
	Refresh	

and the following dialog is opened and the properties can be modified:

Properties	
Resource	
ContentId	kandinskii_pottrait.jpg
Reference	
MimeType	image/jpeg
Local path	kandinskii_portrait.jpg
Туре	Embedded
	OK Cancel

The **ContentId** is the name identifying the resource that appears in the Tree window closed into square brackets. As default the **ContentId** value is the same as the filename.

The Reference field contains (if present) the URL address of an external resource

The **MimeType** field identifies the file type and the format

The **Local path** specifies the resource file name

Properties		
Resource		
ContentId	kandinski_portrait.jpg	
Reference		
MimeType	image/peg	¥
Local path	audio/xwav audio/mpeg audio/midi audio/xms-wma	<b>_</b>
Туре	application/pdf text/plain application/msword text/html text/html image/xms-bmp	=
	image/git image/xxpixmap image/peg image/prg image/tif	
	image/lpeg video/mpeg video/xmsvideo video/xmsvmv	
	video/quicktime video/quicktime	~

Finally the **Type** field specifies if a resource is embedded in the AXMEDIS object or if is an external resource not physically present into the object.

If a resource is not embedded in the AXMEDIS object, it is represented in the Tree windows with the prefix "ref::". In the following figure, the [AXMEDIS] external resource is a link to an external web site.



#### 2.3.14 The Content processing plugins

On a Resource the contextual menu enables to use content processing plugins. Selecting the **Content processing plugins...** menu option the plugins function list is provided with the list of applicable plugins functions (based on resource mimetype):

Plugins 🔀						
Plugin functions           Image           Image						
ImageProcessing: Conversion(InputResource, Mimet) ImageProcessing: Import(Path, OutputResource, Mim ImageProcessing: Contrast(InputResource, Widh), Hei ImageProcessing: Contrast(InputResource, AMOUN] ImageProcessing: Emboss(InputResource, RADIUS, ImageProcessing: Emboss(InputResource, RADIUS, ImageProcessing: GaussianBlur(InputResource, RADIUS, ImageProcessing: Median(InputResource, RADIUS, ( ImageProcessing: Mimor(InputResource, KepDirectic ImageProcessing: Mimor(InputResource, KepDirectic ImageProcessing: Mimor(InputResource, TYPE, Outp V						
Function description						
Execute Cancel						

Selecting a plugin function and pressing the **Execute** button a dialog is presented allowing to provide the arguments for the function, clicking on the **Execute** button the plugin function is executed:

ImageProcessing: Resize(InputResource, Width, Height, KeepAspectRatio, Outp 🔀								
Parameters								
in InputResource:RESOURCE	Resource [kandinskij_	The Resource to be resized						
in Width:INT32	50	The new image width						
in Height:INT32	50	The new image height						
in KeepAspectRatio:BOOLEAN	1	Indicates to preserve image aspect ratio or not						
out Output Resource:RESOURCE	New Resource	Where the resized resource will be stored						
Result								
result:STRING SUCCESS								
The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error								
( Close								

In this example we will resize an image using the Resize function in the ImageProcessing plugin. The result is the following:

File Edit Resource Viewer Window Help	
AXMEDIS View MPEG21 View Full Comparison of the second sec	Presource Viewer       Metadata Editor       Visual Editor       DRM Editor       Prob.         Resource []       Image: Comparison of the second of the

#### 2.4 The AXMEDIS Editor menus

#### 2.4.1 The File menu

The File menu contains a set of functions related to the edited (or to be loaded) object. They are:

- **New**, to create a new AXMEDIS object
- **Open**, to open an AXMEDIS object loading it from the disk
- **Open from database**, to open an object searching it from the database
- **Save**, to overwrite the object
- Save as..., to save an object specifying the filename
- **Save as MPEG21**, to save the object as \*.mp21 file
- Upload on Database, to upload an object into the database
- **Close**, to close the current opened object
- **Notify Workflow activity completion...,** to be used when the AXMEDIS Editor has been launched from the Workflow Server to notify that the activity to be done has been completed;
- Configuration, shows a number of dialogs to set the correct configuration of the Editor
- **Plugins...**, shows a box with the list of available plugins
- **Recent files**, shows a list of the recent opened objects
- **Exit**, to close the AXMEDEIS Editor

E	dit	Resource Viewer Window H	elp							
1		Open Open with								
4_		northean and an		-		Resource Viewer	Metadata Edito			
ull		Edit Properties			-	Resource [kandinski_p	ortrait.jpg]			
]		Insert Content processing plugins			Generic Metadata from XML     Generic Metadata from MPEG21Identifier     Generic Metadata from MPEG21RelatedIdentifier					
		Extract resource	resource			Generic Metadata from MPEG21Type				
	¥ ≧≞	Cut Copy	Ctrl+X Ctrl+C		AXMEDIS Info     Embedded Resource					
		Paste Delete	Ctrl+C Ctrl+V Delete							
-		Move up	Ctrl+Up	-	Referred Resource New Object					
		Move down	Ctrl+Down		New Object with Res	ource				
		Refresh			Embedded Object from file Referred Object from file					
				۲ ۲	Embedded Object from Referred Object from	m DB				

#### 2.4.2 Edit menu

The **Edit** menu contains a set of functionalities available for the resources in the object tree.

<b>a</b> 03	9.axm - AXMEE	OIS Editor			
File	dit Resource Vie	w Resource View	Players	Window	Help
<b>Full</b>	Open Open with Properties Extract resource Insert Content process		•	309-46e7	-9d6d-
-	Cut Copy Paste Delete	Ctrl+ Ctrl+ Ctrl+ Ctrl+ Delet	-C -V		
-	Move up Move down Recreate tree	Ctrl- Ctrl+	+Up -Down		

When a resource is selected in the tree, using the **Edit** menu is possible to select one of the following features:

- **Open**, open or play the resource in the Resource View panel
- **Open with**, play or view the selected resource selecting one of the viewers listed in the menu
- **Properties**, view and modify the properties of the resource (see section 2.3.13 for a detailed explanation)
- **Extract resource**, to save an embedded resource in the disk as file
- **Insert**, opens a menu with:
  - Generic Metadata from XML... to load a previously saved XML file containing metadata
  - **Generic Metadata from MPEG21Identifier...**, to insert the MPEG21 Identifier in the form of a URI that identifies the object
  - **Generic Metadata from MPEG21RelatedIdentifier...** to insert the MPEG21 Related Identifier in the form of a URI allowing the identification of information related to the Digital Item or parts thereof
  - **Generic Metadata from MPEG21Type...** to insert the MPEG21 Type in the form of a URI identifying a special type of Digital Items. For example the type identifier can be used to identify that the Item is created according to the format described in the specified URI.
  - **Dublin Core,** to insert the Dublin Core metadata
  - **AXMEDIS Info**, to insert the AXINFO metadata

- **Embedded Resource...**, add an embedded resource in the object (see section 2.3.6 for a detailed explanation)
- **Referred Resource...**, add an external resource
- New Object, insert a new empty object in the tree
- New Object with Resource..., insert an object in the tree selecting it from the disk
- Embedded Object from file..., insert and embedded object from file
- **Referred Object from file...,** insert a reference to an object choosing it from as file in the disk
- o Embedded Object from DB..., insert an embedded object from the database
- Referred Object from DB..., insert a reference to an object choosing it from the database

🚳 k	andi	nsky-example.axm - AXMI	DIS Editor 2						
File	Edit	Resource Viewer Window H	elp						
<u>1</u>		Open Open with		۲					
ļ.	2	Open with		-		Resource Viewer	Metadata Editor		
Ful		Edit Properties			-	Resource [kandinski_p	ortrait.jpg]		
		Insert		Þ 🏨	Generic Metadata fro	om XML			
		Content processing plugins			Generic Metadata from MPEG21RelatedIdentifier Generic Metadata from MPEG21Type				
		Extract resource		Ctrl+X Ctrl+C					
	*	Cut			-16				
		Сору							
	Ê	Paste	Ctrl+V	W.	Embedded Resource				
		Delete	Delete	_	Referred Resource				
		Move up	Ctrl+Up		New Object				
		Move down	Ctrl+Down		New Object with Res	ource			
		Befresh			Embedded Object from file				
	_			Referred Object from file					
				X	Embedded Object fro	om DB			
				×	Referred Object from	DB			
				_			Statement and the second se		

- **Content processing plugins...**, opens a new window with the list of available plugins for the selected resource. Please see section 2.3.14 for more details.
- Cut, Copy, Paste and Delete options
- Move up, Move Down to change the resource position in the tree
- **Refresh**, to force the tree update

#### 2.4.3 The Resource Viewer menu

The **Resource View** menu shows a set of functionalities available according with the resource showed in the **Resource View** window. The list of functionalities is the same showed with a right click in the **Resource View** window

# 2.5 AXMEDIS Resource Viewer (DSI)

### 2.5.1 Main functionalities

The Resource Viewer allows to view and in some cases also edit the resources in the AXMEDIS Object, it is composed of:

- Image Viewer
- Audio Player
- Video Player
- Document Viewer
- SMIL Player
- MPEG4 Player

The functionalities provided are explained in the following sections.

### 2.5.2 Relationship with other tools

The Resource viewer is integrated as a part of the AXMEDIS Editor.

## 2.5.3 Image Viewer - Detailed description of the functionalities and Screenshots

The Image Viewer is the part of the AXMEDIS Editor visualizing the images embedded as resources in an AXMEDIS object.

Double clicking on an image resource opens the Image Viewer. Right clicking on the image to open the contextual menu.



Features in the contextual menu of the image player are:

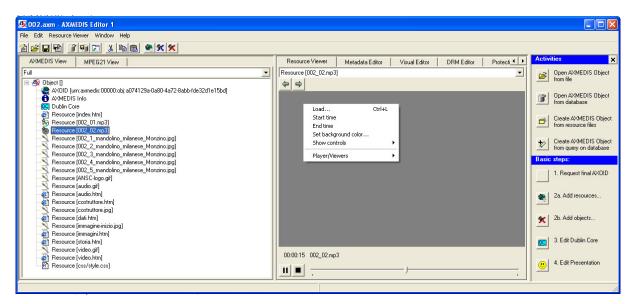
- Load, opens an external resource;
- Fit, fits the rendered image to the windows size;
- Zoom In, enlarges the image size view;
- **Zoom out**, reduces the image size view;
- Zoom, from 1% to 3000% to reduce or enlarge the size of the image by the given percent;
- Autofit, fits the rendered image to the windows size automatically

- **Fullscreen**, to zoom the image to fit the size of the screen. To return to the normal view size, right click on the image and deselect the "Fullscreen" option in the contextual menu;
- Set background colour, changes the colour of the background choosing it using a colour palette
- **Rotate figure**, rotates the image by 90, 180 and 270 degrees
- Mirror Figure, creates a mirror image reflecting in the horizontal or in the vertical direction
- Select region, permits to select a portion of the image
- Save region to file, to save the selected region on dick
- Save region as Resource, to save the selected region to be copied as new resource in the object tree
- Copy region, to copy the selected region in the clipboard
- **Paste region**, to paste the selected region
- Show controls, hides or shows additional information and functions below the image, such as
  - the "Status" with the name and the size of the image;
    - the "Zoom buttons";
- Players viewers, opens a different player.

#### 2.5.4 Audio Player - Detailed description of the functionalities and Screenshots

The Audio Player is the part of the AXMEDIS Editor playing the audio resources embedded in an AXMEDIS object

Double clicking on an audio resource opens the Image Viewer. Right clicking on the audio player to open the contextual menu.



Features in the contextual menu of the audio player are:

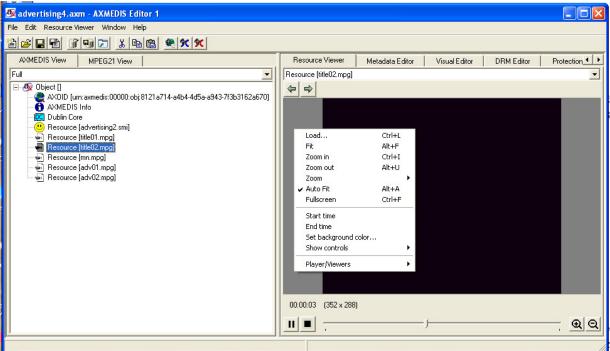
- Load, opens an external resource;
- Start Time, sets the point to start the audio playing
- End Time, sets the point to stop the audio playing
- Set background colour, changes the colour of the background choosing it using a colour palette
- Show controls, hides or shows additional information and functions, such as
  - the "Status" with the name of the file and the total duration,
  - o the Current Time,
  - o the Play/Stop buttons
  - o the Slider;
  - o the History button to go forward or back in the history of the showed resources
- **Players viewers**, opens a different player.



## 2.5.5 Video Player - Detailed description of the functionalities and Screenshots

The Video Player is the part of the AXMEDIS Editor playing the videos embedded as resources in an AXMEDIS object

Double clicking on a video resource opens the Video Player. Right clicking in the video player opens the contextual menu.



Features in the contextual menu of the Video Player are:

- Load, opens an external resource;
- **Fit**, fits the rendered video to the windows size;
- **Zoom In**, enlarges the video size view;
- Zoom out, reduces the video size view;
- Zoom, from 1% to 3000% to reduce or enlarge the size of the video by the given percent;
- **Fullscreen**, to zoom the video to fit the size of the screen. To return to the normal view size, right click on the image and deselect the "Fullscreen" option in the contextual menu;
- Start Time, sets the point to start the video playing
- End Time, sets the point to stop the video playing
- Set background colour, changes the colour of the background choosing it using a colour palette
- Show controls, hides or shows additional information and functions, such as
  - o the "Status" with the name of the file,
  - o the Current Time,
  - o the Play/Stop buttons
  - o the Slider;
  - o the Zoom buttons
  - o the History button to go forward or back in the history of the showed resources
- Players viewers, opens a different player.

### 2.5.6 Document Viewer - Detailed description of the functionalities and Screenshots

The Document Viewer is the part of the AXMEDIS Editor visualizing the documents embedded as resources in an AXMEDIS object

Double clicking on a document resource (typically an html, pdf, .doc, .rft, or .txt resource) opens the corresponding Document Player according to the document type.

Particularly the html viewer permits to view images or play resources linked into the html code and stored as single resources into the same AXMEDIS object.

### 2.5.7 SMIL Player - Detailed description of the functionalities and Screenshots

The SMIL Player is the part of the AXMEDIS Editor visualizing the SMIL resources embedded in an AXMEDIS object

Double clicking on a SMIL resource in the tree opens the SMIL Player. Right clicking in the SMIL Player opens the contextual menu.

🌆 test-smil.axm - AXMEDIS Editor 2		
File Edit Resource Viewer Window Help		
12 2 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
AXMEDIS View MPEG21 View	Resource Viewer	Metadata Editor 🔺 🕨
Ful	Resource [NYC.smil]	<u> </u>
AVOID [urr:axmedis:00000:obj:f4651f7e-3372-47cc-8a29-62b7910d2524]     AVMEDIS Info     Dubin Core     Resource [Ferry1.gif]     Resource [NYC.smil]	Load Fullscreen Start time End time Set background c Show controls Player/Viewers	Ctrl+L Ctrl+F olor

Features in the contextual menu of the SMIL Player are:

- **Load**, opens an external resource;
- **Fullscreen**, to view the SMIL resource in fullscreen. To return to the normal view, right click on the image and deselect the "Fullscreen" option in the contextual menu;
- **Start Time,** sets the point to start the SMIL resource playing
- End Time, sets the point to stop the SMIL resource playing
- Set background colour, changes the colour of the background choosing it using a colour palette
- Show controls, hides or shows additional information and functions, such as
  - the "Status" with the name of the file,
  - o the Play/Stop buttons
- Players viewers, opens a different player.

#### 2.5.8 MPEG4 Player - Detailed description of the functionalities and Screenshots

The MPEG-4 player is a part of the AXMEDIS Editor playing the MPEG-4 resources embedded in an AXMEDIS object.

Functionalities are similar to those of the Video player. Please, see section 2.5.5 for more details.

# 2.6 AXMEDIS Metadata Editor (UNIVLEEDS)

## 2.6.1 Main functionalities

The Metadata Editor allows the user to add, edit, delete and view metadata elements including Dublin Core and AXMEDIS Info (AxInfo) using a simple HCI interface with pop up menus and editing boxes.

### 2.6.2 Relationship with other tools

The Metadata Editor is integrated as a part of the AXMEDIS Editor.

### 2.6.3 Detailed description of the functionalities and Screenshots

The Metadata Editor view can be opened by selecting "Metadata View" in the tab or by double clicking in the Hierarchical View on the left side of the main AXMEDIS Editor. We see in Figure 1 the AXMEDIS Editor with the Metadata Editor comprising of a Tree View displaying the metadata elements and editing windows to edit the element content type.

💁 AXMEDIS Editor			
File Edit View Editors/Viewers Players Window Help			
AVMEDIS MPEG21	Resource View Metadata View Vier	ual View Behaviour View Object View Workflow View D	
Ful			
F4	C      C    C	Metadala Editor Metadala View   Eleitent Content Content Type Enumeration: Atticula Name Type Value Add Child Element Commit Update	

Figure 1

The Editor provides the following functionalities:

- Adding child metadata elements to a Metadata element
- Inserting metadata elements
- Deleting Metadata elements
- Editing Metadata elements

### 2.6.3.1 Adding Metadata Elements

Adding metadata elements to the metadata is achieved by right clicking on the element the user wishes to add a child to. A pop menu appears and navigating to the "Add New Child Element ..." a list of valid child elements is presented. These elements are derived from the metadata Grammar inserted when loading metadata with an associated schema.

Resource View         Metadata View         Visual View         Behaviour View         Object View		2 € \$ ₹ ₹ attorption i tile Cont	scription
Fornat identifier souce language relation coverage rights Ensurements Attibute Name Type	Value v3.org/1959/12/22-of-syntams Figure 2	Attri	Name Type Value

Another method for adding a child element is to use the Add Child drop down box in the main panel highlighted in Figure 3.

Image: State Control State       Image: State Control State       Image: State Control State         Image: State Control State       Image: State Control State       Image: State Control State       Image: State Control State         Image: State Control State       Ima	XMEDIS Editor Edit View Editors/Viewers Players Window Help		E(
HEDIS MPEG2			
a Table II	KMEDIS MPEG21	Resource View Metadata View	Visual View Behaviour View Object View Worktlow View DBM V
BEI Duble Core	Object []	Image: Second secon	
Context Types	AVDID (uncommedia: 00000:obj:000(ce07-f5a8-4993-a595-dbc/d17d300c)     AVMEDIS Into	itte	
Context Type:		- Creator - Ianguage	Description
Enancesian		Sec. 19. 19. 19.	Content
Allebalm			Content Type:
Name Type Volue priha Unknown Uptioner http://www.voluej1030/02/22.nd/syntae-na			Alticulo Name Type Value
			Ad Chald Element Connel Update Update Content
Total Commit Update			odivide combutor date logn
Commet Update			source

Figure 3

### 2.6.3.2 Inserting Metadata Elements

To insert elements into the metadata is similar to the Adding functionality. To insert an element, the user right clicks on the element. The new element will be inserted above the selected element as shown in Figure 4. The left screenshots demonstrate the user right clicking on the Dublin Core Element "language" and inserting the Dublin Core element "creator". In the right screenshot, the tree view shows the "creator" inserted above "language" and below "title".

riew Metadata View \\ B	Visual View   Behaviour View   Dtject View   Workflow View   DRM Vis 🕩	Besource View     Metadala View       Image:	Visual View Behaviour View Object View Workflow View	
cription title	Metadata Editor   Metadata Vieve   Element	Bescription     Bescription     Bescription     Generator	Metadata Editor   Metadata View   Element	
Expand Children Items Collapse Children Items	language	anguage	creator	
Collapse Children Items Expand Al Items	Content	14 C 14 C 15 C 15 C 1	Content	
Collapse All Items	Content Type:		Content Type University of Leeds	
Delete Targuage" Demont	oulard descrition axibiter contributor date top date top date top axibiter date date date date date date date date		Enumeration Enumeration	
	Name Type Value		Name Type Value	
	lang Unknown smins Unknown http://putl.org/dc/elements/1.1/		lang Unknown en smin: Unknown http://put.org/dc/elements/1.1/	

Figure 4

# 2.6.3.3 Deleting Metadata Elements

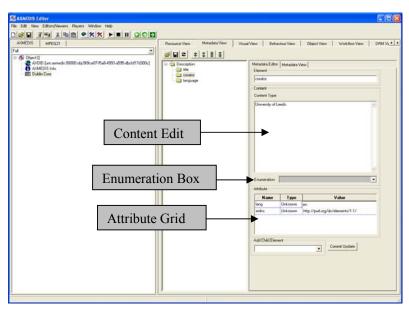
The user right clicks on the element they wish to delete and navigates the pop up menu to remove the metadata element (see Figure 5). In this example the Dublin Core element "Creator" is removed.

cource View Metadata View   ■ ■ ★ \$ \$ \$ \$	Visual View   Behavloor View   Dbject View   Woldflow View   DFM Viet >	Resource View Metadata View	/ Visual View   Behaviour View   Object View   Workflow View   DRM V	
Description	Metadala Editor   Metadata View	E Cescription	Metadata Editor   Metadata View	
i ble	Element	105e	Element	
Expand Children Items	(creator	language	Description	
Collapse Children Items	Rems Content		Content	
Expand All Items Collapse All Items	Content Type:		Content Type:	
	Courseston		Enumeration:	
	Name Type Value		Name Type Value	
	lang Unknown		mins Unknown http://www.w3.org/1999/02/22+di-syntax-ns	



# 2.6.3.4 Editing Metadata Elements

Editing the metadata element is achieved by using the text box in the Content frame, the "Enumeration" drop down box and the Attribute grid as shown in Figure 6. Fields are edited by selecting the view and adding the values you wish to add the metadata. If the schema does not allow the fields to be edited, for example there are no enumerations in the Figure 6. In Figure 5, the element currently selected does not have a text node and therefore both the content and enumeration area are grayed out.





To edit elements with enumeration choices, the user selected the enumeration value they require from the drop down box as shown in Figure 7.

Resource View Metadata View Visu	ual View   Behaviour View   Object View   Workflow View   DRM Vis 4
Adinio DipectCreatorName DipectCreatorName DipectCreatorURL DipectCreatorCompany DipectCreatorNationality DipectCrea	Metadata Editor     Metadata View       Element     ObjectType       Content     Content       Content Type: String     BASIC       BASIC     Image: String String       Enumeration:     BASIC       Attribute     COMPOSITE
	Add Child Element

Figure 7

# 2.7 AXMEDIS Metadata Mapper Editor (UNIVLEEDS)

## 2.7.1 Main functionalities

This is a GUI interface where a user can define mapping information to enable transformation between metadata languages. This mapping can be used to generate a stylesheet which can then be used to transform metadata information.

## 2.7.2 Relationship with other tools

The resulting stylesheet can be used to transform metadata documents using the content processing tools.

## 2.7.3 Detailed description of the functionalities and Screenshots

### 2.7.3.1 Creating a Transformation XSLT to map Metadata

The main window of the metadata mapper consists of three components, the left hand component displays a tree view of the source metadata once it has been loaded, the right hand component displays a tree view of the destination metadata and the middle component is used to show the relationship between elements on either side.

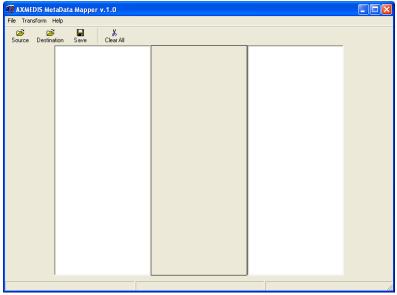


Figure: Metadata Mapper

## 2.7.3.2 Creating a Transformation XSLT to map Metadata

To create an XSLT stylesheet, we first need to load two metadata documents. The first should contain an instance of the metadata you want to transform from (source metadata language), the second should contain an instance of the metadata you want to transform to (destination metadata language). This is achieved by selecting the source and destination toolbar buttons in the metadata mapper tool and navigating the file open dialogue to the documents you want to open.

AXMEDIS MetaData Mapper v.1.0			
Tel:     Tel:       Open Source (II)       Look (I)       Down (I)       With Revert Documents       With Revert Documents       With Documents       With Documents       With Documents       With Documents       With Documents       With Documents       Placent       Fin name:       Placent       Fin name:       Placent	2 X	The readom has Source Desited on Son Desited  To the readom has been been been been been been been bee	
		best-input.cml	

**Figure: Opening the Source File** 

Once the two metadata documents have been successfully loaded, they will be displayed in the tree components as shown in the screenshot below.

XXMEDIS MetaData Mapper v.1.0			
nte Transform Help Soucio Destination Course		nesoda Bite Content Denor Pore	
	+004-001	best-output.vol	

Figure: After opening source and destination Files

Relationships can now be made by selecting an element from the left hand side and then selecting the related element from the right hand side. These connections can be updated by selecting a new element on the right hand side while the left hand side of a connected node is selected. A connection can be deleted by right clicking the connected element.

AXMEDIS Me		v.1.0			
File Transform H					
Source Destina	ition Save	Clear All			
	Content			metadata 👔	
	0 name 0 ago			Content D author	
	address work			D year	
		best-a	putami	test-output.xm	

Figure: Creating mapping between source and destination

Once the user has finished mapping metadata from source to destination language a XSLT stylesheet can be saved which contains all the connection information. This is achieved by selecting the save toolbar button and saving a file using the 'file save' dialogue.

AXMEDIS Met		.1.0					
Save Map file	leip	•			? 🗙		
	🗀 samples		•	+ 🗈 💣 📰			
My Recent Documents Desktop My Documents	Svn	.xa					
Mu Nobuork	File name:	transformation.xsl			Save		
My Network Places	File name: Save as type:	Files (*.xsl)		•	Cancel		
		test-input.xr	nl		test-out	put.xml	

Figure: Saving Mapping as an XSLT file (.xsl)

## 2.7.3.3 Transforming Metadata using the XSLT

Now that we have a stylesheet describing how to map metadata from the source language to the target language, we can transform a document. This is achieved using the 'Transform' menu. First an input file is selected to be transformed; then an output filename is chosen for the transformed metadata; finally the transform function is called and the metadata is mapped to the destination language according to the stylesheet rules and saved to file.

🐼 AXMEDIS MetaData Mapper v.1.0	🗱 AXMEDIS MetaData Mapper v.1.0
File Transform Help	File Transform Help
g Set Input 🔐 X So Set Output Save Dear All	Set Input file ? 🗙
Transform Content Cont	Look in My Deckor Deckor Wp Documents Wp Conceptar Wp Conceptar
	File name         Open           My Mehnoth         Files of types         Files (")         Cancel           Places         I'' Open as read only         I'''         I'''
Set Input File best-input cmi best-output cmi	 kest-input.xml kest-output.xml

Figure: Setting Metafile to transform after creating anXSLT file (.xsl)

	aData Mapper v.1.0					
File Transform H				? 🗙		
Set Output file Savein	i samples		+ 🗈 💣 🖬 -			
My Recent Documents Desktop	som 2 results.com 2 test-roput.com 2 test-roput.com At transformation.csl					
My Computer						
My Network. Places	File name: results.m Save as type: Files (".")		×	Save Cancel		
		test-input.xml		test-outp	ut.xmi	

Figure: Setting an output file for the new Metadata after transformation

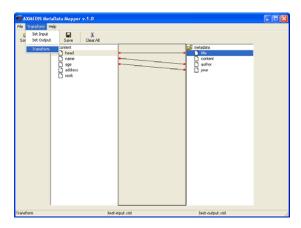


Figure: Transforming the Metadata

# 2.8 AXMEDIS Visual and Behaviour Editor (EPFL)

### 2.8.1 Main functionalities

The SMIL Editor allows editing of SMIL resources from the AxEditor by a visual interface. It is divided in three parts: the tree view part that shows the whole SMIL structure, the visual part that shows the regions used for resources displaying and the behavior part that shows the timing structure and properties.

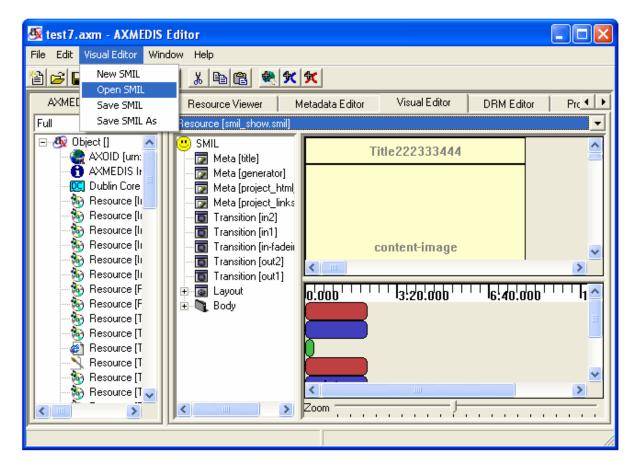
### 2.8.2 Relationship with other tools

The SMIL Editor and Player is integrated as a part of the AXMEDIS Editor.

## 2.8.3 Detailed description of the functionalities and Screenshots

## 2.8.3.1 General Commands

You can use the functions from the Axmedis Editor to create a new SMIL resource, open an existing SMIL resource, save a SMIL resource, and save a SMIL resource as another SMIL resource as follows:



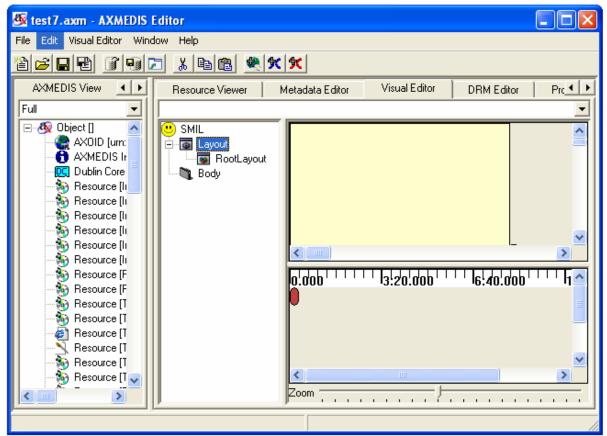
# 2.8.3.1.1 <u>SMIL resource combo box</u>

You can use this function to select the SMIL resources embedded inside the axmedis object as follows.

🌆 test7.axm - AXMEDIS				
File Edit Visual Editor Win	dow Help			
1 <b>1 1 1 1 1 1 1</b>	2 🔏 🖻 🖻 🗮 🛠 🛠			
AXMEDIS View	Resource Viewer Metadata Editor	Visual Editor	DRM Editor	Prc 4
Full         Object []         AXDID [um:         AXMEDIS It         Dublin Core         Resource [It         Resource [	Resource [smil_show.smil] Resource [test1.smil] Resource [smil_show.smil] Resource [smil_show.smil] Resource [smil_show.smil] Resource [smil_show.smil] Resource [test.smil] Resource [testnew.smil] Resource [test1.smil] Resource [objectives.smil]			▼

## 2.8.3.1.2 <u>New SMIL</u>

When you have no SMIL resource loaded and select the option of "New SMIL", the SMIL editor will create a very simple SMIL resource with only rootlayout and body container as follows:



When you have a SMIL resource loaded and select the option of "New SMIL", the SMIL editor will first ask you if you want to save the current resource or not and then create a very simple SMIL resource with only rootlayout and body container as section 3.2.1:

Save Resource	
Do you want to say	ve the resource ?
Yes	No

## 2.8.3.1.3 Open SMIL

When you have no SMIL resource loaded and select the option of "Open SMIL", the SMIL editor will pop up a dialog for you to select the SMIL resources embedded inside the axmedis object as follows:

Open Resource			X
Resource name:	Resource [smil_	show.smil]	•
	ОК	Cancel	

When you have a SMIL resource loaded and select the option of "Open SMIL", the SMIL editor will first pop up a dialog to ask you if you want to save the current resource or not and then pop up a dialog for you to select the SMIL resources embedded inside the axmedis object as section 3.3.1:

Save Resource	
Do you want to sa	ave the resource ?
Yes	No

## 2.8.3.1.4 Save SMIL

When you have no SMIL resource loaded and select the option of "Save SMIL", the SMIL editor will pop up a dialog for you to save the SMIL resources as a new resource embedded inside the axmedis object as follows:

Save Ressource As			
Resource name: smil_show.smil			
	ОК	Cancel	

When you have a SMIL resource loaded and select the option of "Save SMIL", there will pop up a dialog asking you if you want to overwrite the current one or not.

Save Resource		
Do you want to overwrite: testnew.smil ?		
ОК	Cancel	

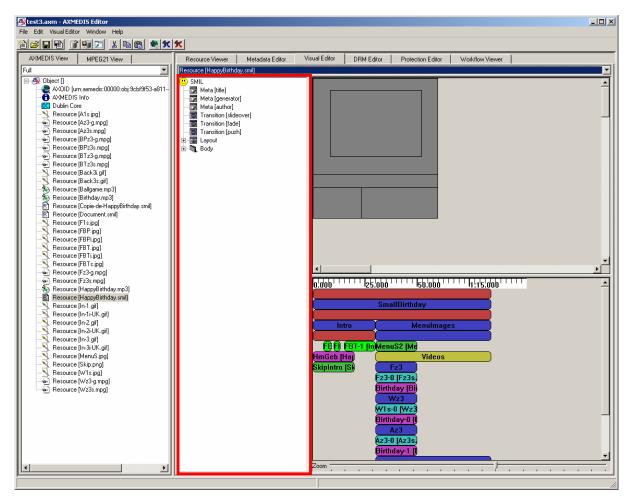
### 2.8.3.1.5 Save SMIL As

When you have a SMIL resource loaded and select the option of "Save SMIL As", there will pop up a dialog for you to save this resource as another resource.

Save Ressource As		$\mathbf{X}$	
Resource name:	smil_show.smil		
	ОК	Cancel	

# 2.8.3.2 Tree view part

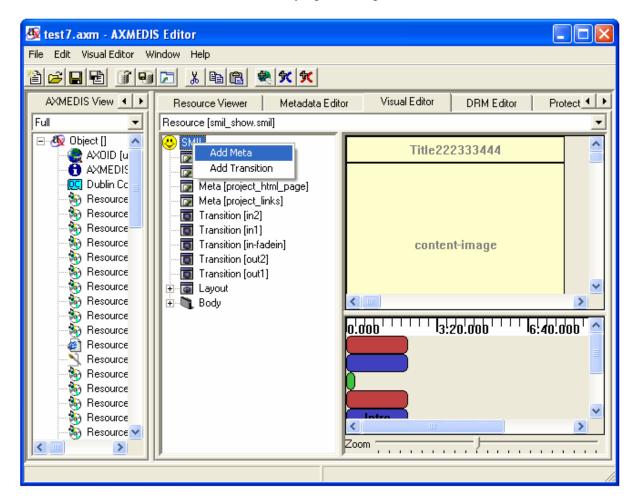
The tree part is located at the left of the SMIL Editor.



The tree view part of the SMIL editor is used for manipulating the whole SMIL with his internal structure. It is the only view that can display/edit completely Metas, Transitions and Links.

## 2.8.3.2.1 <u>SMIL</u>

You can add Metas and Transitions to the SMIL by right clicking the SMIL icon as follows.



2.8.3.2.1.1 Add Metas

ADD ME	TA 🔀
Id	
Name	
Content	
	Ok Cancel

Id: ID of the meta. It uniquely identifies the Meta within this SMIL.

Name: Identifies a property name. It is required for Meta elements.

name	abstract	Gives the presentation abstract.
------	----------	----------------------------------

author	Lists the presentation author's name.
base	Sets the base URL for the source clips.
copyright	Supplies the presentation copyright.
title	Gives the presentation title.

### **Content**: Provides the content for the name attribute..

## 2.8.3.2.1.2 Add Transitions

ADD TRA	ANSITION
Id	
Туре	arrowHeadWipe
Subtype	up 💌
Dur	1.000
Start	0
End	1
Directior	forward 💌
FadeCol	#000000 Select Color
	Ok Cancel

- Id: ID of the transition (default: empty). It uniquely identifies the transition within this SMIL.
- **Type:** Specifies the main transition type (default: none).
- **Subtype:** Defines an optional subtype for each type.
- **Dur:** Defines the length of the transition effect.
- **Start:** Starts the effect at a midway point.
- **End:** Ends the effect before it completes fully.
- Direction: Specifies the transition direction (default value is forward).

FadeColor: Sets a color for fades.

You can choose the option of "Select Color" to customise the color. There will pop up the following dialog.

	? 🛛
Basic colors:	
Custom colors:	Hue: 160 Red: 0 Sat: 0 Green: 0 Color/Solid Lum: 0 Blue: 0 Add to Custom Colors

# 2.8.3.2.2 <u>Meta</u>

You can edit the Meta by right click the Meta. There would be three options: "Rename", "Modify", "Delete"

Full       Resource [smil_show.smil]         AXOID [u       Meta         AXMEDIS       Meta         Dublin Cc       Meta         Resource       Meta         Resource       Meta         Resource       Meta         Resource       Transition [in2]         Resource       Transition [in1]         Transition [in1]       Transition [out2]         Resource       Transition [out1]         Resource       Resource         Resource       Body         Resource       Solution         Resource       Resource         Resource       Resource <th>🌆 test7.axm - AXMED</th> <th>IS Editor 📃 🗖 🔀</th>	🌆 test7.axm - AXMED	IS Editor 📃 🗖 🔀
AXMEDIS View       Resource Viewer       Metadata Editor       Visual Editor       DRM Editor       Prote         Full       Image: State of the state of	File Edit Visual Editor V	Vindow Help
Full   Object []   AXOID [u   AXMEDIS   Dublin Cc   Resource	1000	
Object []   AXOID [u   AXMEDIS   Meta   Delete   Resource	AXMEDIS View	Resource Viewer Metadata Editor Visual Editor DRM Editor Prote
AX0ID [u AXMEDIS Dublin Cc Resource	Full 📃	Resource [smil_show.smil]
AXMEDIS Dublin Cc Resource Resour		Title222333444
	AXMEDIS Dublin Cc Resource	Meta Modify pej Delete Transition [in2] Transition [in1] Transition [out2] Transition [out1] Body

## 2.8.3.2.2.1 Rename

You can directly rename the Meta Name as the following.

🌆 test7.axm - AXMEDI	S Editor
File Edit Visual Editor W	indow Help
12 <b></b>	
AXMEDIS View	Resource Viewer Metadata Editor Visual Editor DRM Editor Prote
Full 💌	Resource [smil_show.smil]
⊡	SMIL Title222333444
AXMEDIS Dublin Cc Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource	Image: Second state of the second s
Resource Resource Resource Resource Resource Resource	Body

## 2.8.3.2.2.2 Modify

By choosing the option of "Modify", you can modify the Meta with the following dialog:

MODIFY	' META [rename this meta] 👘 🔀
Id	meta-smil-a
Name	rename this meta
Content	PPC Flashlight Demo
	Ok Cancel

The attributes of this dialog are exactly the same as those of "Add Meta" described in 2.8.3.2.1.1.

## 2.8.3.2.2.3 Delete

By choosing the option of "Delete", you can delete the Meta with the following dialog:

WARNING!	
Do you want to delete	this meta(rename this meta)
Yes	Cancel

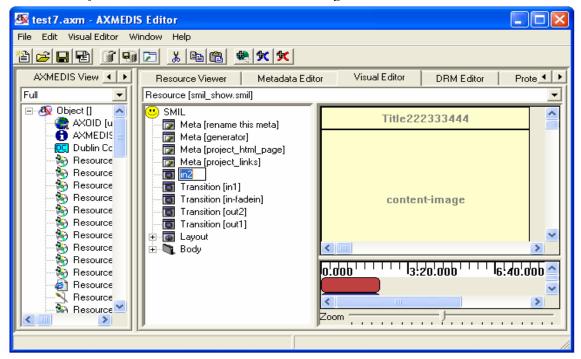
# 2.8.3.2.3 Transition

You can edit the transition by right click the transition. There would be three options: "Rename", "Modify", "Delete".

🌆 test7.axm - AXMED	IS Editor 📃 🗖 🔀
File Edit Visual Editor V	Vindow Help
12 2 2 2 3	
AXMEDIS View	Resource Viewer Metadata Editor Visual Editor DRM Editor Prote
Full 🗾	Resource [smil_show.smil]
E 🥸 Object [] 🔼 🔼	SMIL     Title222333444
AXMEDIS Dublin Cc Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource Resource	Meta [generator] Meta [project_htm_page] Meta [project_links] Rename T Rename T Modify Delete T Transition [out1] Body 0.000 13:20.000 16:40.000 200 10 10 10 10 10 10 10 10 10

## 2.8.3.2.3.1 Rename

You can directly rename the transition name as the following:



### 2.8.3.2.3.2 Modify

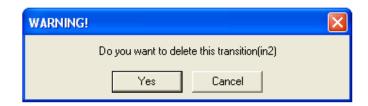
By choosing the option of "Modify", you can modify the transition with the following dialog:

MODIFY	TRANSITION [in2]
Id	in2
Туре	clockWipe 💌
Subtype	clockwiseTwelve 💽
Dur	2.000
Start	0
End	1
Directior	forward 💌
FadeCol	#000000 Select Color
	Ok Cancel

The attributes of this dialog are exactly the same as those of "Add transition" described in 2.8.3.2.1.2.

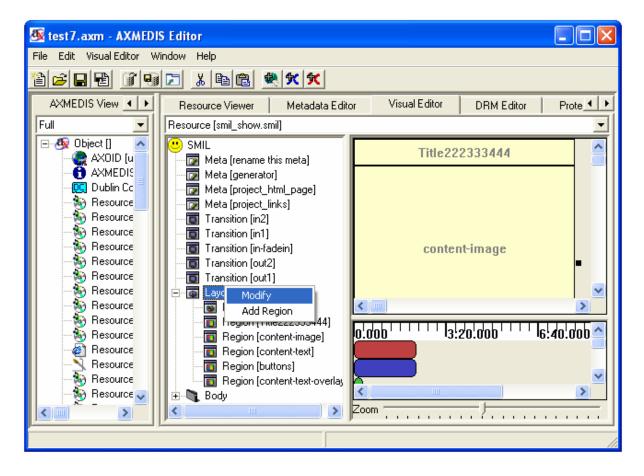
### 2.8.3.2.3.3 Delete

By choosing the option of "Delete", you can delete the transition with the following dialog:

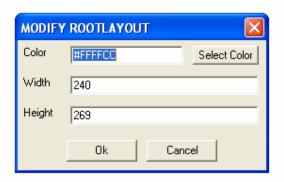


# 2.8.3.2.4 Rootlayout

You can modify the size of the root-layout by right clicking the root-layout element in the Tree View part (The same function as in the Visual View part). There will pop up a menu. One option is to modify the size and color of the root-layout. By inputting the values of the height and width, you can modify the size. With the dialog given, you can customize the color as well. The left top position is fixed at the left top corner of the canvas.



# 2.8.3.2.4.1 Modify



- **Color:** Sets the window background color (default: black).
- Width: Sets the main window width (default: 0).
- **Height:** Sets the main window height (default: 0).

			? 🗙
Basic colors:			Γ.
			1
		Hue: 40	Red: 255
		Sat: 240	Green: 255
Define Custom Colors >>	Color Solid	Lum: 216	Blue: 204
OK Cancel	A	dd to Custom (	Colors

You can select the color by right-clicking the "Select Color" and there will pop up the color for choice.

## 2.8.3.2.4.2 Add region

ADD REGION	X
ld	
Name	
🔲 Width	0
🗖 Left	0
🗖 Right	0
🗖 Height	0
🗖 Тор	0
E Bottom	0
ZIndex	0
Fit	hidden
Show Background	always
Color	#000000 Select Color
	0k Cancel

You can add the region into the root layout by selecting the option of "Add Region".

Id: Uniquely identifies a region within the root-layout.

Name: Identified the region. It is not unique.

Width: Sets the region's width (default: auto).

Left: Sets the region's offset from the window's left side (default: auto).

**Right:** Sets the region's offset from the window's right side (default: auto).

**Height:** Sets the region's height (default: auto).

**Top:** Sets the region's offset from the top of the window (default: auto).

Bottom: Sets the region's offset from the bottom of the window (default: auto).

**Z-Index:** Sets the stacking order when the region overlaps another region (default: 0).

Fit: Controls how clips fit the region (default: hidden).

Show Background: Determines when the background color appears (default: always).

The governing equation for the horizontal dimension is: bbw (bounding-box-width) = left + width + right. Given that each of these three parameters can have either a value of "auto" or a defined value not "auto", then there are 8 possibilities:

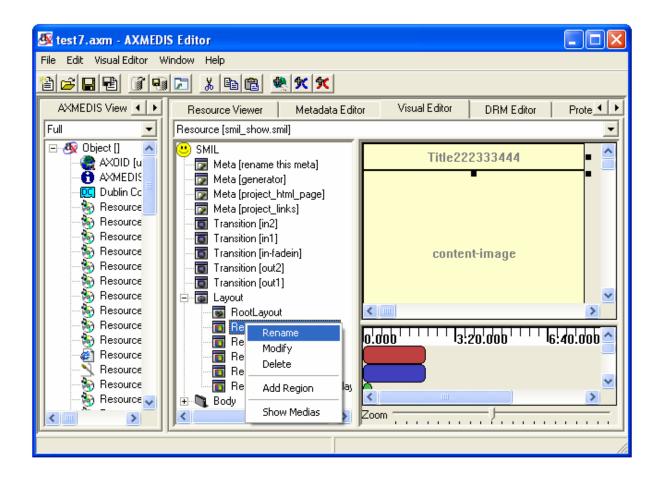
Attribute values		Result before clipping to the bounding box			
left	width	right	left width rig		right
auto	auto	auto	0	bbw	0
auto	auto	defined	0	bbw - right	right
auto	defined	auto	0	width	bbw - width
auto	defined	defined	bbw - right width	width	right
defined	auto	auto	left	bbw - left	0
defined	auto	defined	left	bbw - right - left	right
defined	defined	auto	left	width	bbw - left - width
defined	defined	defined	left	width	bbw - left - width

The vertical attributes height, bottom, and top are resolved similarly. The governing equation for the vertical dimension is: bbh (bounding-box-height) = top + height + bottom. Given that each of these three parameters can have either a value of "auto" or a defined value not "auto", then there are 8 possibilities:

Attribute values		Result before clipping to the bounding box				
top	height	bottom	top height		bottom	
auto	auto	auto	0	bbh	0	
auto	auto	defined	0	bbh - bottom	bottom	
auto	defined	auto	0	height	bbh - height	
auto	defined	defined	bbh - bottom - height	height	bottom	
defined	auto	auto	top	bbh - top	0	
defined	auto	defined	top	bbh - bottom - top	bottom	
defined	defined	auto	top	height	bbh - top - height	
defined	defined	defined	top	height	bbh - top - height	

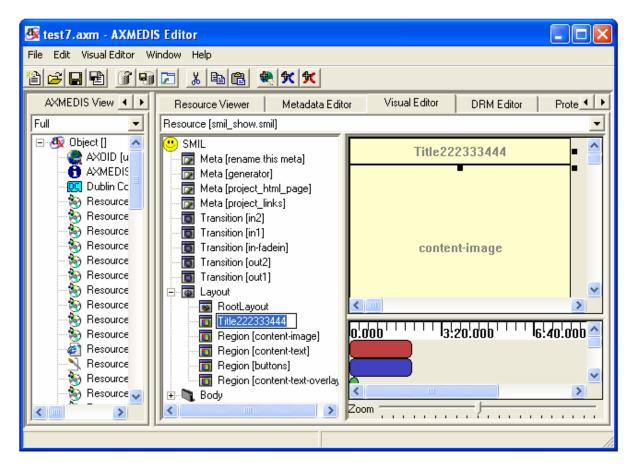
# 2.8.3.2.5 <u>Region</u>

You can modify the size of the region manually with dialog menu by right clicking the region element of the Tree View part (the same function of the Visual View part). There will pop up a menu. One option is to rename this region One option is to modify the size, position, index, and color of the region. One option is to delete this region. One option is add some sub-regions in side this region, one option is to show the media resources which are associated with this region. By inputting the values of the height and width, you can modify the size. With the dialog given, you can customize the color as well.



### 2.8.3.2.5.1 Rename

You can directly rename the region's name as the following:



2.8.3.2.5.2 Modify

MODIFY REGION [content-image]				
Id	content-image			
Name				
🔽 Width	240			
🔽 Left	0			
🔲 Right	0			
🔽 Height	180			
🔽 Тор	29			
E Bottom	0			
ZIndex	1			
Fit	hidden			
Show Background	always			
Color	#000000 Select Color			
	Ok Cancel			

You can modify the region by choosing the option of "modify region". There will pop up a dialog menu. The attributes are exactly the same as the part "add region" described in the root layout editing, section 4.4.2.

### 2.8.3.2.5.3 Delete

You can also delete the region by choosing the option of "delete".

1) When there is no media resource associated with this region, there will popup the following warning dialog.

WARNING!	×
Do you want to delete this region (content-image)?	
Yes Cancel	

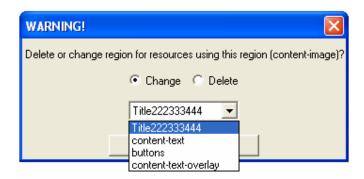
2) When there are some child regions associated with this region, there will popup the following warning dialog asking if you want to delete this region and all his children.

WARNING!	
Do you want to delete this region	(content-text) and all his children?
Yes	Cancel

3) When there are some media resources associated with this region, there will popup the following warning dialog asking if you want to delete or change region for these resources. By option "Delete", you can delete the region and the resources inside.



You can choose to use other regions to host these resources as follows. There will appear a list of all the other regions for changing.





ADD REGION	
ld	
Name	
🔲 Width	0
🔲 Left	0
🔲 Right	0
🔲 Height	0
🗖 Тор	0
E Bottom	0
ZIndex	0
Fit	hidden 💌
Show Background	always 💌
Color	#000000 Select Color
	Ok Cancel

You can add new region by choosing the option of "Add Region". There will pop up a dialog menu. The attributes of "Add Region" in region editing are exactly the same as the part "Add Region" described in the root layout editing, section 4.4.2.

# 2.8.3.2.5.5 Show Medias

Medias that uses buttons Region Select Media that uses buttons Region	×
Beleti metia mai uses bukuns negion	_
Select Cancel	

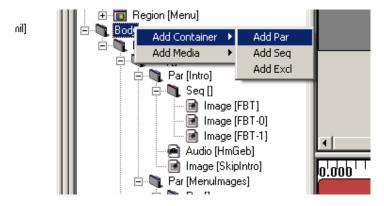
You can check which media is associated the region by choosing the option of "Show Medias". You can select the Media from them for editing.

## 2.8.3.2.6 Body

The Body is also the main sequence and is a not modifiable sequence of timings. You can add Containers and Medias to it by right clicking on it and using the menu.

# 2.8.3.2.6.1 Add Container

To add a Container to the Body right click on it and select the submenu "Add Container" and choose the type of container you want to add.



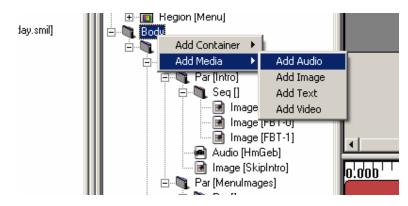
For example if you create a Par, a window like this will be displayed:

ADD PAR	X
Id	
🔲 Begin	
🗖 End	
🗖 Dur	
🗖 RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

Now you can set the new Par properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 2.8.3.2.8.3 for details about the Container.

### 2.8.3.2.6.2 Add Medias

To add a Media to the Body right click on it and select the submenu "Add Media" and choose the type of media you want to add.



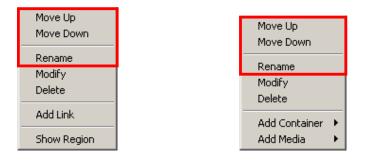
For example if you create an Audio, a window like this will be displayed:

ADD AUDIO	X
Id	
Source	Resource
Region	audio
In Transition	slideover
Out Transition	slideover
🗖 Begin	
🗖 End	
🗖 Dur	
RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

Now you can set the new Audio properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 2.8.3.2.9.3 for details about the Medias properties.

### 2.8.3.2.7 Common timing operations

There are some common operations between Medias and Containers. You can see in the Menu the commands Move Up, Move Down and Rename are both in Media and Container Menus. Modify and delete are also common in the menus but loads different actions. (See sections 2.8.3.2.8 and 2.8.3.2.9)



## 2.8.3.2.7.1 Move Up

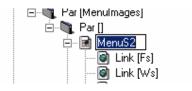
The Move Up command can be loaded by right click on the Media/Container and selecting Move Up. It moves the timing selected up in the structure (in the order of his parent). It is disabled when the timing selected is at the top of his parent.

### 2.8.3.2.7.2 Move Down

The Move Down command can be loaded by right click on the Media/Container and selecting Move Down. It moves the timing selected down in the structure (in the order of his parent). It is disabled when the timing selected is at the bottom of his parent.

#### 2.8.3.2.7.3 Rename

The Rename command can be loaded by right click on the Media/Container and selecting Rename. It opens the name editing. You can also open the editing by fast clicking on it.



When you end the editing, the name is changed.

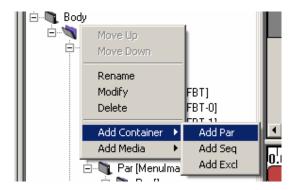
### 2.8.3.2.8 Containers

The Containers are the logical structure of the whole timing of the SMIL. You can add Containers and Medias to a Container by right clicking on it and using the menu. Containers could be Par, Seq or Excl for parallel, sequential and exclusive playing.



### 2.8.3.2.8.1 Add Container

To add a Container to a Container right click on it and select the submenu "Add Container" and choose the type of container you want to add.



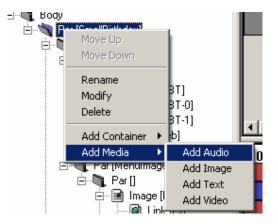
For example if you create a Par, a window like this will be displayed:

ADD PAR	X
ld	
🗖 Begin	
🗖 End	
🗖 Dur	
🔲 RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

Now you can set the new Par properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 2.8.3.2.8.3 for details about the Containers properties.

# 2.8.3.2.8.2 Add Medias

To add a Media to a Container right click on it and select the submenu "Add Media" and choose the type of media you want to add.



For example if you create an Audio, a window like this will be displayed:

ADD AUDIO	X
Id	
Source	Resource
Region	audio
In Transition	slideover
🔲 Out Transition	slideover
🗖 Begin	
🗖 End	
🗖 Dur	
RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>D</u> k <u>C</u> ancel

Now you can set the new Audio properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 2.8.3.2.9.3 for details about the Medias properties.

# 2.8.3.2.8.3 Modify

To modify by dialog a Container right click on it and select "Modify". A window like this will be displayed.

MODIFY PAR [MenuImages]			
Id	Menulmages		
🔲 Begin			
🗖 End			
🔽 Dur	indefinite		
🔲 RepeatCount			
🗖 RepeatDur			
Fill	auto	•	
	Ok Cancel		

There you can set the following properties:

Id: ID of the container (default: empty)

The ID is used identify the Container in the SMIL

**Begin:** Begin of the container (default: not set)

The Begin set the start of the container; it is a list of beginnings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

**End:** End of the container (default: not set)

The End set the end of the container; it is a list of endings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end

**Dur:** Duration of the container (default: not set)

The Dur set the duration of the container; it is a single Duration value.

**RepeatCount:** Number of repetitions (default: not set)

The RepeatCount is used when you want to repeat the container a defined number of times.

**RepeatDur:** Duration of repetitions (default: not set)

The RepeatCount is used when you want to repeat the container for a defined duration.

Fill: Default Fill for Medias in this Container (default: auto)

The Fill is used to set default filling for Medias in the Container. It can have the following values: auto, remove, freeze, hold and transition.

# 2.8.3.2.8.4 Delete

To delete a Container right click on it and click on "Delete". A confirms dialog will appear: Like this one if the Container contains something.

WARNING!		×
Do you wa	nt to delete this par(MenuImages) and all his children?	
	Yes <u>C</u> ancel	
WARNING!		×
	Do you want to delete this par(Az3)?	
	Yes Cancel	

In both cases click Yes to delete the Container or Cancel or exit the window if you changed your mind.

### 2.8.3.2.9 Medias

Like this one if not.

The Medias are the resources played in the SMIL. You can add Link to a Media or select his Region by right clicking on it and using the menu. Medias could be Audio, Image, Text and Video for respective type of files playing.

Move Up Move Down
Rename Modify Delete
Add Link
Show Region

### 2.8.3.2.9.1 Add Link

To add a Link to a Media right click on it and click the menu "Add Link", a window like this will be displayed:

ADD LIN	K 🛛 🗶
Id	
Href	Resource
Title	
Coords	
	<u> </u>

There you can set the following properties of the new Link:

Id: ID of the link (default: empty)

The ID is used identify the Link in the SMIL (used most of time for internal links).

**Href:** Link to load (default: empty)

The Href is used for external Links by setting a link to another SMIL file.

**Title:** Title of the Link(default: empty)

The Title is displayed as information when the SMIL is played.

**Coords:** Coordinates of the Link Region (default: empty= entire Region)

The Coords are a list of coordinates to define a sub-region mouse sensitive to load this link (the entire Region is used if it is not defined)

The Resource button allows setting the Href by selecting a SMIL resource in Axom. It loads a window like this:

Select Resource			×
Resource name: Copie-de-HappyBithday.smil			•
	<u>0</u> K	<u>C</u> ancel	

You simply select the resource you want to link and validate; the new Href will be set.

# 2.8.3.2.9.2 Select Region

To select the Region where a Media is played, simply right click on it and click the menu "Show Region". The Region of the Media will be selected. (In Tree and Visual View)

### 2.8.3.2.9.3 Modify

To modify by dialog a Media right click on it and select "Modify". A window like this will be displayed.

MODIFY AUDIO [Birthday-0]			
ld	Birthday-0		
Source	Birthday.mp3 Resource		
Region	audio		
In Transition	slideover		
Out Transition	slideover		
🗖 Begin			
🗖 End			
🗖 Dur			
🔲 RepeatCount			
🗖 RepeatDur			
Fill	auto		
	<u>O</u> k <u>C</u> ancel		

There you can set the following properties:

**Id:** ID of the Media (default: empty) The ID is used identify the Media in the SMIL

**Source:** Source of the Media (default: empty) The Source is used to link the resource played by this Media

**Region:** Region of the Media (default: first Region) The Region defines the area where the Media will be played. You can select each region you have defined.

**In Transition:** Transition at start (default: not defined)

The In Transition defines the Transition at start where the Media will be played. You can select each Transition you have defined.

**Out Transition:** Transition at end (default: not defined) The Out Transition defines the Transition at end where the Media will be pla

The Out Transition defines the Transition at end where the Media will be played. You can select each Transition you have defined.

**Begin:** Begin of the Media (default: not set) The Begin set the start of the Media; it is a list of beginnings. The general definition of W3C is supported:

### http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

**End:** End of the Media (default: not set)

The End set the end of the Media; it is a list of endings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end

**Dur:** Duration of the Media (default: not set)

The Dur set the duration of the Media; it is a single Duration value.

**RepeatCount:** Number of repetitions (default: not set) The RepeatCount is used when you want to repeat the Media a defined number of times.

**RepeatDur:** Duration of repetitions (default: not set)

The RepeatCount is used when you want to repeat the Media for a defined duration.

**Fill:** Filling of the Media (default: auto)

The Fill is used to set the filling for the Media. It can have the following values: auto, remove, freeze, hold and transition.

The Resource button allows setting the Source by selecting a resource in Axom (selected by mime type). It loads a window like this:

Select Resource			X
Resource name:	A1s.jpg		•
	<u>0</u> K	<u>C</u> ancel	

You simply select the resource you want to link and validate; the new Source will be set.

### 2.8.3.2.9.4 Delete

To delete a Media right click on it and click on "Delete". A confirms dialog will appear:



Click Yes to delete the Media or Cancel or exit the window if you changed your mind.

### 2.8.3.2.10 Links

The Links are the way to jump from a Media. They can be renamed, modified and deleted by menu.

Rename	
Modify	
Delete	

### 2.8.3.2.10.1 Modify

To add a Link to a Media right click on it and click the menu "Modify", a window like this will be displayed:

MODIFY	LINK [Ws]
ld	Ws
Href	Resource
Title	
Coords	59,5,109,60
	<u> </u>

There you can set the following properties of the new Link:

Id: ID of the link (default: empty)

The ID is used identify the Link in the SMIL (used most of time for internal links).

**Href:** Link to load (default: empty)

The Href is used for external Links by setting a link to another SMIL file.

**Title:** Title of the Link (default: empty) The Title is displayed as information when the SMIL is played.

**Coords:** Coordinates of the Link Region (default: empty= entire Region)

The Coords are a list of coordinates to define a sub-region mouse sensitive to load this link (the entire Region is used if it is not defined)

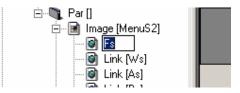
The Resource button allows setting the Href by selecting a SMIL resource in Axom. It loads a window like this:

Select Resource			×
Resource name: Copie-de-HappyBithday.smil			
	<u>0</u> K	<u>C</u> ancel	

You simply select the resource you want to link and validate; the new Href will be set.

### 2.8.3.2.10.2 Rename

The Rename command can be loaded by right click on the Link and selecting Rename. It opens the name editing. You can also open the editing by fast clicking on it.



When you end the editing, the name is changed.

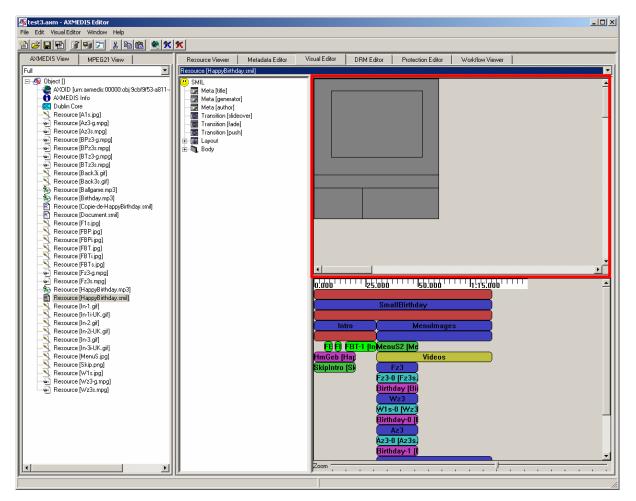
To delete a Link right click on it and click on "Delete". A confirms dialog will appear:

WARNING!			×
	Do you want to del	lete this link(Ws)	
	Yes	<u>C</u> ancel	

Click Yes to delete the Link or Cancel or exit the window if you changed your mind.

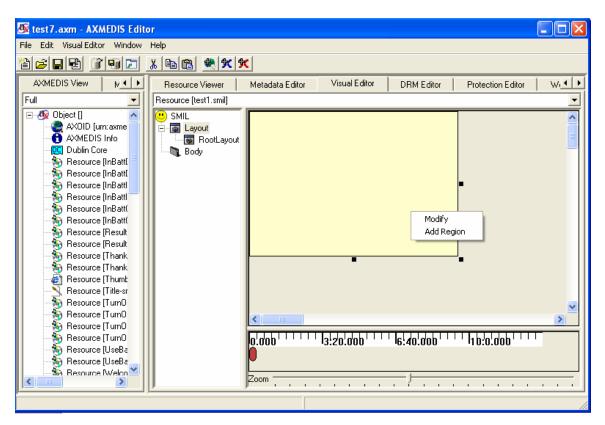
# 2.8.3.3 Visual view part

The visual part is located at the right top of the SMIL Editor.



The visual view part of the SMIL editor is used for manipulating the SMIL layout which including the Rootlayout, Regions, Sub-regions of regions.

### 2.8.3.3.1 Root-layout Editing



You can modify the size of the root-layout by using the mouse to change the size directly or manually with dialog menu by right clicking the root-layout. There will pop up a menu for you. One option is to modify the size and color of the root-layout. By inputting the values of the height and width, you can modify the size. With the dialog given, you can customize the color as well. The left top position is fixed at the left top corner of the canvas.

#### 2.8.3.3.1.1 Modify

MODIFY	ROOTLAYOUT
Color	#FFFFCC Select Color
Width	240
Height	269
	Ok Cancel

You modify the size and color of the root-layout by inputting the values of the height and width. See section 0 for more details about the properties.

	? 🛛
Basic colors:	
	Hue: 40 Red: 255 Sat: 240 Green: 255
Define Custom Colors >>	Color/Solid Lum: 216 Blue: 204
OK Cancel	Add to Custom Colors

You can select the color by right-clicking the "select color" and there will pop up the color for choice.

# 2.8.3.3.1.2 Add region

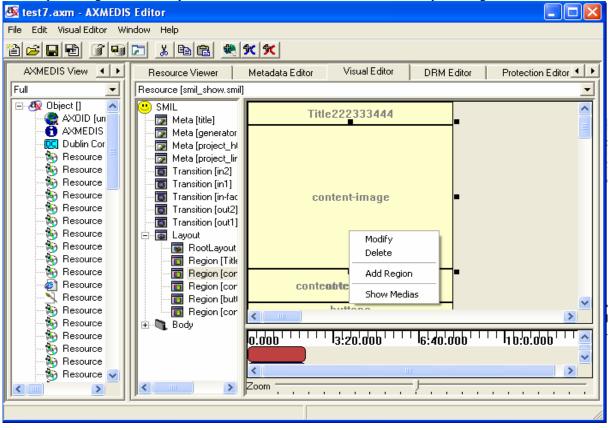
ADD REGION	
ld	
Name	
🔲 Width	0
🗔 Left	0
🔲 Right	0
🔲 Height	0
🗖 Тор	0
E Bottom	0
ZIndex	0
Fit	hidden
Show Background	always
Color	#000000 Select Color
	0k Cancel

You can add the region into the root layout by selecting the option of "add region". You can refer to section 02 for more details about the properties.

### 2.8.3.3.2 <u>Region Editing</u>

You can modify the size of the region by using the mouse to change the size directly or manually with dialog menu by right clicking the corresponding region. There will pop up a menu for you. One option is to modify the size, position, index, and color of the region. One option is to delete this region. One option is add some sub-regions in side this region, one option is to show the media resources which are associated with this region. By inputting the values of the height and width, you can modify the size. With the dialog given, you can customize the color as well.

By directly editing the region with mouse, you can move the region by holding the left key of the mouse and moving it. You can also drag the border of the region to resize it. The sub regions cannot exceed the borders of their parent regions. Also they cannot be moved out of the borders of their parent regions.



# 2.8.3.3.2.1 Modify

MODIFY REGION [content-image]		
ld	content-image	
Name		
🔽 Width	240	
🔽 Left	0	
🔲 Right	0	
🔽 Height	180	
🔽 Тор	29	
F Bottom	0	
ZIndex	1	
Fit	hidden	
Show Background	always	
Color	#000000 Select Color	
Ok Cancel		

You can modify the region by choosing the option of "Modify". There will pop up a dialog menu for you. You can refer to section 02 for more details about the properties.

#### 2.8.3.3.2.2 Delete

You can also delete the region by choosing the option of "Delete".

1) When there is no media resource associated with this region, there will popup the following warning dialog.

WARNING!	
Do you want to delete this	s region (content-image)?
Yes	Cancel

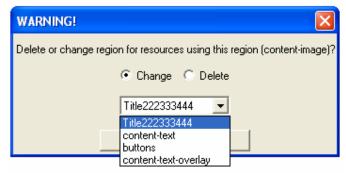
2) When there are some child regions associated with this region, there will popup the following warning dialog asking if you want to delete this region and all his children.

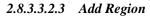
WARNING!	
Do you want to delete this region (	(content-text) and all his children?
Yes	Cancel

3) When there are some media resources associated with this region, there will popup the following warning dialog asking if you want to delete or change region for these resources. By option "Delete", you can delete the region and the resources inside.



You can choose to use other regions to host these resources as follows. There will appear a list of all the other regions for changing.

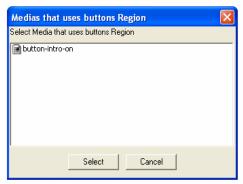




ADD REGION	X
Id	
Name	
🔲 Width	0
🗔 Left	0
🗔 Right	0
🗔 Height	0
🗔 Тор	0
🗔 Bottom	0
ZIndex	0
Fit	hidden
Show Background	always 💌
Color	#000000 Select Color
	Ok Cancel

You can add new region by choosing the option of "add region". There will pop up a dialog menu for you. The attributes of "add region" in region editing are exactly the same as the part "add region" described in the root layout editing.

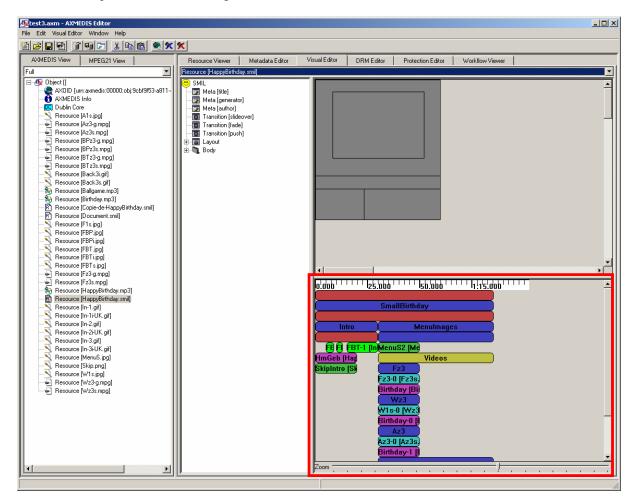
# 2.8.3.3.2.4 Show Medias



You can check which media is associate the region by choosing the option of "Show Medias". You can select the media from them for editing.

# 2.8.3.4 Behaviour view part

The behaviour part is located at the right bottom of the SMIL Editor.



### 2.8.3.4.1 Description of components

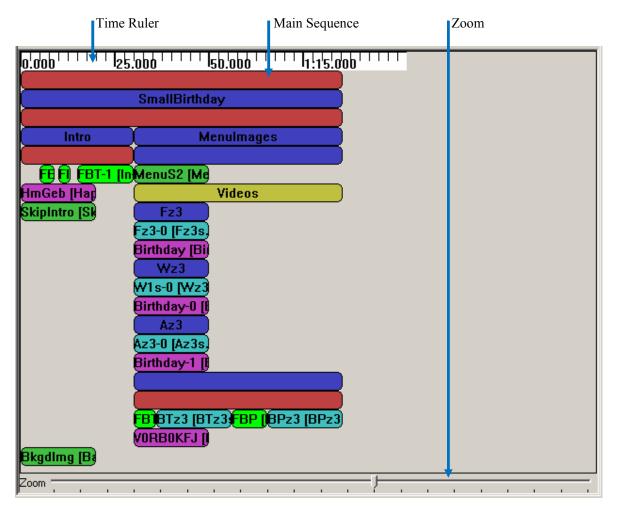
At the top of the behaviour view you can see the time ruler. This ruler gives timing information and a scaling view for the whole SMIL timing.

AXMEDIS

At the centre you can see and modify the timing attributes of the SMIL. At the top there is always an not modifiable anonym red bar that represent the main sequence who is the basic timing structure of the SMIL file. Under it, that means "in it", you can add/modify/delete others containers like "Par" for parallel playing (all the contained together), "Seq" for Sequential playing (all the contained one after another) and "Excl" for Exclusion playing (only one of the contained upon a time). You can also add/modify/delete the medias that will be played.

If the timings are too big navigation scroll bars appears.

At the bottom, you can see and modify the zoom scale used for timing display.



#### 2.8.3.4.2 <u>Time Ruler and Zoom</u>

Time ruler and zoom show and allow seeing the global timing. One important thing to remember is that if durations are not defined for the whole SMIL file, the timing you will get in a player will be different from the one displayed because all not known durations are set by default to 20 seconds in the behaviour view. (see below for more details).

### 2.8.3.4.3 <u>Timings</u>

Timings are both Main Sequence and other Medias and Containers. (boxes in the middle). The meanings of the colours are:

Red:Sequence ContainerBlue:Parallel ContainerYellow:Exclusive Container

AXMEDIS

Pink:Audio MediaGreen:Image MediaCyan:Video MediaWhite:Text Media

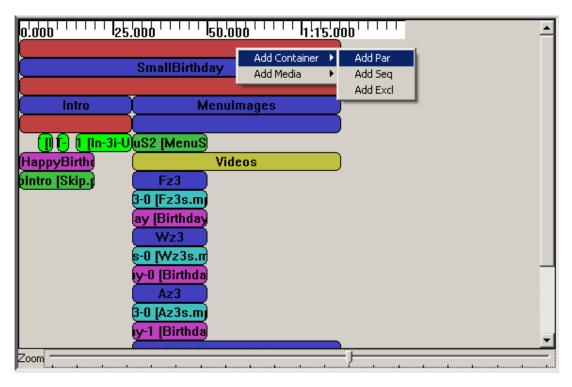
When a colour is shining the duration of the Media/Container is set. When a colour is greyed the duration of the Media/Container is not set.

### 2.8.3.4.3.1 Main Sequence

The main sequence is a not modifiable sequence of timings. You can add Containers and Medias to it by right clicking on it and using the menu.

### **Add Container**

To add a Container to the Main Sequence right click on it and select the submenu "Add Container" and choose the type of container you want to add.



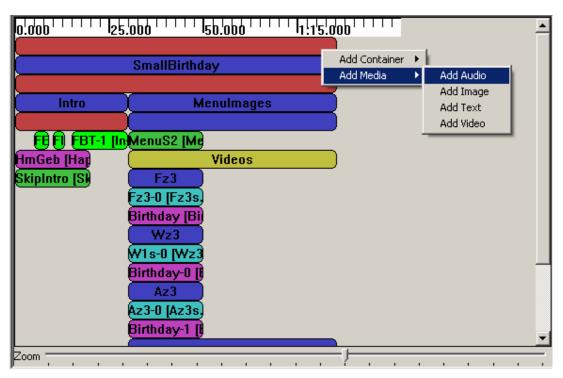
For example if you create a Par, a window like this will be displayed:

ADD PAR	X
Id	
🗖 Begin	
🗖 End	
🗖 Dur	
🔲 RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

Now you can set the new Par properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 0 for details about the Container.

### Add Medias

To add a Media to the Main Sequence right click on it and select the submenu "Add Media" and choose the type of media you want to add.



For example if you create an Audio, a window like this will be displayed:

ADD AUDIO	×
Id	
Source	Resource
Region	audio
In Transition	slideover
Out Transition	slideover
🗖 Begin	
🗖 End	
🗖 Dur	
RepeatCount	
🔲 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

Now you can set the new Audio properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 0 for details about the Medias properties.

#### 2.8.3.4.3.2 Common Timing operations

There are some common operations between Medias and Containers. You can see in the Menu the commands Move Up, Move Down and Undefine Duration are both in Media and Container Menus. Modify and delete are also common in the menus but loads different actions. (See sections 2.8.3.4.3.3 and 2.8.3.4.3.4)

Move Up Move Down	Move Up Move Down	
Undefine Duration Modify Delete	Undefine Durat Modify	tion
Add Link	Add Container	•
Show Region	Add Media	•

The mouse modifications are also in common.

0''''''''''''''''''''''''''''''''''''''			
	Con all Districtions		
	SmallBirthday		
Intro	Menulmages -		
	US2 [MenuS]		
pyBirth	Videos		
o (Skip.d	Fz3		

#### Move Up

The Move Up command can be loaded by right click on the Media/Container and selecting Move Up. It moves the timing selected up in the structure (in the order of his parent). It is disabled when the timing selected is at the top of his parent.

#### **Move Down**

The Move Down command can be loaded by right click on the Media/Container and selecting Move Down. It moves the timing selected down in the structure (in the order of his parent). It is disabled when the timing selected is at the bottom of his parent.

#### **Undefine Duration**

The Undefine Duration command can be loaded by right click on the Media/Container and selecting Undefine Duration. It removes a definition of Duration of the Timing (don't remove them all). In order (when available) : Dur, Ends in the order of apparition.

#### **Mouse modifications**

The Begin, End and Duration attributes of timings can also be modified by mouse. To modify media/container, left click on it. If you keep the left down drag & drop is activated. The resource can only be moved horizontally. When the resource is dropped it takes the new time offset for begin.



When the media/container are left clicked, a selection appears. When you drag and drop the black squares it changes durations and start (when using the left one).



Please note that Seq doesn't accept negative values, so the resource will be adjusted to be correct. Another thing to note is that if the duration of your timing was not defined, it changes his colour to the "duration set" one

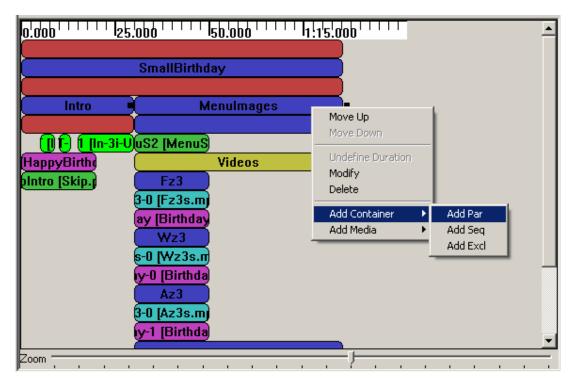


# 2.8.3.4.3.3 Containers

The Containers are the logical structure of the whole timing of the SMIL. You can add Containers and Medias to a Container by right clicking on it and using the menu. You can also set timings properties by mouse and by the menu. Containers could be Par, Seq or Excl for parallel, sequential and exclusive playing.

### **Add Container**

To add a Container to a Container right click on it and select the submenu "Add Container" and choose the type of container you want to add.



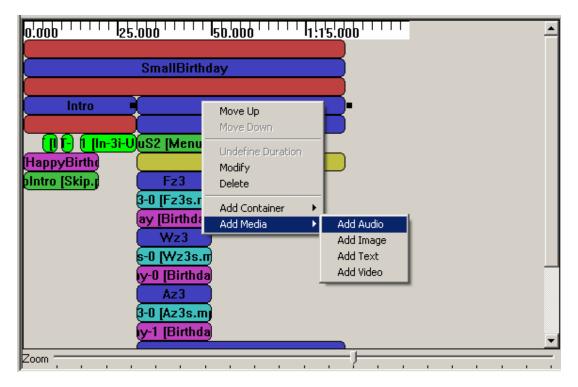
For example if you create a Par, a window like this will be displayed:

ADD PAR	×
Id	
🗖 Begin	
🗖 End	
🗖 Dur	
🔲 RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

Now you can set the new Par properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 0 for details about the Containers properties. AXMEDIS 91

### Add Medias

To add a Media to a Container right click on it and select the submenu "Add Media" and choose the type of media you want to add.



For example if you create an Audio, a window like this will be displayed:

ADD AUDIO	×
ld	
Source	Resource
Region	audio
🔲 In Transition	slideover
🔲 Out Transition	slideover
🗖 Begin	
🗖 End	
🗖 Dur	
☐ RepeatCount	
🔲 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

Now you can set the new Audio properties and create it by clicking on "Ok", you can also cancel the creation by clicking on "Cancel" or exiting the window. See section 0 for details about the Medias properties.

### Modify

To modify by dialog a Container right click on it and select "Modify". A window like this will be displayed.

MODIFY PAR [MenuImages]				
Id	Menulmages			
🔲 Begin		-		
🗖 End				
🔽 Dur	indefinite			
RepeatCount		-		
🗖 RepeatDur				
Fill	auto	]		
	Ok Cancel			

There you can set the following properties :

**Id:** ID of the container (default: empty) The ID is used identify the Container in the SMIL **Begin:** Begin of the container (default: not set)

The Begin set the start of the container; it is a list of beginnings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

**End:** End of the container (default: not set)

The End set the end of the container; it is a list of endings. The general definition of W3C is supported: <u>http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end</u>

**Dur:** Duration of the container (default: not set)

The Dur set the duration of the container; it is a single Duration value.

RepeatCount: Number of repetitions (default: not set)

The RepeatCount is used when you want to repeat the container a defined number of times.

**RepeatDur:** Duration of repetitions (default: not set)

The RepeatCount is used when you want to repeat the container for a defined duration.

Fill: Default Fill for Medias in this Container (default: auto)

The Fill is used to set default filling for Medias in the Container. It can have the following values: auto, remove, freeze, hold and transition.

Note: the offset value for Begin, End and Dur can be also set by mouse.

#### Delete

To delete a Container right click on it and click on "Delete". A confirms dialog will appear: Like this one if the Container contains something.

WARNING!	<
Do you want to delete this par(MenuImages) and all his children?	
<u>[</u> ancel	

Like this one if not.

WARNING!		×
	Do you want to delete this par(Az3)?	
	<u>Yes</u> <u>C</u> ancel	

In both cases click Yes to delete the Container or Cancel or exit the window if you changed your mind.

#### 2.8.3.4.3.4 Medias

The Medias are the resources played in the SMIL. You can add Link to a Media or select his Region by right clicking on it and using the menu. You can also set timings properties by mouse and by the menu. Medias could be Audio, Image, Text and Video for respective type of files playing.

#### Add Link

To add a Link to a Media right click on it and click the menu "Add Link", a window like this will be displayed:

ADD LIN	K 🔀
ld	
Href	Resource
Title	
Coords	
	<u>D</u> k <u>C</u> ancel

There you can set the following properties of the new Link:

Id: ID of the link (default: empty)

The ID is used identify the Link in the SMIL (used most of time for internal links).

**Href:** Link to load (default: empty)

The Href is used for external Links by setting a link to another SMIL file.

**Title:** Title of the Link(default: empty)

The Title is displayed as information when the SMIL is played.

**Coords:** Coordinates of the Link Region (default: empty= entire Region)

The Coords are a list of coordinates to define a sub-region mouse sensitive to load this link (the entire Region is used if it is not defined)

The Resource button allows setting the Href by selecting a SMIL resource in Axom. It loads a window like this:



You simply select the resource you want to link and validate; the new Href will be set.

#### Select Region

To select the Region where a Media is played, simply right click on it and click the menu "Show Region". The Region of the Media will be selected. (in Tree and Visual View)

#### Modify

To modify by dialog a Media right click on it and select "Modify". A window like this will be displayed.

MODIFY AUDIO [Birthday-0]			
Id	Birthday-0		
Source	Birthday.mp3 Resource		
Region	audio		
In Transition	slideover		
Out Transition	slideover		
🗖 Begin			
🗖 End			
🗖 Dur			
🗖 RepeatCount			
🗖 RepeatDur			
Fill	auto		
	<u>O</u> k <u>C</u> ancel		

There you can set the following properties:

**Id:** ID of the Media (default: empty) The ID is used identify the Media in the SMIL

**Source:** Source of the Media (default: empty) The Source is used to link the resource played by this Media

**Region:** Region of the Media (default: first Region) The Region defines the area where the Media will be played. You can select each region you have defined.

In Transition: Transition at start (default: not defined)

The In Transition defines the Transition at start where the Media will be played. You can select each Transition you have defined.

**Out Transition:** Transition at end (default: not defined)

The Out Transition defines the Transition at end where the Media will be played. You can select each Transition you have defined.

**Begin:** Begin of the Media (default: not set)

The Begin set the start of the Media; it is a list of beginnings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-begin

**End:** End of the Media (default: not set)

The End set the end of the Media; it is a list of endings. The general definition of W3C is supported: http://www.w3.org/TR/SMIL2/smil-timing.html#adef-end

**Dur:** Duration of the Media (default: not set)

The Dur set the duration of the Media; it is a single Duration value. *AXMEDIS* 

**RepeatCount:** Number of repetitions (default: not set)

The RepeatCount is used when you want to repeat the Media a defined number of times.

**RepeatDur:** Duration of repetitions (default: not set)

The RepeatCount is used when you want to repeat the Media for a defined duration.

**Fill:** Filling of the Media (default: auto)

The Fill is used to set the filling for the Media. It can have the following values: auto, remove, freeze, hold and transition.

The Resource button allows setting the Source by selecting a resource in Axom (selected by mime type). It loads a window like this:

Select Resource		
Resource name:	A1s.jpg	•
	<u>D</u> K <u>C</u> ancel	

You simply select the resource you want to link and validate; the new Source will be set.

Note: the offset value for Begin, End and Dur can be also set by mouse.

#### Delete

To delete a Media right click on it and click on "Delete". A confirms dialog will appear:

WARNING!	×
Do you want to delete this audio(Birthday-0)?	
Yes Cancel	

Click Yes to delete the Media or Cancel or exit the window if you changed your mind.

#### 2.8.3.5 Example

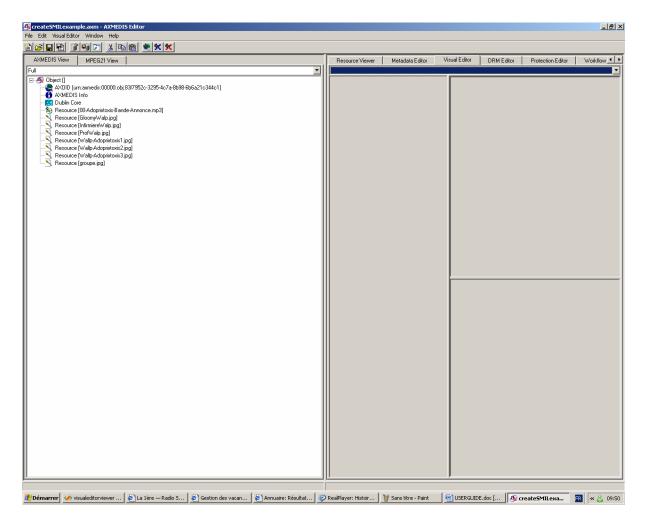
#### 2.8.3.5.1 Introduction

For this small example we will create a little SMIL presentation from scratch. It will demonstrate how to use this editor for a simple interactive presentation.

#### 2.8.3.5.2 Basic Files

A SMIL play other files. So we will load the createSMILexample.axm file:

#### DE5.0.1.1 AXMEDIS Major Tools User Manuals



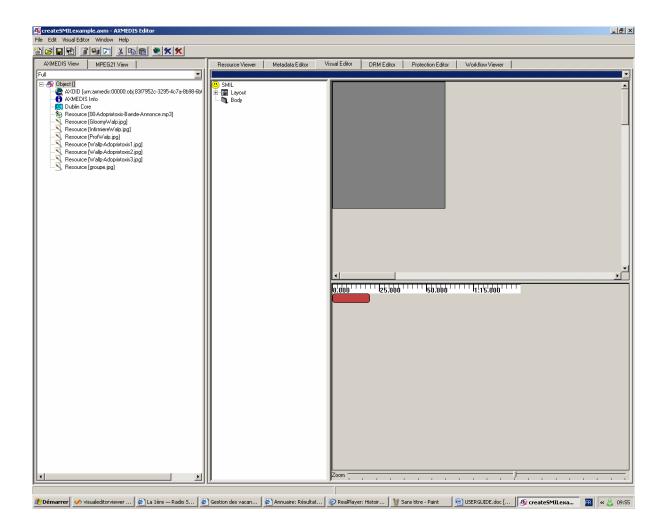
#### 2.8.3.5.3 Create the SMIL

Now we have to create a new SMIL Resource. So we use the menu VisualEditor:



The New empty SMIL appears:

#### DE5.0.1.1 AXMEDIS Major Tools User Manuals

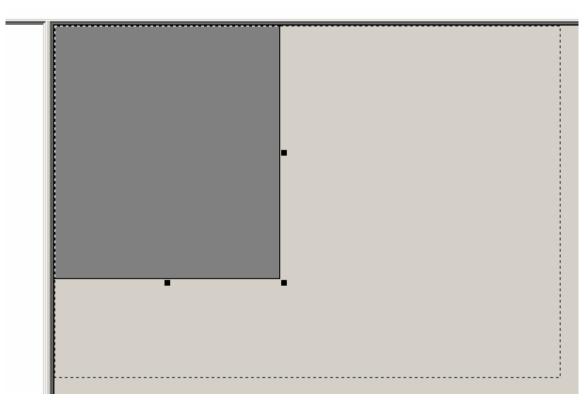


### 2.8.3.5.4 Edit SMIL

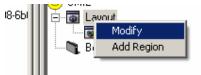
Now we can edit our new SMIL resource.

# 2.8.3.5.4.1 Modify Root Layout

The Root Layout dimensions are not the one we want to use. So we change them:



And also by menu...



... we change the Color and Adjust the Sizes

		<u>?</u> ×
		Couleurs de base :
MODIFY	ROOTLAYOUT	
Color	#808080 Select Color	
Width	640	
Height	480	
	Ok Cancel 0	Couleurs personnalisées :
		Définir les couleurs personnalisées >>
		OK Annuler

# 2.8.3.5.4.2 Add Regions

To add the first Region we right click on Layout.



And add a new Region : Audio for Audio playing

ADD REGION	X
ld	Audio
Name	
🗖 Width	0
🗖 Left	0
🔲 Right	0
🔲 Height	0
🗖 Тор	0
E Bottom	0
Zindex	0
Fit	hidden
Show Background	always 💌
Color	#000000 Select Color
	<u>D</u> k <u>C</u> ancel

And also another one named Main for Main window.

ADD REGION	×
ld	Main
Name	
☐ Width	0
🗖 Left	0
Right	0
Height	0
🗖 Тор	0
E Bottom	0
ZIndex	0
Fit	fil 🔽
Show Background	always 💌
Color	#000000 Select Color
	<u>D</u> k <u>C</u> ancel

Note that this time we have set the Fit to "fill".

We finally add another Region in Main:



To be a little region in the right bottom part.

ADD REGION	×	
Id	Skipping	
Name		
🔽 Width	120	<u>? x</u>
🗖 Left	0	Couleurs de base :
🔽 Right	0	
🔽 Height	90	
🗖 Тор	0	
🔽 Bottom	0	·■■■■■□■□ ⊧
Zindex	0	Couleurs personnalisées :
Fit	fill 💌	
Show Background	always 💌	Définir les couleurs personnalisées >>
Color	#0080FF Select Color	OK Annuler
	Ok Cancel	

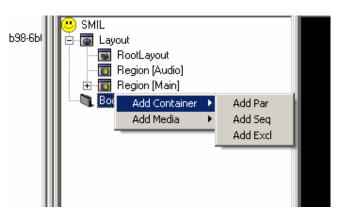


# 2.8.3.5.4.3 Timing

With the Region defined we can go to the Timing part.

### Containers

First we will define some Containers.



A Par to play sound and images in parallel

ADD PAR	×
ld	
🗖 Begin	
🗖 End	
🗖 Dur	
RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

And an Excl in it. And 2 Par in the Excl named opt1 and opt2. And finally one Seq in the new Par.

⊡⊶ <b>©t</b> Body ⊡⊶ <b>©t</b> Par[]		
i⊡¶ Excl [] i⊒¶ Par [opt1]	ADD SEQ Id	×
🔤 🔤 🔤 🔤 🔤 🔤	🗖 Begin	
	🗖 End	
	🗖 Dur	
	🗖 RepeatCount	
	🗖 RepeatDur	
	Fill	auto
		Ok Cancel

### Medias

Now we will add the Medias in the containers.

First we add an Audio Media named sound to play the mp3 file we have in the main Par.

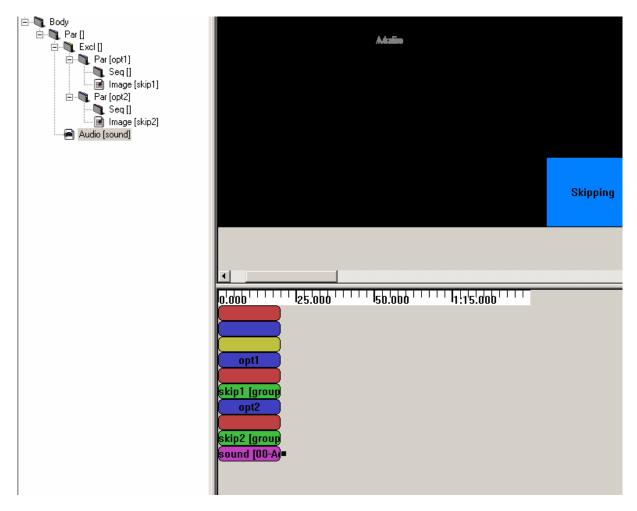
∟ <b></b>	Move Up Move Down	
	Rename Modify Delete	
	Add Container 🔸	
	Add Media 🛛 🔸	Add Audio
		Add Image
		Add Text
		Add Video
	-	

We set the mp3 link by clicking on Resource. And select the Region to be Audio.

ADD AUDIO		×			
Id	sound				
Source		Resource			
Region	Audio	•			
In Transition	<u></u>	<b>v</b>			Skipping
🔲 Out Transition		~	Select Resource		<u> </u>
🗖 Begin	, ,		Resource name:	00-Adoprixtoxis-Bande-Annonce.	mp3 💌
🗖 End				OK Cancel	] [
🗖 Dur	, ,		<sup>+++</sup> Isb.'obo+++	1:15.000	
🗖 RepeatCount					
🗖 RepeatDur					
Fill	auto	•			
	Ok Cancel				

In the two Pars we add the Image groupe.jpg with names skip1 and skip2 in the Skipping region.

ADD IMAGE	×
Id	skip2
Source	groupe.jpg Resource
Region	Skipping
🔲 In Transition	
🔲 Out Transition	
🗖 Begin	
🗖 End	
🗖 Dur	
☐ RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel



Finally we add images GloomyWalp.jpg, InfirmiereWalp.jpg, ProfWalp.jpg in Main Region in first Seq. And add images Wallp-Adoprixtoxis1.jpg Wallp-Adoprixtoxis2.jpg Wallp-Adoprixtoxis3.jpg in Main Region in second Seq.

# CreatingTransitions

We haven't defined the Transitions since yet. We add a new transition in the SMIL



A fading one:

ADD TRA	NSITION
Id	fading
Туре	fade 💌
Subtype	crossfade 💽
Dur	1.000
Start	0
End	1
Directior	forward 💌
FadeCol	#000000 Select Color
	<u>O</u> k <u>C</u> ancel

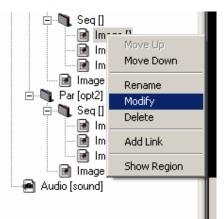
And a fanning one:

ADD TRA	NSITION
Id	fanning
Туре	doubleFanWipe
Subtype	fanInHorizontal
Dur	1.000
Start	0
End	1
Directior	forward 💌
FadeCol	#000000 Select Color
	<u>O</u> k <u>C</u> ancel

Now we can use these Transitions.

### Setting timing

Now we will set Timing properties to our images and a Transition between them.



We set all durations to 10 to the images in the Seq and fading transitions between images of the first Seq and fanning to the second one.

MODIFY IMG []	×
ld	
Source	GloomyWalp.jpg Resource
Region	Main
In Transition	fading 💌
🔽 Out Transition	fading 💌
🗖 Begin	
🗖 End	
🔽 Dur	10.000
🔲 RepeatCount	
🔲 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

By using the Zoom we obtain a behaviour view like this:

0.000 6.250	112.500 1111 118.750	1 25.000
ļ		
	opt1	
[GloomyWalp.]	[InfirmiereWal]	[ProfWalp.jpg]
skip1 [gro		
	opt2	
[Wallp-Adoprix]	[Wallp-Adoprix	[Wallp-Adoprix]=
skip2 [gro		
sound [00	-Adoprixtoxis-Bande-	
Zoom		······································

Now we have only to define the start of Par in the Excl. We want that opt1 to be the default and to switch by the skipping. We also take the opportunity to cycle the Par by setting RepeatDur to indefinite.

MODIFY PAR [opt	1] X
Id	opt1
🔽 Begin	+0.000;skip2.activateEvent
🗖 End	
🗖 Dur	
🔲 RepeatCount	
🔽 RepeatDur	indefinite
Fill	auto
	<u>O</u> k <u>C</u> ancel

So we edit opt1:

And opt2

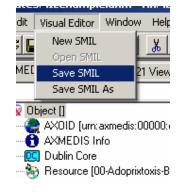
MODIFY PAR [opt	2] 🔀
Id	opt2
🔽 Begin	skip1.activateEvent
🗖 End	
🗖 Dur	
🔲 RepeatCount	
🗖 RepeatDur	
Fill	auto
	<u>O</u> k <u>C</u> ancel

```
And we add an end to the Excl:
```

MODIFY EXCL []		×
ld		
🗖 Begin		
🔽 End	sound.end	
🗖 Dur		
RepeatCount		
🗖 RepeatDur		
Fill	auto	]
	<u>O</u> k <u>C</u> ancel	

## 2.8.3.5.5 Saving SMIL

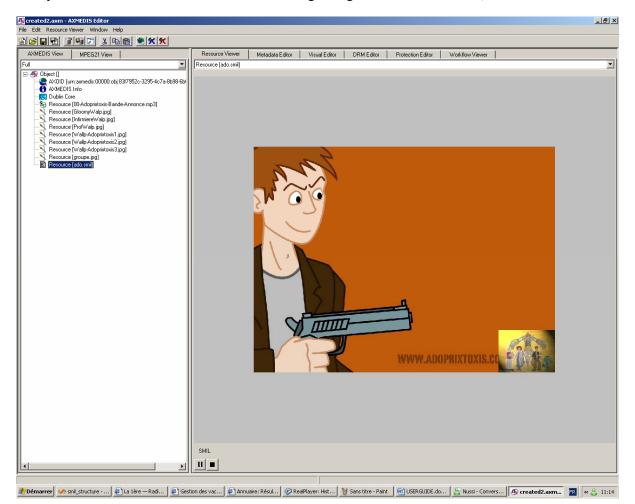
Now we can save our work.



And find an original name.

Save Ressourc	e As		×
Resource name:	ado.smil		
	<u>0</u> K	<u>C</u> ancel	

Now you can see it in the Resource Viewer. The image at right bottom is interactive, as set before.



Ok, it is not perfect (and the sound in French), but now can modify it again... It's up to you now!

# 2.9 AXMEDIS DRM Editor (FUPF)

## 2.9.1 Main functionalities

"DRM Editor and Viewer" is a software application to view and eventually edit MPEG-21 REL Licenses. This user manual refers to its version 2.1.9. "DRM Editor and Viewer". It has editing functionalities, being capable of integrating as well in a future axviewer with only viewing features.

Its main features are:

Feature
Load a license from a XML file
Load license from a remote host (PMS Server)
Create a new license form the scratch
Display graphically the license
Store a license in a XML file
Store a license in a remote host (PMS Server)
Edit (modify) a License
Attach a license to an AXMEDIS Object
Create PARs, and internal PARs.

## 2.9.2 Relationship with other tools

The licenses created with the AXMEDIS DRM Editor can be stored locally or in a remote server (AXMEDIS PMS Server). In order to be able to store licenses in the remote server, a connection to it must be available, as explained in next chapter.

## 2.9.3 Detailed description of the functionalities and Screenshots

The main window shows two areas: in the left a hierarchically structure is displayed (also called tree), which is used to navigate through the license elements; in the right side there is a panel showing information related to the element marked in the tree. Functionalities can be accessed through the menu options, the buttons in the button bar, or the buttons that appear in the panel. Next we summarise the DRM Editor and Viewer main functionalities:

• DRM Editor and Viewer. Open a license from a file (see Figure 1). The panel displays the file path or an alternative description.

File       Edit       Help         E       Edit       Help         E       E       GrantGroup         E       GrantGroup         Grant       Grant         Grant       Grant         Issuer       Issuer	Editor License AXMEDIS DRM Editor and Viewer License: C\Documents and Settings\vrodriguez\Escritorio\ AXMEDIS Aceptar Aceptar	
	Figure 1: DRM Editor view	<b>\$</b> //

- DRM Editor. Create a new license . When a new license is created, it is empty. The tree appears with an "issuer" element and with a "Grant Group" element, but they are initially empty.
- DRM Editor. Modify a license.

When the tree is	clicked on its	"issuer element",	the Editor	shows the	issuer panel,	where the
issuer and the	date of issuand	ce can be set (see	Figure 2).			

💥 AXMEDIS License Edit	litor	x
File Edit Help		
	Issuer data Issuer: Issuerid 8239s Date: 2006-03-07 Details:	
	c	₽ //

Figure 2: DRM Editor License Issuer view

When the tree is clicked on its "GrantGroup element", a Grant Group panel is displayed. (see Figure 3). From this panel it is possible to add or delete grants. The first icon creates an empty grant, the second deletes it. Once a grant has been created, it will be displayed in the tree.

XAXMEDIS License Editor	
File Edit Help	
Grant group	GrantGroup
	(1) mxcdiminish (2) mxcadapt (3) mxcmove (4) mxcplay

- When the tree is clicked on its "Grant" element (see Figure 4), the Grant panel is shown. From this panel, the following actions can be performed:
  - To change the following fields: principal, right, resource.
  - To add and remove conditions. The conditions that can be set are: number, interval, territory and/or fee. Each of them can be modified.

XAXMEDIS License	Editor			_ 🗆 🗙
File Edit Help				
C C C C C C C C C C C C C C C C C C C	Principal	License	grants	
	Principal	Final User		
	Resource Resource	AX0ID:Identifier	reference id	
	Right Right	mx:diminish 🗨		
	-Interval condition	From: 2005-10-26	To: 2005-12-31	
	Fee	3.00 EUR -	Fee per use.	
	Territory Territory	SPAIN 💌		
		7	<b>X</b>	
				<b>\$</b> //.

Figure 4: DRM Editor License Grant view

• When the *issue* right is chosen, the license becomes a "distributor license", and the Grants underneath are Grants to be given by the distributor. This is reflected in the tree, where a new sublevel is displayed containing additional grants.

- DRM Editor. Store a license to a file. This option is performed when selection the "File -> Save to File" option of the Editor.
- DRM Editor. Store a license into a remote server .

Limitations to be fixed in subsequent versions:

- In the current version only up to 8 grants can be added to the same grant group.
- Only a condition of each type can be added to a grant.

If the DRM Editor and Viewer are used in its classic version (the one which displays a simple tree) these limitations are overcome.

# 2.10 AXMEDIS Workflow Editor (IRC)

### 2.10.1 Main functionalities

The AXMEDIS workflow Editor/Viewer provides user with the workflow information for the object being edited/viewed. It also shows the Workflow Engine's Interface for the user to see his worklist.

The Workflow information that is displayed are as follows:

Parameter	Information
Title	The
Process	The workflow process that is being executed for the selected AXOID
Activity	The Activity that is currently being executed for the selected AXOID
Priority	The priority of the Workflow Process
Status	The status of the Workflow Process
Actor	The Actor responsible for the current Activity
AXRQID	The Workflow Request ID issued by the workflow engine for current
	request.

#### 2.10.2 Relationship with other tools

This tool is embedded as a part of Axeditor. It uses workflow editorPlugin to communicate with the Workflow Engine through Workflow Gateways.

#### 2.10.3 Detailed description of the functionalities and Screenshots

- In order to view the workflow information, the user should select the "Workflow View" tab in the Axeditor. On activation the editor will show empty fields for the parameters.
- Meanwhile it will retrieve the "Work List" for the logged user from the workflow engine.
- When the user clicks on the "Request Workflow Information" button, the editor retrieves the workflow parameters from the Workflow Engine and displays in the upper half of the viewer.
- If the information cannot be retrieve an error message is displayed.

File       Editary/Newers       Players       Window       Help         NMEDIS       MPED21       Researce View       Visual View       Dipiect View       Woldflow View       DBM View       Postection View         MMEDIS       MPED23       Vield/Gov Information       Title       Postection View       DBM View       Postection View       DBM View       Postection View       DBM View       Postection View       Title       Postection View       Postection View <t< th=""><th>MAXMEDIS Editor</th><th></th></t<>	MAXMEDIS Editor	
AVMEDIS IMPEG21 Fut	File Edit View Editors/Viewers Players Window Help	
Image: Contract of the contra		
Worklist Roles Applications Process Updates Contents Properties Security Under	File         Editory/Newers         Payres         Workow         Help           AMEDIS         MERGIN         MERGIN </th <th>Resource Vew Metadata Vew Vew Vew Behaviour Vew Disject Vew Wolkflow Vew DRM Vew Protection Vew       Void Nov Information       TBr:       Process:       Activity       Notice:       Actor       Actor       Void Nov Information from Workflow Server       Workflat       Roles:       Applications       Process:       Void Nov Server</th>	Resource Vew Metadata Vew Vew Vew Behaviour Vew Disject Vew Wolkflow Vew DRM Vew Protection Vew       Void Nov Information       TBr:       Process:       Activity       Notice:       Actor       Actor       Void Nov Information from Workflow Server       Workflat       Roles:       Applications       Process:       Void Nov Server
OpenFlow at /Prove_WF/workflow     Helpt     Work list     This page represents the to-do list of a given actor (the currently logged zope user). The to-do list     is the collection of all instances the actor can work on, ordered by activity the instance is pending     on. Clicking on an instance will start its activity application.     Logged user:         Iname admin         roles Manager         Authenheated		Work list         This page represents the to-do list of a given actor (the currently logged zope user). The to-do list is to collection of all instances the actor can work on, ordered by activity the instance is pending on. Clicking on an instance will start its activity application. <b>a Logged user:</b> <u>nome</u> admin roles         Manager Authenticated

Figure 1: Workflow viewer

# 2.11 AXMEDIS Protection Information Editor (FHGIGD)

## 2.11.1 Main functionalities

The Protection Information Editor and Viewer provides the functionalities to view and edit protection information.

The main features are:

- The user can browse the protection information, the list of protection operations that were applied to the selected part of an AXMEDIS object.
- The user can view detailed information about a specific protection operation including all parameters and the protection target.
- The user can alter the order of different protection operations.
- The user can delete one of the protection operations from the list of protection steps.
- The user can select one of the available tools for protection, e.g. encryption, scrambling or compression, and add an additional protection operation to a specific part of an AXMEDIS object.

### 2.11.2 Relationship with other tools

The Protection Information Editor and Viewer uses the Protection Processor to access protection information, to apply protection operations to a specific part of an AXMEDIS object.

### 2.11.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the AXMEDIS Protection Information Editor and Viewer. A part of an object is selected in the tree view of the object shown on the left side of the editor. For editing and viewing o protection information the tab "Protection Infromation" must be selected on the right side of the editor window.

The current user interface for the protection of resources and the viewing of protection information is shown in the following picture.

K I-cinque-sensi.axm - AXMEDIS Editor	
File Edit View Editors/Viewers Players Window Help	
D 🛎 🖬 🗿 🐰 🖻 🖀 🗶 🛠 🖈 🕨	
AXMEDIS MPEG21	Resource View   Metadata View   Visual View   Behaviour View   Object View   Workflow View   DRM View   Protection View
Ful	Available Tools
Object [I-cinque sensi - 46bcd8b6-2768-4cdf-8fcf-860     AXMEDIS Info     Dublin Core     Resource [poster]     Resource [piot]     Resource [pireview-download]     ref::Resource [preview-download]     ref::Resource [preview-download]     for::Resource [preview-dow	Blowfish         Caesar cipher         Blowfish         Move Up         Move Down         Edt         Delete         Protection Information Details         Blowfish tool details

Figure. Protection Information Editor and Viewer user interface

## 2.11.3.1 Viewing of Protection Information

After the user selected a specific part of an object and switched to the protection view (as described above) a window appears which shows on the right side a list of the protections steps that were applied to this part of the object.

When the user selects one of these operations more detailed information is shown in the lower right part of the window ("Protection Information Details"). The user can open an additional window by double clicking one of the protection operations. This window displays the name of the tool that was applied, a list of the different parameters and the target to which this protection operation was applied to (see figure below).

Protection Operation		X
Tool Name		
[Tool Description]		
Parameters		
[Parameter 1]		
[Parameter 2]		
[Parameter 3]		
[Parameter 4]		
Target		
-		
[Description of Resource]		
<u>о</u> к	Cancel	
<u></u> K		

Figure: Parameter setting for a specific Protection Operation

### 2.11.3.2 Editing of Protection Information

When a user wants to change the protection information he has to select a part of an AXMEDIS and view the protection information as described above. The order of the different protection operations can be changed by selecting a specific operation and clicking on the up or down button on the right side.

If a user want so add an additional protection step he can select a protection tool from the list on the left side of the protection window and click on the green arrow in the middle to add it to the list of protection steps. A new window appears in which the specific parameters for this new protection operation, e.g. key length.

A user can also edit existing protection operations by double clicking on an operation in the protection view window. A window appears that displays the different parameters for this protection operation which can be edited and saved by the user.

# 3 AXMEDIS PC Player (DSI)

# 3.1 Main functionalities

The AXMEDIS Player allows to:

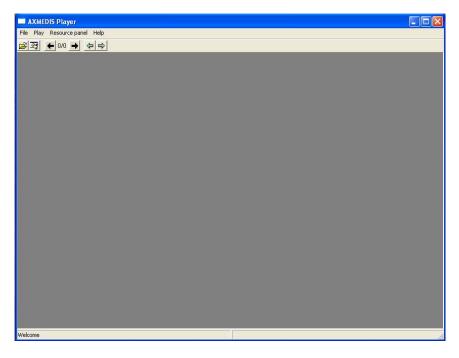
- view the resources present inside the object
- view the metadata of the object
- view the SMIL presentation built
- view the AXMEDIS structure

# 3.2 Relationship with other tools

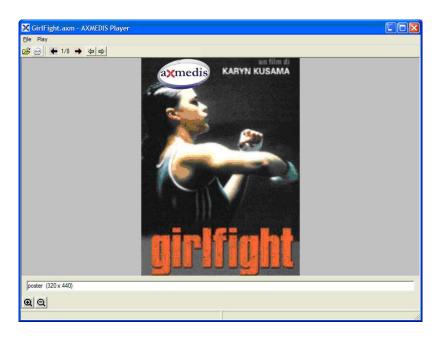
None

# 3.3 Detailed description of the functionalities and Screenshots

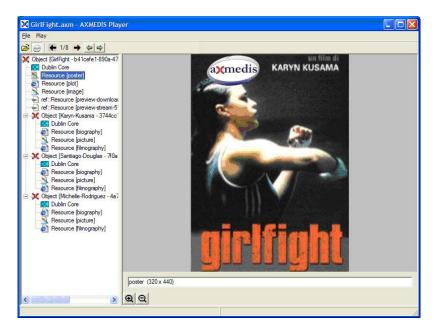
When the player is started an AXMEDIS object may be loaded using the **File/Open...** menu or using the button on the toolbar.



When the file is opened the first resource inside is opened:

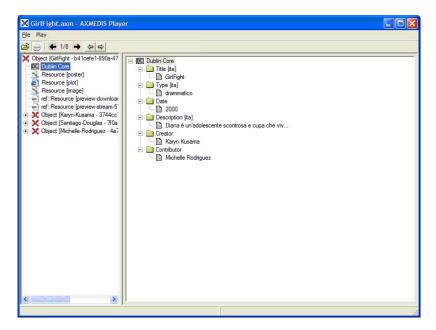


The content of the AXMEDIS object may be browsed using the arrows in the toolbar or using the hierarchy view (opened using the button in toolbar)



Colect [Karyn-Kusama - 3744cc Dublin Core Resource [biography] Resource [biography] Resource [biography] Colect [Santiago-Douglas - 70e Dublin Core Resource [biography] Colect [Minography] Colect [Minofele-Rodiguez - 4s Colect [Minofele-Rodiguez - 4s Colect [Minofele-Rodiguez - 4s Colect [Minofele-Rodiguez - 4s Resource [biography] Resource [biography] Resource [filmography] Resource [filmography] Resource [filmography]	insieme al padre Sandro e al fratello minore Tiny. La sua unica forma di comunicazione è la rabbia, a scuola litiga e se la prende con tutti. Un giorno casualmente Diana entra in contatto con una palestra di pugli e ne rimane affascinata, segretamente inizia ad allenarsi imparando a controllare l'ira con il metodo. Il suo appena conquistato equilibrio va muovamente in crisi quando si innamora del suo collega puglie Adrian.

The metadata of the object may be view double clicking on the Dublin Core element in the hierarchy view:



# 4 AXMEDIS PDA Player (TISCALI, DSI)

NOT INCLUDED IN THIS VERSION

# 4.1 Main functionalities

NOT INCLUDED IN THIS VERSION

# 4.2 Relationship with other tools

NOT INCLUDED IN THIS VERSION

# 4.3 Detailed description of the functionalities and Screenshots

NOT INCLUDED IN THIS VERSION

# 5 AXMEDIS ActiveX Control (DSI)

# 5.1 Main functionalities

The AXMEDIS ActiveX can be used to visualize and use AXMEDIS Objects inside MS Windows applications or inside web browsers.

The ActiveX exposes a set of functionality allowing to:

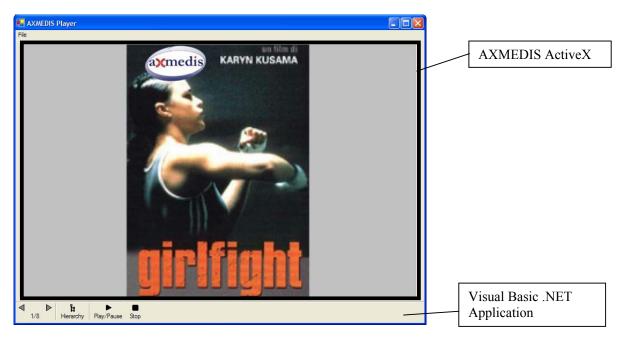
- open an AXMEDIS object from file system or from an URL (downloading)
- access to some information on the AXMEDIS Object, (e.g. content count, content mimetype)
- visualize the content that is present inside the AXMEDIS Object.
- control the visualization of the content (play, pause, stop, etc.)
- hide/show the hierarchy view of the object
- visualize the Dublin Core Metadata of the whole object
- show the licence available for the user on the object (not yet available)

## 5.2 Relationship with other tools

None

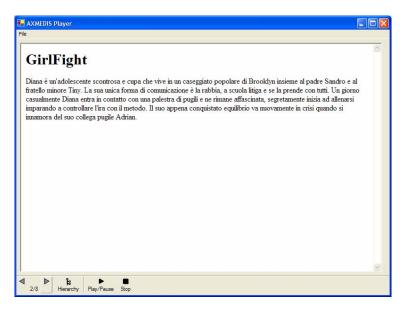
# 5.3 Detailed description of the functionalities and Screenshots

The following pictures show the use of the AXMEDIS ActiveX inside a Visual Basic Application implementing a basic player. The ActiveX user interface does not present any button controls to allow the customization of the user interface, the visual area is used to display the resources.



The Left and Right arrow buttons (defined in the VB application) use the *OpenContent(n)* method of the ActiveX to open a specific content stored in the AXMEDIS object, the Hierarchy button use the *ViewHierarchy* property to view/hide the AXMEDIS Hierarchy, the Play/Stop button use the *Play/Stop* methods to control the execution of Audio/Video resources.

For example clicking on the Right arrow the second resource is shown (the movie plot):



and clicking on the Hierarchy Button the hierarchy is shown:



🔜 AXMEDIS Player File Creator Contributor Resource [biography] Resource [picture] Resource [filmography] > < ta Hierarchy Play/Pause ∢ ⊳ Stop 2/8

Double clicking on the Dublin Core element the Metadata is shown:

# 5.3.1 AXMEDISViewerCtrl

5.3.1.1 B	asic Interfac	е
-----------	---------------	---

Method Load		
short Load(stri	ng url)	
Description	Loads and AXMEDIS object from an URL or from file system, it tries to open the first SMIL resource available or otherwise the first Resource/AXObject available	
Input parameters	<ul> <li>string url – the url or file to be opened (e.g. "http://AXMEDIS.org/demo/demo1.axm", "c:\AXMEDIS-objects\test.axm"), protocols supported will be http and ftp,</li> </ul>	
Return value	returns 0 if the object can be successfully loaded, 1 if the object cannot be loaded, 2 if the content cannot be opened (missing license)	
Remarks	In case of load failure an empty object is present	
Property Src	read write)	
string Src		
Description	the URL of the object loaded, when set the object is loaded (not opening content if the object is protected)	
DefaultValue	""	
Property ContentCount (read only)		
short ContentC	<i>Count</i>	
Description	number of content elements (resources/axobjects) at the first level	
DefaultValue	0	
Property BackgroudColor (read write)		
string Backgro	string BackgroundColor	
Description	the color to be used as background (e.g. "#ffffff" for white)	
DefaultValue	"#fffffff"	
<b>Property Viev</b>	WHierarchy (read write)	
bool ViewHier	archy	
AVMEDIC	120	

Description	indicates if the AXMEDIS Hierarchy view has to be shown or not.
DefaultValue	false
Method GetC	ontentType
	entType(short contentPos)
Description	allows to get which kind of content is present at a specific position (1ContentCount)
Input	• <i>short contentPos</i> – position of the content to be analyzed
parameters	
Return value	returns "RESOURCE" or "AXOBJECT"
Remarks	In case of invalid position returns ""
	ontentMimeType
	entMimeType(short contentPos)
Description	allows to get the mimetype of content at a specific position (1ContentCount)
Input parameters	• <i>short contentPos</i> – position of the content to be analyzed (1ContentCount)
Return value	returns a mimetype for a resource and the mimetype of the resource really played in case of an embedded AXMEDIS object (e.g. it can return "application/smil" if the object contains a SMIL resource)
Remarks	In case of invalid position returns ""
Method Open	Content
void OpenCom	tent(short contentPos)
Description	allows to open a content at a specific position (0ContentCount), position 0 means the object itself. If the content to be opened is an AXMEDIS object it opens the first SMIL resource present otherwise it opens the first resource present
Input	• <i>short contentPos</i> – position of the content to be opened (0ContentCount)
parameters	
Return value	none
Remarks	none
Method Show	
void ShowMeta	
Description	allows to show the metadata of the whole object (using Dublin Core information)
Input	none
parameters Return value	
Remarks	none
Method Show	
void ShowLice	
Description	allows to show the license available on the object
Input	none
parameters	
Return value	none
Remarks	none
<b>Property Need</b>	License (read only)
bool NeedLicer	nse
Description	Indicates if a license is needed to view the object
DefaultValue	false
<b>Property Have</b>	eLicense (read only)
bool HaveLice	
Description	Indicates if is available a license to view the object
DefaultValue	false
Method Acqui	
•	cense(string licenseID)
Description	allows to acquire locally a license given the license ID (if it is allowed)
AXMEDIS	129

Input	• <i>string licenseID</i> – contains the license identification code
parameters	
Return value	none
Remarks	The method is used to preload in the local cache the license allowing to use it offline even
	using the AXMEDIS Player. The license could be even for another AXMEDIS Object not for
	the one shown in the ActiveX (which can be a preview version)

# 5.3.1.2 Visual Control Interface

	portVisualControl (read only)
bool SupportV	
Description	indicates if for the currently opened content the visual control methods can be used
DefaultValue	false
<b>Property Zoon</b>	m (read write)
double Zoom	
Description	is the zoom factor to be applied $(1 = 100\%)$
DefaultValue	false
Remark	if the zoom factor is changed the AutoFit property is set to false
<b>Property Auto</b>	oFit (read write)
bool AutoFit	
Description	when true indicates to resize the visual content to be fitted inside the window
DefaultValue	true
Remark	none
Method Fit	
void Fit(double	e width, double height)
Description	fits the zoom factor to display the image at the desired size (keeping aspect ratio)
Input	• <i>double width, height</i> - the image size in pixels
parameters	
Return value	none
Remarks	the AutoFit property is set to false
Method FitTo	
void FitToWind	
Description	fits the visual content to the size of the image
Input	none
parameters	
Return value	none
Remarks	the AutoFit property is manteined
Method Zoom	
void ZoomIn(d	
Description	Increments the zoom factor of the given percentage
Input	• <i>double perc</i> – the percentage used to increment the zoom factor (e.g. 10 for 10%)
parameters	
Return value Remarks	none the AutoFit property is set to false
Method Zoom	
void ZoomOut	
Description	Decrements the zoom factor of the given percentage
Input	<ul> <li><i>double perc</i> – the percentage used to decrement the zoom factor (e.g. 10 for 10%)</li> </ul>
parameters	<i>uouore pere</i> – the percentage used to detrement the zoom factor (e.g. 101011070)
Return value	none
Remarks	the AutoFit property is set to false
	Screen (read write)
· · · · · · · · · · · · · · · · · · ·	

bool FullScreen			
Description	when true switch to full screen mode		
DefaultValue	false		
Remark	none		
Method Print			
<pre>void Print()</pre>			
Description	Prints the visual content		
Input	none		
parameters			
Return value	none		
Remarks	none		

# 5.3.1.3 Time Control Interface

Property Supp	oortTimeControl (read only)		
bool SupportTi	meControl		
Description	indicates if for the currently opened content the time control methods can be used		
DefaultValue	false		
Method Play			
void Play()			
Description	Starts playing the content or continue in case of pause		
Input	none		
parameters			
Return value	none		
Remarks	has no effect if it is already playing		
Method Pause			
void Pause()			
Description	Pause the execution or continue execution		
Input	none		
parameters			
Return value	none		
Remarks			
Method Stop			
void Stop()			
Description	Stops execution		
Input	none		
parameters			
Return value	none		
Remarks	none		
Method Jump			
void JumpToTi			
Description	Set the execution time in milliseconds		
Input	• <i>ulong time</i> – the time at which jump the execution		
parameters	- · · · ·		
Return value	none		
Remarks			
	ying (read only)		
bool IsPlaying			
Description	indicates if the content is being played		
DefaultValue	false		
Property Duration (read only)			
ulong Duration			

Description	indicates duration in milliseconds		
DefaultValue	0		
<b>Property Curr</b>	rentTime (read only)		
ulong CurrentT	Fime		
Description	indicates current execution time in milliseconds		
DefaultValue	0		
Property StartTime (read write)			
ulong StartTim	ulong StartTime		
Description	indicates the time in milliseconds where to start		
DefaultValue	0		
Property EndTime (read write)			
ulong EndTime			
Description	indicates the time in milliseconds where to end execution		
DefaultValue	Duration		

# 5.3.1.4 Generic Command Interface

This interface allows to execute commands giving a commad identifier. The command identifier are:

Command ID	Value
"Load"	string with the URL
"Src"	string
"OpenContent"	content position
"ContentCount"	
"BackgroundColor"	string
"ShowMetadata"	none
"ShowLicense"	none
"NeedLicense"	bool
"HaveLicense"	bool
"Zoom"	double
"ZoomIn"	double
"ZoomOut"	double
"AutoFit"	
"Fit"	string "w,h" (e.g. "100, 400")
"FullScreen"	bool
"Print"	none
"Play"	none
"Stop"	none
"Pause"	none
"IsPlaying"	bool
"CurrentTime"	ulong (read only)
"Duration"	ulong (read only)
"StartTime"	ulong
"EndTime"	ulong

Method execCommand			
HRESULT execCommand(string cmdID, bool showUI, variant value, bool* ret)			
Description	executes the command described in cmdID, with an optional argument contained in value		
Input	• <i>string cmdID</i> – command to be done		
parameters	<ul> <li>bool showUI – indicates if UI update is needed</li> </ul>		
• <i>variant value</i> – the argument for the command			

	• <i>bool* ret</i> – contains if the command has been executed or not		
Return value	S OK if ok		
Remarks	none		
	CommandEnabled		
	ryCommandEnabled(string cmdID, bool* ret)		
Description	looks if the specified command can be successfully executed in the current context		
Input	• <i>string cmdID</i> – command to be checked		
parameters	• $bool^*$ ret – contains the result (true if the command is enabled)		
Return value	S OK if ok		
Remarks	none		
Method query	CommandIndeterm		
HRESULT que	ryCommandIndeterm(string cmdID, bool* ret)		
Description	looks if the specified command is in the indeterminate state		
Input	• <i>string cmdID</i> – command to be checked		
parameters	• <i>bool</i> * <i>ret</i> – contains the result (true if the command is in the indeterminate state)		
Return value	S_OK if ok		
Remarks	none		
Method query	CommandStatus		
HRESULT que	ryCommandStatus(string cmdID, bool* ret)		
Description	indicates if the specified command has been executed on the object or not		
Input	• <i>string cmdID</i> – command to be checked		
parameters	• <i>bool* ret</i> – contains the result		
Return value	S_OK if ok		
Remarks	none		
	CommandSupported		
HRESULT que	ryCommandSupported(string cmdID, bool* ret)		
Description	looks if the specified command is supported		
Input	• <i>string cmdID</i> – command to be checked		
parameters	<ul> <li>bool* ret – contains the result (true if the command is supported)</li> </ul>		
Return value	S_OK if ok		
Remarks	none		
Method queryCommandValue			
	ryCommandValue(string cmdID, variant* ret)		
Description	returns the current value for a command		
Input	• <i>string cmdID</i> – command		
parameters	• <i>variant* value</i> – contains value		
Return value	S_OK if ok		
Remarks	none		

## 5.3.1.5 Examples of usage

The following is an example of use of the activex to make a preview of an AXMEDIS object:

```
axactivex=new AXMEDISViewerCtrl();
axactivex.BackgroudColor="#ffffff";
//open the object downloading it from an URL
axactivex.Load(<u>http://AXMEDIS.org/demo/metropolis.axm</u>);
//show the metadata of the whole object
axactivex.ShowMetadata();
//look for a license and if not present acquire it
if(axactivex.NeedsLicense && !axactivex.HaveLicense)
    axactivex.AcquireLicense(licenseID);
else
    axactivex.ShowLicense();
AXMEDIS
```

```
// open all content elements inside the object and make a preview for 10s each
for(int i=1; i<=axactivex.ContentCount; i++)
{
    axactivex.OpenContent(i);
    //if currently opened content is image/video/document fit it to 100x100 preview
    if(axactivex.SupportVisualControl)
        axactivex.fit(100,100);
    //if currently opened content is audio/video preview it for 10s other wise wait for 10s
    if(axactivex.SupportTimeControl)
        axactivex.EndTime=10000; //10s preview
    else
        wait(10000); //wait 10s
}</pre>
```

# 6 AXMEDIS DRM Editor (FUPF)

# 6.1 Main functionalities

"DRM Editor and Viewer" is a software application to view and eventually edit MPEG-21 REL Licenses. This user manual refers to its version 2.1.9. "DRM Editor and Viewer" and comes in the form of two different applications. They are two different executable files, although they come with the same setup.exe installation file, which in turn will ask whether one or both programs are to be installed.

Its main features are:

Feature	DRM editor	DRM viewer
Load a license from a XML file	Yes	Yes
Load license from a remote host (PMS Server)	Yes	Yes
Create a new license form the scratch	Yes	No
Display graphically the license	Yes	Yes
Store a license in a XML file	Yes	No
Store a license in a remote host (PMS Server)	Yes	No
Edit (modify) a License	Yes	No

# 6.2 Relationship with other tools

This tool can be embedded as a component in other tools (i.e. axeditor).

The licenses created with the AXMEDIS DRM Editor can be stored locally or in a remote server (AXMEDIS PMS Server). In order to be able to store licenses in the remote server, a connection to it must be available, as explained in next chapter.

# 6.3 Detailed description of the functionalities and Screenshots

The application is a window application. (see Figure 1). As in a common window application, the following elements appear: menu bar, button bar, status bar. The status bar shows an icon informing whether connection to the server is available or not. If it does not exist, only file operations are possible



The main window shows two areas: in the left a hierarchically structure is displayed (also called tree), which is used to navigate through the license elements; in the right side there is a panel showing information related to the element marked in the tree. Functionalities can be accessed through the menu options, the buttons in the button bar, or the buttons that appear in the panel. Next we summarise the DRM Editor and Viewer main functionalities:

• DRM Editor and Viewer. Open a license from a file 🖆 (see Figure 1). The panel displays the file path or an alternative description.

	Editor
File Edit Help	License          AXMEDIS DRM Editor and Viewer         License:       C\Documents and Settings\vrodriguez\Escritorio\         AXMEDIS       X         DRM License Editor.       V2.1.9         Aceptar       Aceptar

Figure 1: DRM Editor view

- DRM Editor. Create a new license D. When a new license is created, it is empty. The tree appears with an "issuer" element and with a "Grant Group" element, but they are initially empty.
- DRM Editor. Modify a license.
  - When the tree is clicked on its "issuer element", the Editor shows the issuer panel, where the issuer and the date of issuance can be set (see Figure 2).

💥 AXMEDIS License F	Editor	_ 🗆 🗙
File Edit Help		
Grant Grant Ssuer	Issuer Issuer Issuer: Issuer id 8239s Dete: 2006-03-07 Deteils:	
		<b>i</b>

Figure 2: DRM Editor License Issuer view

• When the tree is clicked on its "GrantGroup element", a Grant Group panel is displayed. (see Figure 3). From this panel it is possible to add in or delete in grants. The first icon creates an empty grant, the second deletes it. Once a grant has been created, it will be displayed in the tree.

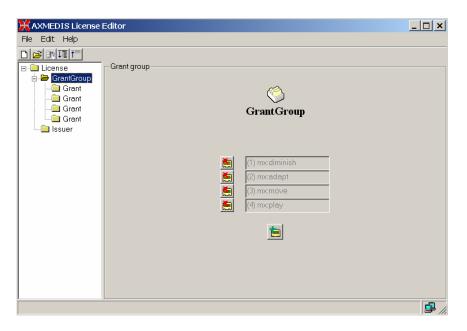


Figure 3: DRM Editor and Viewer License Grant Group view

- When the tree is clicked on its "Grant" element (see Figure 4), the Grant panel is shown. From this panel, the following actions can be performed:
  - To change the following fields: principal, right, resource.
  - To add and remove conditions. The conditions that can be set are: *number*, *interval*, *territory* and/or *fee*. Each of them can be modified.

XAXMEDIS License	Editor			_ 🗆 🗙
File Edit Help				
Conse     Crant     Grant     Ssuer	─ Principal	License g	Tants	
	Principal	Final User		
	Resource Resource Right	AX0ID:Identifier	reference id	
	Right	mx:diminish 🗨		
	Interval condition Interval	From: 2005-10-26	To: 2005-12-31	
	Fee Fee	3.00 EUR 💌	Fee per use.	
	Territory Territory	SPAIN		
		3 Car		
				₫ <i> </i> .,

Figure 4: DRM Editor License Grant view

• When the *issue* right is chosen, the license becomes a "distributor license", and the Grants underneath are Grants to be given by the distributor. This is reflected in the tree, where a new sublevel is displayed containing additional grants.

- DRM Editor. Store a license to a file. This option is performed when selection the "File -> Save to File" option of the Editor.
- DRM Editor. Store a license into a remote server **I**.

Limitations to be fixed in subsequent versions:

- In the current version only up to 8 grants can be added to the same grant group.
- Only a condition of each type can be added to a grant.

If the DRM Editor and Viewer are used in its classic version (the one which displays a simple tree) these limitations are overcome.

# 7 AXMEDIS DRM Viewer (FUPF)

# 7.1 Main functionalities

Refer to section "4 DRM Editor" for the viewing functionalities of "DRM Editor and Viewer".

# 7.2 Relationship with other tools

Refer to section "4 DRM Editor" for the viewing functionalities of "DRM Editor and Viewer".

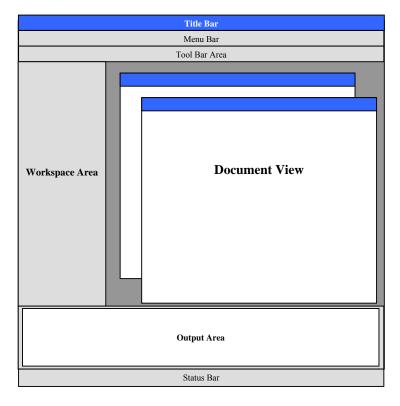
# 7.3 Detailed description of the functionalities and Screenshots

Refer to section "4 DRM Editor" for the viewing functionalities of "DRM Editor and Viewer".

# 8 AXMEDIS Rule Editor (DSI)

# 8.1 Main functionalities

The AXCP Rule Editor GUI is a MDI window that manages a AXCP rule document. It provides a set of tools and views to help the user during the editing and building of rule. It hosts an instance of the AXCP rule executor in order to provide functionalities for debugging, testing and validating the script code associated with a rule. To help the user in writing rule, the editor is equipped with an Help on line and area where the user can access to a library of script functions. The GUI is structured as:



AXMEDIS Rule Editor 1.0 - AXCPRule.xml	
File Edit View Insert AXCP Script Command Tools Workflow Window Help	
🏠 😅 🖬   🌜 👒 🏩   ] 律 律   三 😩 🕶 🛵 🛵   ] 王 🕅 🖓	8 🐣
	3
	Ln 36 Col 10 INS

Main view of the AXMEDIS Rule Editor GUI

### 8.1.1 The Menu Bar

The menu bar is constituted of the following entries:

#### File

- New create a new rule document
- **Open** Open a AXCP rule in the Rule Editor
- **Close** Close the current rule document
- Save save the current rule using the current file name
- Save as save the current rule by name
- **Import JScript** import a script in the rule
- Export JScript export the script on file system
- **Properties** it shows a report on the
- Page setup allow preparing the page for printing document
- **Print preview** open the print preview dialog
- **Print** send the document to the printer
- o Recent Files History of files
- $\circ$  **Exit** Quit the editor

#### Edit

- Undo to revoke the last performed actions
- Redo Once something has been undone this button permits to redo that step
- Cut delete and copy a selection in the clipboard
- **Copy** copy a selection in the clipboard
- **Paste** paste a selection available in the clipboard
- **Delete** delete a selection
- Find... Search a word in the text
- Find next search again for a new location of the current text
- **Replace...** replace a word with another

- Replace again replace again the word with a new entry
- Match brace match the brace
- Go to... go to a specific line text
- Advanced menu:
  - Indent increase
    - Indent reduce
    - Overwrite mode
    - Wrap mode
    - Show line endings
    - Show indent guides
    - Show line numbers
    - Show long line markers
    - Show whitespace
- Select All select all content
- Select line select the line where cursor is blinking

#### View

- Workspace It opens the Workspace area
- **Output** It opens the Output area
- Debug Monitor
- Preferences

#### Insert

- Selection Adds a selection item in the rule
- **Parameter** Adds a parameter item in the rule
- Script Adds a script item in the rule
- **Dependency** Adds a dependency item in the rule
  - Tool
  - Script

## AXCP Script

- o Var
- Function
- o Statement
  - if
    - if...else
    - switch
    - do...while
    - while
    - for
    - for in
    - try...catch

#### Commands

- AXCP Engine
  - Activate Rule It is the activate rule command and will allow sending the current rule to the scheduler and the notification to the AXMEDIS Workflow Manager. A connection with the Rule Engine Scheduler will be open in order to perform the installation of rule in the Scheduler.
  - Install
  - Get rules
- o Find Rule... Allows making queries to the rules repository of the Rule Editor
- Rules List... Shows the list of rules inside the repository of the Rule Editor
- **Check** Tests the feasibility of the rule (like a compiler plus some tests on AXMEDIS objects and estimation of some parameters such as the files complexity and required workload)

- o Debug
  - **Go** Enter in the debug mode or if the script is stopped, continue execution until the script is finished, or a breakpoint is reached.
  - **Stop** Stop the script execution and close the debug mode
  - **Step Over** Executes the current line of the script, then pauses. This differs from the "Trace" command in that it will not step into functions and scripts that are called by the current line.
  - **Trace Into** Executes the current line of the script, then pauses. This differs from the "Step" command in that if the current line calls a function, or another script, the debugger will trace into the called function or script.
- Breakpoint:
  - **Insert/Remove** Set a breakpoint on the currently selected line of the script code. Every time the selected line is reached, the debugger will stop. Clear a breakpoint from the currently selected line of the script code.
  - View list Open the debug window showing all breakpoints in the script code.
- o Tools
  - Selection Editor
  - Metadata Mapper

#### Messages

- Last message Displays the last message sent by the AXMEDIS Workflow Manager
- Messages List Displays the list of messages sent by the AXMEDIS Workflow Manager
- **Notify activity completion** it open the dialog for notifying the completion of the activity to the AXMEDIS Workflow Manager

Window (provided automatically by the MDI GUI)

- Cascade
- Tile Horizontal
- Tile Vertical
- Next Activate the next document view
- o Previous Activate the previous document view
- Arrange Icons Arrange the all minimised document views
- o Close All Close all document views
- Windows list

#### Help

o About - Information about the authors, version, etc

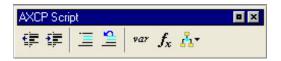
#### 8.1.2 ToolBar Area

The toolbar area will host a set of icon buttons that will allow calling functions without accessing to the menu bar. The toolbar area will be based on dockable toolbars and will allow the dynamic customisation by adding or removing sub-toolbars. For this end the editor will provide sub-toolbars for:

- *Standard* it will provide main functionalities for managing rule files and editing (new, open, save, etc...) for:
  - o New rule document
  - 0 Open from disk
  - o Save
  - o Cut
  - o Copy
  - o Paste



- *AXCP Script* it will provide controls for:
  - o Reduce indent
  - o Increase indent
  - Set selected rows as comments
  - *Remove comment from selected rows*
  - o Var
  - o Function
  - o Code



- *Debug* it will provide main controls for:
  - o Start Debug
  - o Stop Debug
  - o Step Over
  - o Trace Into
  - o Add/Remove Breakpoint



- AXCP Engine it will provide controls for:
  - Install and activate the rule on AXCP Engine
  - Install the rule without activation on AXCP Engine
  - Get the rules installed on AXCP Engine



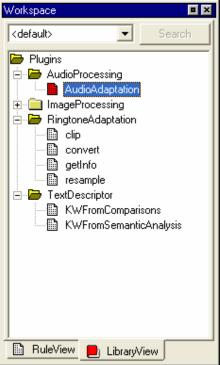
## 8.1.3 Workspace Area

It is a resizable docking panel and includes a notebook control where the rule view and the library view are shown.

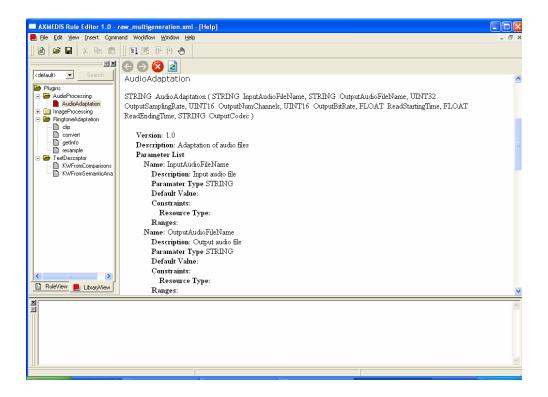
**Rule Tree View** - Such view is a tree view that display the structure of the rule. A dynamic popup menu is available for a quick access to functions that allows the quick management of items (edit and view metadata, delete, Insert, Cancel, Move up/Down, Rename, Open/Edit, ...). Appropriate icons allow identifying intuitively components of rule in view. In the following picture the actual structure of the Rule View area is depicted:

Workspace 🛛 🗖 🗙
Header     Schedule     Definition     G Dependences     Arguments     Key     Selection(1)     JScript
🖹 RuleView 📙 LibraryView

**Library view** – It is an on-line book that could be used as help by the user. It displays the set of functionalities provided by the Plugins installed and automatically detected by the editor. It is a tree control that permits to show and browse plugins module and the functionalities that they provide according to their profile.



The user can see the documentation associated with each selected function by interacting with each item of the tree by double clicking or accessing to a contextual popup menu. The selected documentation is displayed in the **Text/Html document view.** 



#### 8.1.4 Output area

This is a text control where messages, textual description, errors, debugging info, alert, etc... will be displayed.

Output	
AXMEDIS JS ENGINE Ver. 1.5	~
Compiling JS cript	
Executing JScript	
Break at line 5 Break at line 6 Break at line 7	
J	<b>V</b>

#### 8.1.5 MS Windows Firewall Alert at startup

The picture bellow shows the Windows Security Alert Dialog. To run AXCP Tools, please unlock the application clicking on the "Unlock" button. This operation allows AXCP tools to use network services and run properly.



# 8.1.6 Configuration

The AXCP Rule Editor allows accessing to the configuration dialog when it is necessary to modify the configuration file.

Configura	tion				
_ Modules -		Parameters			Close
AXMEDIS,	RULE_EDITOR _PLUGIN_MANAGER	Name	Туре	Value	
DATABAS WORKFL(		FILE_HISTORY	string	C:\incoming\Nuova cartella\Rules\resizing_i	
RULE_EN	GINE	XML_XSD_PATH	string	1	
AXMEDIS	DN_EDITOR _SELECTION	XML_RULE_PATH	string	1	
		FRAME_SIZE	string	738:1032	
		FRAME_POSITION	string	0:0	
		<			
Add	d Remove	Add	Edit	Remove	
Set Para	m				
Parameter	FILE_HISTORY				
Туре	string			•	
Value	C:\incoming\Nuova cartel	la\Rules\resizing_rul	e.xml;C:\inc	coming\Nu	

In the following tables the set of parameters regarding the configuration of the editor are listed. Such parameters are grouped into modules as reported below:

OK.

Cancel

# **AXMEDIS Rule Editor**

<b>Config parameter</b>	Possible values
XML_RULE_PATH	it is the directory where the rule will be saved
XML_XSD_PATH	It is the directory where xml schema (XSD files) are stored
FRAME_SIZE	it is the information about the last width and height of the main frame
FRAME_POSITION	It is the information about the last position (x,y) of the main frame
FILE_HISTORY	It is the list of recent rule documents

## **Workflow Manager**

Config parameter	Possible values
workflowUrl	It is the URL for the workflow plugin
gatewayUrl	It is the gataway URL for the workflow

### **AXMEDIS Plugin Manager**

Config parameter	Possible values
PLUGINS_PATH	It is the directory where the DLL of plug-ins with their profiles (workflow, adaptation,
	descriptor and fingerprint estimators) are stored.

# **AXMEDIS Database**

Config parameter	Possible values
user	The user name for logging into Database
passwd	The passoword for logging into Database
LoaderWSEndPoint	It is the URL for the loader
HTTPPath	It the HTTP path
UploadPath	It is the Upload path
SaverWSEndPoint	It is the URL for the saver

# **AXMEDIS Rule Engine**

<b>Config parameter</b>	Possible values
gatewayUrl	it is the URL of the AXCP Rule Scheduler/GRID

# **AXMEDIS Selection**

Config parameter	Possible values
MAIN_QUERY_SUPPORT_WSDL	It is the URL of the WSDL for using the Main Query Support
SELECTION_ARCHIVE_WSDL	It is the URL of the WSDL for using the Selection Archive

# 8.1.7 Tools, Viewers and Editors

Some different types of tools and editor were designed for visualizing and/or editing different type of documents.

- 1. **Javascript editing window** This is the window client where the user can use to write the script code. It is a multiline text control where it is possible to edit the script. The textual editor supports some facilities such as:
  - Auto completion of words a window listing possible completions for strings the user has typed
  - Syntax highlighting keywords will be colourised
  - Brace highlighting
  - Folding/Hiding making lines invisible or visible. It shows or hides a range of lines.
  - Multiple views to have multiple views of the same Document. (Split view)
  - Breakpoint insertion/removal to control the code in the debugging session

•

AXMEDIS Rule Editor 1.0 - A	XCPRule.xr	nl - [JS Script Editor - JSScript]	
S File Edit View Insert AXCP S	Script Comma	nd Tools Workflow Window Help	_ 8 ×
] 🖀   😅 🖬   🗶 🖦 🙈	∐ €E €E	三 ≌   ∞ ƒ, Ճ   ] 国 國 伊 役 色	
<b>_</b> ×	12	qs.view = QueryView.VIEW_PUBLISHED;	~
🖃 🔄 searchBox_test	13	qs.sort = QuerySort.SORT_STANDARD;	
Header	14	qs.queryString = key;	
🖉 Schedule	15	qs.firstDoc = 0;	
🖻 🔄 Definition	16	qs.lastDoc = 1;	
🚞 Dependences	17	<pre>var qr = new Array();</pre>	
🖻 🔄 Arguments	18	<pre>var maxres = sb.query(qs, qr);</pre>	
key	19	vari, j;	
JSScript	20	<pre>var axObj = new AxmedisObject();</pre>	
	21	<pre>for(i = 0; i <qr.length ++i)<="" ;="" pre=""></qr.length></pre>	
	22		
	23	<pre>print(qr[i].id+" "+qr[i].url);</pre>	
	24	<pre>var doc = sb.getDocument(qr[i].id); axObj.addContent(doc);</pre>	
	26	<pre>var meta = sb.getDocumentMetadata(qr[i].id);</pre>	
	27	<pre>print("-&gt; "+doc.mimeType+" ["+doc.size+"]");</pre>	
	28	for(j = 0; j < meta.length; ++j)	
	29	$\Box $	
	30	<pre>print("&gt; "+meta[j].key+"["+meta[j].slice+"]="+meta[j].value);</pre>	
	31	• •	
	32	L )	
	33	<pre>var res = axObj.getContent();</pre>	
	34	<pre>var content = res[0];</pre>	
	35	<pre>axObj.save("C:\\searchBox.xml");</pre>	
	36	var i = 0;	~
🖹 RuleView 📙 LibraryView	<		>
Name Type	×		
Name Type			
			~
Call Stack Local Variable 4	Output	Search	
		Ln 26 Col 48	INS

Visualisation of line numbers

- 2. **Text/Html document view** This is the window for the visualisation of the documentation provided by the help on line. It is opened when the user double clicks on a voice of the index in the *Library view* or when the internal help is called. It provides functionalities for browsing TXT or HTML pages. For example, all the information related to the description of a function selected from the *Library view* are shown in such window.
- 3. **Selection Editor** It is will be an interactive html page that will be displayed by means the HTML document viewer. It will provide functionality for:
  - a. Edit a selection
  - b. Save/Load a selection
  - c. Actualise the selection

# 8.1.8 Selection Editor ToolBar

The selection editor provides a quick access to functions by means the following toolbar for:

- 1. Clear the selection
- 2. Insert a New Query
- 3. Open a Selection from disk
- 4. Save a Selection on disk
- 5. Import Selection from DB
- 6. Export Selection into DB
- 7. Import Query from Disk
- 8. Export Query to disk
- 9. Customize Query Panels

AXMEDIS

- 10. Run query
   11. Selected query
   12. Run selection
- 13. Add to Rule

	🔁 🔓 👘 🧯 😻		<b>-</b> 🧑 _	Add to Rule	
AXMEDIS Rule Editor 1.0 - AXCPRule     File Edit View Insert AXCP Script Cor		v Window Help			
	📮 📃 🖺 🛛 🖛 👖 🗋 🚱	k   📴 📬 🎁   🖬 🦓		💌 🌎 Add to Ruk	
SearchBox_test	Selection AXMEDIS Query Dublin Core Creator: Coverage:	Query Result Selection Archive	Title: Format: Subject:	CONTAINS  CONTAI	
- 🖺 key - 🎦 JSScript	Description: Creation Date From: AxInfo		Calendar To:	[	Calendar
	KEPTOOL Owner:	CONTAINS  CONTAINS	Distributor: Access Mode:	CONTAINS  CONTAINS	
and	Invalid Selection		ld Condition(s) ()	Update	
Name Tupe					1
Call Stack Local Variable 4 Dutp	put Search				
			Ln 26	Col 48 INS	

Title	Description	Version	Object Id	Source Cha S
Il tesoro del santo	In un bordello italiano una	1	08180e7b	AXDB
Follie di Jazz (Second Ch	Mentre combattono strenu	1	0944c363	AXDB
McLintock!	Classica Western/Comedy	1	18054fe6-2	AXDB
La mia brunetta preferita	Nel braccio della morte dell	1	2397bc2d	AXDB
L'Erba di Grace	Il marito di Grace si è suicid	1	3dc0e5e3	AXDB
Love Laughs at Andy Ha	Tornato dalla seconda Guer	1	4142e15e	AXDB
The Inspector General	Un venditore ambulante di	1	45810070	AXDB
Il cameraman	Essendosi innamorato della	1	5f10d2d0-1	AXDB
La palla numero 13	Sherlock Jr e Ward tentano	1	76e10529	AXDB
I ragazzi del Marais	Regione del Marais, lungo l	1	91e9165c	AXDB
Il Navigatore	Rollo decide di sposare la s	1	950ef7ed-2	AXDB
The perils of Pauline	Siamo agli inizi del secolo, q	1	abdd95fe-d	AXDB
The sin of Harold Diddle	Vent'anni dopo il suo trionf	1	bcafec3f-7	AXDB
			did5	AXEPTOOL
			did9	AXEPTOOL
			did1	AXEPTOOL
\$				>

Query Result Panel

# 8.2 Relationship with other tools

The AXCP Rule Editor is related to Workflow tools and AXCP Rule Scheduler. The former for monitoring the rule creation and editing activity, the latter for posting and installing rules into the AXCP Grid Environment.

Finally. the current version of the Rule Editor embeds the Selection Editor for creating, testing and simulating complex queries onto the AXMEDIS Query Support.

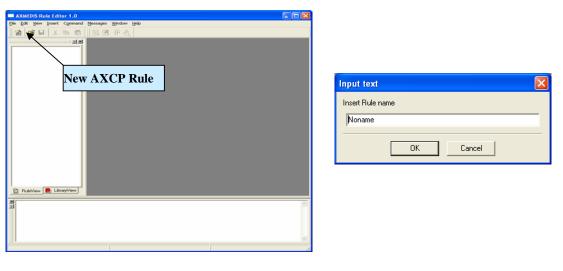
# 8.3 Detailed description of the functionalities and Screenshots

### 8.3.1 Editing on AXCP Rule

A content producer or manager wishes to create a content processing rule called AXCP Rule for manipulating/creating AXMEDIS multimedia objects. The AXCP Rule Editor is the editor for writing AXCP Rule. The AXCP Rule Editor GUI is a MDI window that manages a rule document at a time. The editor provides a set of tools and views to help the user during the editing and building of rule, writing JavaScript code. By opening the AXCP Rule Editor the user can create a rule to specify the time of firing. Once a rule has been created, the user can save it for re-editing at a future time or test the rule. Testing the rule enables the rule to be checked and debugged for any arising problems when executing the JavaScript code and allow the user within the editor to make changes to successfully activating the rule.

### 8.3.2 Creating a new rule

To create a rule, the user starts the AXCP Rule Editor and from the opening screen creates a new Rule by selecting "*New*" from the tool bar or using the File menu (File  $\rightarrow$  New) or using the keyboard shortcut "Ctrl+N" (see Screenshot 1). On requesting a new rule, the dialog box pops up and the user enters the name of the draft AXCP Rule and selects "OK" (see Screenshot 2).



Open a new rule

Input rule name dialog

After the rule name has been entered, the new rule is ready for editing with the '*tree view*' used as a workspace and the editing dialogs for editing the rule details and making a rule schedule.

Ular das Dada Distar	Header dialog
Header Rule Dialog	
General       Producer       Comment         Rule Name       [searchBox_test]         AXRID	This is the dialog that allows filling fields of the header section. The dialog is an OK/Cancel modal dialog in a notebook style with <i>General</i> , <i>Producer</i> and <i>Comment</i> tab where the list of items to edit is displayed. <b>Note</b> : The AXRID field is read only and it is pre-filled with the identification code assigned by the rule editor
Schedule Rule Dialog	Schedule dialog
Firing Conditions         Start Date       2005-08-08         Start Time       10:30:11         Expiration Date       2005-08-08         Expiration Time       10:30:11         Periodicity (Every)	This dialog allows filling/editing fields for a schedule item. The dialog is as an OK/Cancel modal dialog and displays the list of items to edit. The dialog allows setting the start date and time, the expiration date and time, and the conditions of periocity (how may times in term of unit such as days, week, month and so on)
Dependency Rule Dialog	Dependecy dialog
Attribute         Name       ImageProcessing_1.001         Plugin Name       ImageProcessing         Plugin Version       AudioProcessing         Plugin Version       ImageProcessing         RingtoneAdaptation       TextDescriptor         OK       Cancel	This dialog allows filling fields for a dependency item. The dialog is an OK/Cancel modal dialog and displays the list of available plugins in order to facilitate the choice.

# 8.3.3 Loading an existing rule

Instead of creating a new rule, the user may wish to edit an existing draft rule. The user may have saved it as a file somewhere or saved it in the AXCP Rule Repository. By selecting 'open' or 'Rule List' or selecting a file in the history list ('Recent Files...'), as seen in screenshot 4 and 5, the rule editor can load an existing draft rule from the Repository or elsewhere on the system.

AXMEDIS R		Messages Window Help		15 Rule Editor		assone which a	. Halls		4	- 🗆 🗙
New Open Close	Ctrl-N Ctrl-O	Messages Window Prep 일본 문 구 속				医医带虫				
Save Save As	Orlis									
Import Xicript. Export Xicript.				Repository F	Rule List Di	slog			8	
Properties	Ozl+T				Version	Author	Date of Co		Path	
Page Sebup Print Preview Print	Ctrl+Shift+P Ctrl+P			Example example searchBox_t searchBox_t	110	Ivan Bruho Ivan	2005-05-25 2005-04-02 2005-08-08 2005-08-08		Z:\Avmeds\avmeds\Applications\ruleec Z:\Avmeds\avmeds\Applications\ruleec Z:\Avmeds\avmeds\Applications\ruleec Z:\Avmeds\avmeds\Applications\ruleec	
Recent Files Exit	Alt-X	1 seard/Box_bek.ml 2 Example.ml 3 AXXPR4.sml								
		5 ooffgaaton.om		¢						
BuleView	Librarj\View		E Rule			Open	View Con	ment	Close	
2		8	A I							2
1.11.2						Ĩ.				

Open commands shows the commond Open dialog

The *Rule List* command opens a rules list modal dialog displaying all rules stored in the repository of the AXCP Rule editor. In this window, the list of rules will be organised in a table built on the following subset of metadata:

- Rule Name
- Rule Version
- Author
- Date of composition
- Rule ID (AXRID)

The user can select a specific rule in order to open it in the rule editor. Such operation is possible by pushing the *Open* button or double clicking on the line of the chosen rule. The user can visualize the comment associated with rule by pushing the *View Comment* button, the comment is displayed the *Output Area*. Otherwise the user can cancel the operation by closing the dialog or pushing the *Close* button.

# 8.3.4 Editing a rule

The user can use the set of dialog and text editor to edit the AXCP rule (as shown in screenshots), and edit rule data such as:

- Parameter dialog for editing the attributes of a rule parameter
- Dependency dialog for editing the attributes of a AXMEDIS PlugIn
- XML Selection Editor (XML viewer/editor for the XML representation of selections) and JavaScript Editor based on Scintilla Editor for text/javascript code editing. It provides full editing capabilities (copy, cut, paste, redo, undo, syntax highlighting, etc...), print preview, page setup and print functionalities, syntax highlighting, brace highlighting, folding/hiding of lines, breakpoint insertion/removal, visualisation of line numbers

Dependency Rule Dialog 🛛 🔀	Parameter Rule Dialog
Attribute	Attribute
Name Protection_1.0	Name key
Plugin Name Protection	Type String
Plugin Version 1.0	Default Value and
L]	
OK Cancel	OK Cancel

Dependency dialog

Parameter dialog

# 8.3.5 Debugging Rule functionalities

The editor provides functions to add/remove breakpoints (F9), start debug (F5), next breakpoint (F5), step over (F10) and step into (F11), stack calls monitoring, local variables visualization. In the output window a textual output provides internal errors or communication when script runs and during the debug session.

1. **Call Stack** – This a page of the Debug dockable window that displays stack of functions calls. It display the script name and the line of the call. Double clicking on an entry level of the stack allows focusing the view of the script where the corresponding call is located.

ebug Monitor		• ×
Function	Location	JSScript
fillMetadata	line 3, PC=2	main
main	line 53, PC=49	main
main	line 59, PC=1	main
Call Stack Local	Variables Watch	nes Breakpoints

2. Local Variables – This is a page of the Debug dockable window that displays variables and instances of objects allocated by the script. They are displayed as tree list control with folding-unfolding capability for displaying the list of attributes of the object instance.

Name	Type	Value	
🗆 obj	AxmedisObject	{AX0ID=urn:axmedis:00000:obj:12cd50!	~
AXOID	string	urn:axmedis:00000:obj:12cd5052-4a63-4	
childrenCount	integer	0 urn: axmedis: 00000: obj:12	204505
URI	string	untaxinedis.00000.00]. 12	.cu303
contentID	string		
xml	string	xml version="1.0" encoding="UTF-8"</td <td></td>	
🖃 jsxml	REXML	{XML= xml version="1.0" encoding="L</td <td></td>	
XML	string	xml version="1.0" encoding="UTF-8"</td <td></td>	
- rootElement	REXML_XMLEleme	{type=comment;name=!;attributeString=	
type	string	comment	
name	string	ļ	
attributeStrir	string	Sample XML file generated by XMLSpy	
attributes	string	null	
🛨 childElemer	Array	{[REXML_XMLElement];}	_
parentEleme	string	null	
i text	string		
🛨 dc	AxDublinCore	{metadataID=;}	
🛨 mainDocument	REXML_XMLEleme	{type=element;name=axsiae:CopopMeta	
namespaces	string	xmlns:axsiae="http://www.axmedis.org/	
i	integer	17	
🛨 builder	JSXMLBuilder	{XML=;{[JSXMLBuilder_XMLElement];[J!	
XMLStr	string	<axsiae:identification>III<axsiae:iswc>Str</axsiae:iswc></axsiae:identification>	
[∓] Xml	Arrau ariables Watches	{[strinal:[strinal:]strinal:}	×

- 3. Watches Not available in the current version.
- 4. **Breakpoints -** This a page of the Debug dockable window that displays the list of breakpoints inserted in the scripts: each breakpoint is associated with the name of the script and relative line number and status (Enabled or Disabled). Double clicking on a breakpoint allows focusing the view of the script where the breakpoint is placed.

ebug Monitor					
JScript Name	Line	Function			
🛑 main	33				
🛑 main	40				
Call Stack   Local	Variable	as Watch	Decelorations		
	Y GHADI	Match	Breakpoints	J	

- 5. Debug markers:
  - o A red filled circle indicates an Enabled breakpoint
  - A red empty circle indicates a Disabled breakpoint
  - o A yellow arrow indicates the line that will be executed.

🔲 JS Script	: Editor							
1	<pre>var sb = new AXSearchbox();</pre>							
2	<pre>sb.Host = "liuto.dsi.unifi.it";</pre>							
3	sb.Port = "2200";							
4	sb.Username = "foo";							
5 🔴	<pre>sb.Password = "password";</pre>							
6	<pre>var qs = new QuerySpec();</pre>							
7 🗘	7 🗘 var a = new Array(1);							
8	a[0] = 1;							
9	qs.Archives = a;							
10	qs.Parser = QueryParser.ALGPARSER;							
11	qs.Info = QueryInfo.INFO_CONTEXT;							
12	qs.View = QueryView.VIEW_PUBLISHED;							
13	qs.Sort = QuerySort.SORT_STANDARD;							
14	qs.QueryString = key;							
15	<pre>var qr = new Array();</pre>							
16	<pre>var maxres = sb.Query(qs, qr);</pre>							
17	var i;							
18	×							
<								
	C Debug							

Main navigation interface of a Debug session

#### 8.3.6 Activating a rule

The current version of the prototype allows installing a rule in the rule engine and notifying the completeness of the rule to the workflow manager. The activation can be done by using the *Activate* function in the Command menu or manually as described in the scenario 2.

#### 8.3.7 Creating a selection Parameter

This section describes how to create a selection document as parameter for an AXCP Rule. The user has to Insert a selection parameter in the Arguments section (Insert $\rightarrow$  Selection), the Selection Editor opens an empty Selection document.



To add a new query the user can:

- Access to the popup menu on the tree view by right clicking on the "selection" item and then selecting the "New Query" function
- Use the AddQuery <sup>Solution</sup> button of the toolbar



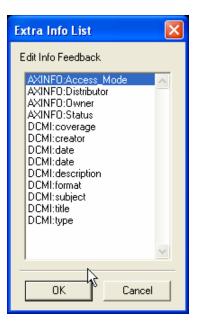
The new query becomes the current query and all operations affect it. The current query is displayed in the toolbar:



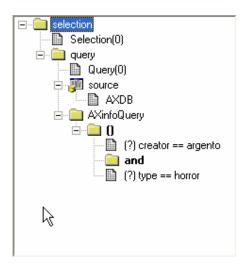
The new query is inserted and is filled with the source data choices currently set on the Available Sources. The source can be modify before adding or after the query. In both case the user has to selects sources in the corresponding panel. After the query insertion by right clicking on the new "query" item the popup menu on the tree view the user can select the "Set Query Source" function to apply the new sources.

Save 🔓 Clear All
New Query
Import Query
Export Query
Set Extra Info
Set Query Source
Delete
Tree View

By means the Set Extra Info function on the same popup menu, the user can fill the query with the list of information to retrieve when the query is submitted to the Main Query Support. The function opens a multiple choice dialog as following:



The user can start to insert conditions in the query by filling the fields in the Query Composer in a single or both panel. After filling, the user has to press the "AddCondition(s)" button to add them in the query.



To add a nesting level, the user has to press the "()" button in the Query Composer. A dialog will appear asking for the logic connector to use

Logic operators	X
Insert operator	
or and	<u>^</u>
	<b>~</b>
	Cancel

The "()" will be inserted in the query and it will be the current level that can be edit. To change level the user has to select an existing nesting level.



During the editing the document is validated at runtime and the Validation Status panel provides the current status of the document:



To remove an item the user can select the item on the tree and by accessing to the popup menu calls the "delete" function.

### 8.3.8 Editing a selection Parameter

We assume to have an existing selection parameter to edit. The user has to open the popup menu by right clicking on the selection item in the tree view.

### 8.3.9 Testing a query

The user selects the query or by clicking on the query item of the tree or by choosing it on the toolbar in the choice box. Then, the user clicks on the button on the toolbar to send the submission to the Query Support. The result is displayed in the Query Result panel.

F( M	tesoro del santo ollie di Jazz (Second Ch IcLintock! a mia brunetta preferita	In un bordello italiano una Mentre combattono strenu Classica Western/Comedy Nel braccio della morte dell	1 1 1	08180e7b 0944c363 18054fe6-2	AXDB AXDB AXDB
M La	IcLintock!	Classica Western/Comedy	-		= =
La			1	18054fe6-2	
	a mia brunetta preferita				MADD
L1		ivel braccio della morte dell	1	2397bc2d	AXDB
	Erba di Grace	Il marito di Grace si è suicid	1	3dc0e5e3	AXDB
Lo	ove Laughs at Andy Ha	Tornato dalla seconda Guer	1	4142e15e	AXDB
TÌ	he Inspector General	Un venditore ambulante di	1	45810070	AXDB
I	cameraman	Essendosi innamorato della	1	5f10d2d0-1	AXDB
La	a palla numero 13	Sherlock Jr e Ward tentano	1	76e10529	AXDB
I	ragazzi del Marais	Regione del Marais, lungo l	1	91e9165c	AXDB
I	Navigatore	Rollo decide di sposare la s	1	950ef7ed-2	AXDB
TÌ	he perils of Pauline	Siamo agli inizi del secolo, q	1	abdd95fe-d	AXDB
Tİ	he sin of Harold Diddle	Vent'anni dopo il suo trionf	1	bcafec3f-7	AXDB
				did5	AXEPTOOL
				did9	AXEPTOOL
				did1	AXEPTOOL

# 8.3.10 Load and Save a selection from/to the Selection Archive

A selection document can be loaded/saved from/to the Selection Archive.

To save a selection into the Archive, the user can clicks on the 1 icon.

To open an existing selection by loading from the Archive the user can click on the <sup>11</sup> icon and the list of available selection document is displayed in the Selection Archive panel. To ask for loading a document, the user selects the selection and by pressing the Open button, it will be loaded and the displayed in the editor.

XXMEDIS Query Query Result Selection Archive Selection List
Selection LIX Selection ID Name Timestamp
J
Open

# 8.3.11 Load and Save a selection from/to the File System

A selection document can be loaded/saved from/to the File System.

To save a selection into the File System , the user can clicks on the  $\square$  icon.

To open an existing selection by loading from the File System the user can click on the 🃴 icon

# 8.3.12 Conclusion

Using the AXCP Rule Editor, the user can write an AXCP Rule and edit it to set when and how the digital contents have to be processed. Once checked, the activated rule is sent to the AXCP Rule Engine which uses AXMEDIS tools to run the javascript that describes the content processing procedure.

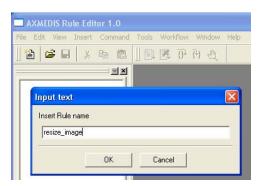
# 8.4 How to Create a rule, a small tutorial

In this tutorial we will show how to create a number of simple rules from scratch.

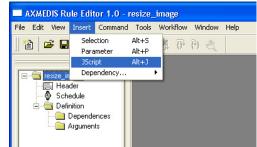
# 8.4.1 EXAMPLE 1 – Rule without parameters (Simple rule)

The first example will show how to create a simple script for resizing an image resource named *AXMEDIS\_logo.png* stored in the C:\\ path and saving the new resized image on the disk.

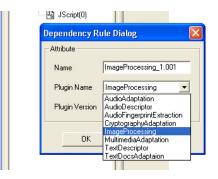
- Choose menu **File/New** or click on the icon;
- Insert the name of the rule , for example *resize\_image*;



• Choose the menu **Insert/JScript**, a new window will be opened where to write the JavaScript for the rule;



- In the tree view (Rule view in the workspace panel) select "Dependeces" folder and right click on it Choose **Insert Dependecies/Tool** in the menu to use functionalities provided by the AXMEDIS plugins.
- In the Dependency Rule Dialog select ImageProcessing in the Plugin Name choice box



• Selecting the **JScript** element on the tree view, the JS Editor, previously opened, will be activated. Then, write the following javascript piece of code in it

```
1
    // 1) create an empty resource
2
    var image = new AxResource();
3
    // 2) load the image file by the selected path
4
5
    image.load("C:\\AXMEDIS_logo.png");
6
7
    // 3) Use the Image Processing plugin for scaling the image
8
    ImageProcessing.Resize(image, 320, 200, true, image);
    // the Resize function of the Image Processing plugin scales the image at 320*200
9
10
   // size maintaining the Aspect ratio and overwriting the new image
11
    // 4) the scaled image is saved as "img_scaled.png
12
  image.save("c:\\img_scaled");
13
```

Note: The line with "//" are comments and describe the meaning of javascript instruction.

In this example, the instruction to resize the image is the function in line 8 ImageProcessing.Resize followed by a number of parameters into parenthesis. Selecting the **LibraryView** tab it is possible to see the complete list of available processing functions. By double clicking on the **Resize** function in the **ImageProcessing** folder will appear the help window showing the needed parameters. In this case the **Resize** function needs the following parameters:

• the resource to be resized (i.e. in our script is image)

- the new image width (i.e. 320 in our script)
- the new image height (i.e. 200 in our script)

- o an indication for preserving the image aspect ratio or not (i.e. true in our case will preserve the aspect ratio)
- the output resource, (i.e. image in our case: this will replace the original image with the new resized one)

The order of parameters is important to use correctly the function and avoid possible execution errors.

Now, we can continue to produce our first rule by:

- Saving the rule in the menu File/Save
- Running the rule pressing the **Start Debug** button
- The output windows, on bottom of the editor, will show if errors are present in the script, the "Execution terminated" message advises the end of run.

AXMEDIS Rule Editor 1.0 - ro	esize_image	.xml - [JS Scrip	t Editor - JScript(0)]				
Is File Edit View Insert Comma	and Tools W	orkflow Window I	Help		- 8 ×		
] 🏠 😂 🖬 🗼 🖻 🛍		}} {} <b>(</b> } <b>(</b> )					
	1	// 1) creat	te an empty resource		~		
🖃 🔄 resize image	2	<b>var</b> image =	<pre>= new AxResource();</pre>				
Header	3						
🚽 🔕 Schedule	4		the image file by the selected path				
🖻 🔄 Definition	5	image.load(	("C:\\Programmi\\AXMEDIS Tools\\resource	Path\\axmedis_logo.p	png");		
	6	11 01 77			=		
■ta ImageProcess ⊡ Arguments	8		the Image Processing plugin for scaling	the image			
JScript(0)	9	-	<pre>ssing.Resize(image,320,200,true,image);</pre>				
Es oscibi(o)	- Hig JScrip(0) 9 //the Resize function of the Image Processing plugin scales the image at 320*200 size 10 //maintaing the Aspect ratio and overwriting the new image						
	11	//maincaing	g the aspect facio and overwriting the h	ew image			
	12	// 4) the s	scaled image is saved as "img scaled.png		_		
🖹 RuleView 📃 LibraryView			an 111 a ana				
	<u> </u>		III.				
× NHANNANANANANANANANANANANANANANANANANAN							
Compiling JScript							
Europuting (Covint							
Executing Jochpt	Executing JScript						
Return: undefined							
Execution terminated					~		

• After the rule execution, it is possible to open the new resource created on the disk in the C:\\ path and named *img\_scaled.png*.



When we save a rule initially edited as JavaScript code the Rule Editor saves it in an xml file. In the previous example, the *image\_resize.xml* file is the following:

# DE5.0.1.1 AXMEDIS Major Tools User Manuals

<pre>cv @ Wikkok/hareddocs/Editor Images/resize_image.xml gle v</pre>	
<pre>Note: Section: 2006-08-31 (/Last_Modifications) CTemping_10 // 10 // 2006-08-31 (/Last_Modifications) CTemping_10 // 2006</pre>	
<pre>gle @ @ @ @ Search @ @ Distanced @ Ond. * @ Anton @ Data @ Quees @ Train version="1.0" encoding="UTF-8" standalone="no" 1&gt; Fulle sinip: sini="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="Rule_Axmedis.xsd"&gt;</pre>	
<pre>// // // // // // // // // // // // //</pre>	Indirizzo 🕖 \\Mitolo\shareddocs\Editor Images\resize_image.xml
<pre>Bule smip:sti="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="Rule_Axmedis.xsd"&gt;</pre>	Google - 💽 Search 🔹 🛷 🔊 9 blocked 🥙 Check 🔹 🖄 AutoLink 🔹 🗐 AutoFill 🛃 Options 🖉
<pre>cHeaders </pre> cAXEND=oxcprule:95409e53-f678-46ba-b046-841de1b727ce cAXEND=oxcprule:95409e53-f678-46ba-b046-841de1b727ce cAXEND=oxcprule:95409e53-f678-46ba-b046-841de1b727ce cAlle_Yession /> cAXEND=oxcprule:95409e53-f678-46ba-b046-841de1b727ce cAlle_Yession /> cation //> cation //> cation //> cation //> cation /// // // //////////////////////////	xml version="1.0" encoding="UTF-8" standalone="no" ? - <pule vsi:ponamespaceschemal.ocation="Pule_Aymedic_ysd" xmlns:vsi="http://www.w3.org/2001/XMI Schema-instance"></pule>
<pre>cAXED&gt;axcprule:95409e33-f678-46ba-b046-841de1b727cs cdule_version_fs</pre> cdule_version_fs cdu	- <here and="" animises="" of="" reprovementation="" sec<="" second="" td="" the=""></here>
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<pre>// 1) create an empty resource var image = new AxResource(); // 2) load the image file by the selected path image.load("C:\\Programmi\\AXMEDIS Tools\\resourcePath\\axmedis_logo.png"); // 3) Use the Image Processing plugin for scaling the image ImageProcessing.Resize(image,320,200,true,image); //the Resize function of the Image Processing plugin scales the image at 320*200 size //maintaing the Aspect ratio and overwriting the new image // 4) the scaled image is saved as "img_scaled.png image.save("c:\\img_scaled"); ]]&gt; </pre> //S_Script>  - <dependencies> - <dependencies> - <dependencies> - <dependencies> - <dependencies> - <dependencies> - <dependencies> - <dependencies> - <dependencies> - <dependencies></dependencies></dependencies></dependencies></dependencies></dependencies></dependencies></dependencies></dependencies></dependencies></dependencies>	
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<pre>ImageProcessing.Resize(image,320,200,true,image); //the Resize function of the Image Processing plugin scales the image at 320*200 size //maintaing the Aspect ratio and overwriting the new image // 4) the scaled image is saved as "img_scaled.png image.save("c:\\img_scaled"); ]]&gt;   - <dependencies> - <dependencies> - <dependencies> ImageProcessing 1.001</dependencies></dependencies></dependencies></pre>	// 3) Use the Image Processing plugin for scaling the image
<pre>//maintaing the Aspect ratio and overwriting the new image // 4) the scaled image is saved as "img_scaled.png image.save("c:\\img_scaled"); ]]&gt;   - <dependencies> - <dependencies> ImageProcessing 1.001</dependencies></dependencies></pre>	<pre>ImageProcessing.Resize(image,320,200,true,image);</pre>
<pre>image.save("c:\\img_scaled"); ]]&gt;   - <dependencies> - <dependency> ImageProcessing 1.001</dependency></dependencies></pre>	
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<plug_in_name>ImageProcessing</plug_in_name> <version>1.001</version>	
<version>1.001</version>	
doi:10.1016/j.com</td <td> </td>	

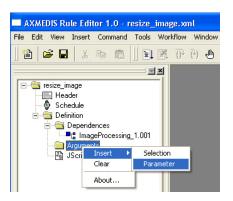
# 8.4.2 EXAMPLE 2 – Rule with Parameters

In the following example we will generalize the previous script inserting some generic arguments in the script.

Instead to specify directly in the rule where the resource has to be loaded and saved (as specified in line 5 and 13 of the previous script), we can specify a generic argument in the script. In this manner the rule will remain valid and will be not modified in the future.

To do this we have to add a number of parameters in our rule.

• right click on the **Arguments** element in the tree view and select **Insert/Parameter** in the contextual menu;



- Add a first argument (the resource to be resized, in this case is the AXMEDIS logo in png format stored in the C:\Programmi\AXMEDISTools\resourcePath path)
  - o **Name** input\_path
  - o Type String
  - O **Deafult Value** C:\Programmi\AXMEDISTools\resourcePath\AXMEDIS\_logo.png



- Add a second argument (the resized output resource will be saved in C:)
  - o Name output\_path
  - o Type String
  - **Deafult Value** c:\img\_scaled
  - Add a second argument (the new image width is 320 pixels)
    - o Name width
    - o **Type** Integer
    - o Deafult Value 320
  - Add a third argument (the new image height is 200 pixel)
    - o **Name** height
    - o **Type** Integer

- o Deafult Value 200
- Add a forth argument for a conversion of the image in jpeg format
  - o Name out\_mime\_type
  - o Type String
  - o **Deafult Value** image/jpeg

Now we have to change the script deleting the specific path overwriting then with the new generic arguments and adding a new line for the format conversion. The script is the following:

```
1
    // 1) create an empty resource
2
    var image = new AxResource();
3
4
    // 2) load the image file by the "input_path" argument
5
    image.load(input_path);
6
7
    // 3) Use the Image Processing plugin for scaling the image
8
    ImageProcessing.Resize(image,width,height,true,image);
    // the "Resize" function of the Image Processing plugin scales the image at 320*200
9
   // size maintaining the Aspect ratio and overwriting the new image
10
11
12 // 4) Use the Image Processing plugin for "Conversion" the image
13 ImageProcessing.Conversion(image,out_mime_type,image);
14
   \ensuremath{{\prime}}\xspace // the "Conversion" function of the Image Processing plugin converts the image
15
    // and overwriting the new image
16
17 // 5) the scaled image is saved in the location specified by the "output_path" argument
18 image.save(output_path);
```

When the rule is executed a new image named img\_scaled.jpg will be saved in C:

#### 8.4.3 EXAMPLE 3 – Rule for creating AXMEDIS Object

As third example we will se how apply the rule to an AXMEDIS object. More in deep we will create a new AXMEDIS object with the new converted image as embedded resource. To do this we have firstly to delete the output image path in line 18 adding only three instructions:

```
// Create an empty AXMEDIS object
var axObj = new AXMEDISObject();
// Add the image resource as a new content
axObj.addContent(image);
// Save the AXMEDIS object
```

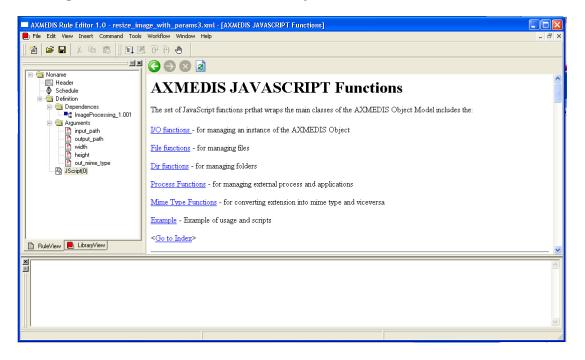
```
axObj.save("c:\\newAXMEDISObject.axm");
```

The final script is the following:

```
1
    // 1) create an empty resource
2
    var image = new AxResource();
3
4
    // 2) load the image file by the "input_path" argument
5
    image.load(input_path);
б
7
    ^{\prime\prime} 3) Use the Image Processing plugin for scaling the image
8
    ImageProcessing.Resize(image,width,height,true,image);
9
    // the "Resize" function of the Image Processing plugin scales the image at 320*200
10
   // size maintaining the Aspect ratio and overwriting the new image
11
12 \, // 4) Use the Image Processing plugin for "Conversion" the image
13 ImageProcessing.Conversion(image,out_mime_type,image);
14 // the "Conversion" function of the Image Processing plugin converts the image
15 // and overwriting the new image
```

```
16
17 // Create an empty AXMEDIS object
18 var axObj = new AXMEDISObject();
19
20 // Add the image resource as a new content
21 axObj.addContent(image);
22
23 // Save the AXMEDIS object
24 axObj.save("c:\\newAXMEDISObject.axm");
```

All the available functions interacting with the AXMEDIS Editor are listed and explained in the **AXMEDIS Javascript Reference Manual** available in the **Help/About** menu.



# 9 AXMEDIS Rule Engine - Rule Scheduler (DSI)

# 9.1 Main functionalities

The AXCP Rule engine is divided in two main components:

- **Rule Scheduler (Server Side)** It consists of the an internal Scheduler and Dispatcher. It performs the operations of rule installation, rule firing, rule executor discovering and management, rules dispatching, communication with the AXMEDIS environment, etc....
- **Rule Remote Executor** (Client Side) It is the executor of rules and consists of a script engine based on JavaScript (JS) SpiderMonkey released by Mozilla. It runs the JavaScript code associated with rule.

# 9.2 Relationship with other tools

The AXCP Rule Scheduler is related to Workflow tools for monitoring the GRID activity and rules.

# 9.3 Detailed description of the functionalities and Screenshots

The Rule Scheduler GUI is the main window that allows the interaction with the Scheduler. It is constituted of:

- 1. A menu bar
- 2. Two main areas where the list of rules and the list of remote executors are displayed.
- 3. A status bar where the current clock and the current date are displayed.

### 9.3.1 Menu bar

It provides the access to the following set of functions:

#### 1. Program

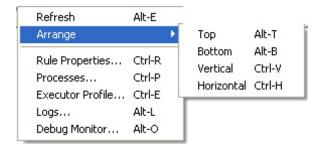
- a. Add Rule It allows to load rules and install into the scheduler
- b. Launch scheduler Start the scheduler activity.
- c. *Stop scheduler* Stop the scheduler activity.
- d. Backup Backup Copy of the last jobs list.
- e. *Restore* Restore a backup copy
- f. Minimize It reduces at icon on the taskbar.
- g. *Exit* Close the application.
- h. Start Grid Peer Functions It starts the components for P2P network access

AddRule	Ctrl-A
Launch scheduler	Ctrl-L
Stop Scheduler	Ctrl-S
Backup	Alt-B
Restore	Alt-R
Minimize	Alt-M
Exit	Alt-X
Start Grid Peer functions	Ctrl-F
test replace parameters	
test replace schedule	
test install whole rule as string	
test replace parameters and schedule	

#### 2. Settings

- a. *Preferences* Open an editable dialog with the set of configuration parameters.
- 3. View
  - a. *Refresh* Update the list of jobs and list of remote executors.
  - b. Arrange Repainting modes of tables in the main frame
    - i. Top It shows only the top table (Table of rules)
      - ii. Bottom It shows only the bottom table (Table of executors)
      - iii. Vertical It shows tables vertically
      - iv. Horizontal -- It shows tables horizontally

- c. Rule Properties... Open a Rule Properties dialog.
- d. Executor Profile...- Open an Executor Profile dialog.
- e. Logs...- Open a dialog to show the list of log messages
- f. Debug Monitor... A dialog for debug purpose



### 4. Commands

- a. Rule
  - i. Enable Rule Put in the "ACTIVE" status the current selected inactive rule.
  - ii. Disable Rule Put in the "INACTIVE" status the current selected active rule.
  - iii. Kill Rule Kill the current execution of the current selected rule.
  - iv. Pause Rule Put in pause the execution the current selected rule.
  - v. *Resume Rule* Resume the execution of the current selected rule.
  - vi. *Suspend Rule...* Open a dialog to edit the temporal interval for rule resuming and then suspend the current selected rule.
  - vii. Remove Rule Remove the rule from the list of rules
- b. Executor
  - i. Remove

Rule 💦 🕨 🕨	Enable	Alt-N
	Disable	Alt-D
Executor •	Kill	Alt-K
	Pause	Alt-P
	Resume	Alt-S
	Suspend	Alt-U
	Remove	Ctrl-M

#### 5. Other

- a. *Help* Open the On Line help.
- b. About Open a dialog with credits.

All this functionalities are also accessible by means shortcuts.

AXMEDIS – Rule Schedu	uler				
<u>Program Settings View C</u>	<u>C</u> ommands <u>?</u>				
	RULES/JOBS Tal	ble			
REMOTE EXECUTORS Table					
	[	Current Date	Current Clock		
de AXMEDIS - Rule Scheduler Program Settings View Commands ?					

AXMEDIS -	Rule Sched	uler												
Program Settin	ngs View Cor	mmands ?												
Rule Name	AXRID	Rule Version	Rule Status	Job ID	Exe	utor ID	Start Time	Start Date	Perio	odicity Nu	mber of Runs			/
searchBox_t			completed	9	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	10	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	11	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	12	-1		16:05:11	09/23/05	0	1				
searchBox_t			running	13	2		16:05:11	09/23/05	0	0				
searchBox_t			completed	14	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	15	-1		16:05:11	09/23/05	0	1				
searchBox_t			running	16	3		16:05:11	09/23/05	0	0				
searchBox_t			completed	17	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	18	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	19	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	20	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	21	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	22	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	23	-1		16:05:11	09/23/05	0	1				
searchBox_t			running	24	8		16:05:11	09/23/05	0	0				
searchBox_t			completed	25	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	26	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	27	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	28	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	29	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	30	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	31	-1		16:05:11	09/23/05	0	1				
searchBox_t			completed	32	-1		16:05:11	09/23/05	0	1				
searchBox_t			running	33	7		16:05:11	09/23/05	0	0				
searchBox_t			completed	34	-1		16:05:11	09/23/05	0	1				
searchBox_t			running	35	9		16:05:11	09/23/05	0	0				
searchBox_t			running	36	6		16:05:11	09/23/05	0	0				
searchBox_t			delayed	37	-1		16:05:11	09/23/05	0	0				
searchBox_t			delayed	38	-1		16:05:11	09/23/05	0	0				
searchBox_t			delayed	39	-1		16:05:11	09/23/05	0	0				
searchBox_t			delayed	40	-1		16:05:11	09/23/05	0	0				
Executor N	IP	CPU	Clock	0		Transfer R				Rule ID	Executor ID	Workload p	Start Time	En
ISIT-01	192.168.0.19		1800			-1	1073741			2	1	0.000000	15:04:38	15
DISIT-04	192.168.0.105		1800			-1	4529848			13	2	0.000000	15:04:05	15
DISIT-03	192.168.0.52	intel	1800			-1	8912896			16	3	0.000000	15:27:33	15
DISIT-02	192.168.0.43	intel	1800			-1	8493465			5	4	0.000000	15:45:09	15
4IRKOFANI	192.168.0.64	intel	1800			-1	-107374			6	5	0.000000	15:53:06	15
ENOM-WORK	192.168.0.103		1800			-1	-214748			36	6	0.000000	16:01:28	16
4386	192.168.0.49	intel	1800			-1	-214748			33	7	0.000000	16:05:11	16
DISIT-05	192.168.0.102		1800			-1	0	busy		24	8	0.000000	16:25:49	16
HOMER	192.168.0.10	1 intel	1800	W	/indows N	-1	-214748	3648 busy		35	9	0.000000	16:35:48	16
•														
• )														
							23/09/2	005			16:35:19	,		

# 9.3.2 Rules/Jobs Table

It is the area where scheduled rules are displayed. It is a list control constituted of a set of columns where the following list of metadata are displayed:

- *Rule name* –the name of the rule
- *Rule version* –the version of rule
- *Rule status* –the current status of rule
- *Rule ID* –the identifier of rule
- Executor ID the identifier of the executor associated with rule
- *Start Time* –the time to fire the rule

- *Start Date* –the date to fire the rule
- *Periodicity* –the periodic attribute
- $N^{\circ}$  *Runs* –the number of time the rule was fired.

Name	Version	Status	ID	Executor ID	Start Date	Start Time	Periodicitv	N° Runs

The following functionalities are provided by means a contextual popup menu:

- Ordering rules alphabetically by name
- Ordering rules by start running time
- Ordering rules by ID

# 9.3.3 Remote Executors Table

It is the area where remote executors are displayed. It is a list control constituted of a set of columns where the following list of metadata is displayed:

- *Name* Computer Name
- *IP* IP address
- CPU CPU & Clock
- OS OS & Version
- *Ping* The network capabilities in term of transmission time.
- *HD Space* The space available on the disk of the executor
- *Status* The status of the executor
- *Rule ID* The ID of the running rule
- *Executor ID* The Id of the executor assigned by the scheduler
- *Start Time* At what time the run is started.

Name	IP	CPU	OS	Ping	HD Space	Status	ID	RuleID	Start Time

The following functionalities are provided by means a contextual popup menu:

- Ordering executors alphabetically by computer name
- Ordering executors by ID

### 9.3.4 Auxiliary dialogs

The Scheduler GUI is supported by the following set of dialogs:

### 9.3.5 Rule Properties Dialog

It is an editable no modal dialog where the properties of the selected rule are displayed. Some of these properties are extracted from the XML file associated with rule.

### 9.3.6 Executor Profile Dialog

It is a not editable no modal dialog where the properties of the selected executor are displayed. Some of these properties are extracted from the executor profile.

### 9.3.7 Logs Dialog

This dialog allows viewing the logs of scheduler activity.

Logs property							
Executor IP	Executor ID	Message	Timestamp	► ►			
192.168.1.191	0	Job n. 9 launched on executor	15:24:59 2005-09-05				
192.168.1.142	0	TRANSFERRED RULE	15:25:00 2005-09-05				
192.168.1.142	0	filled info section	15:25:02 2005-09-05				
192.168.1.142	0	5.9.2005	15:25:04 2005-09-05				
192.168.1.142	0	Return: undefined	15:25:05 2005-09-05				
192.168.1.142	0	END PROCESS	15:25:07 2005-09-05				
192.168.1.191	0	Job n. O launched on executor	15:34:20 2005-09-05				
192.168.1.142	0	TRANSFERRED RULE	15:34:22 2005-09-05	_			
1921100111112	0	filled info section	15:34:24 2005-09-05				
192.168.1.142	0	5.9.2005	15:34:25 2005-09-05	×			

### 9.3.8 Suspend Rule Dialog

It is an editable no modal dialog where the user puts the time for the suspension.

Suspending Rule		×
Input time for suspension	on	
Time (sec)		· ·
ОК	Cancel	]

#### 9.3.9 Preferences Dialog

It is a tabbed dialog that allows editing settings parameters regarding the scheduler activity (*Scheduler settings*) and the GRID support (*GRID settings*).

Scheduler settings - It consists of a set of configuration parameters contains settings about:

- **Backup Time** Backup interval for logging the set of submitted rule and tracing operations. It is expressed in minutes.
- **Time Out** Time out on client activity. It is expressed in seconds.
- Time Resolution Time Resolution of the scheduler. It is expressed in seconds.
- Refresh Time Time Resolution for discovering new rule executors
- Rules Path Rule Repository Path
- Log Path Log Repository Path
- **Profile Path** Executor Profile Repository Path
- Backup Path The path where the scheduler periodically saves the current rules list.

🗖 Properti	es			
Scheduler set	tings Grid settings			
Temporal P	arameters			
Backup Tir	me (min)	β0 <u>·</u>	Resolution (sec)	0
Time Out (v	waiting resource profile)(sec)	60 •	Launching Time Out (se	c) 60 🔹
Discoverin	g (sec)	5		
Paths				
Rules	C:VAxSchedulerFiles/Rules		Browse	
Profiles	C:VAxSchedulerFiles/Profiles	8	Browse	
Logs	C:\AxSchedulerFiles/Logs		Browse	
Backup	C:\AxSchedulerFiles/Backu	p	Browse	
OK Cancel				

 $Grid \ settings -$  It provides a set of settings to setup the communication support. It allows to define the number of ports to use when receiving file, messages, sending files, responding to the discovering request. It allows also to define IPs of LANs to use when the scheduler performs the discovering of peers.

Properties				
Scheduler settings Grid settings				
Ports settings				
Discovery ping sending port	3001	Discovery ping receiving port	3000	
Message port	3002	Port to wait for file request	3014	
Port to send for file request	3006			
Discovery adresses				
192.168.0.255	<			
	->			
	Remove			
	OK	Cancel		
	OK	Lancel		

#### 9.3.10 Configuration Parameters

In this section the set of parameters regarding the configuration of the rule scheduer are listed. Such parameters are grouped into modules as reported below:

<b>AXMEDIS Ru</b>	le Scheduler Frame
-------------------	--------------------

Config parameter	Possible values	
FRAME_SIZE	it is the frame size information	
FRAME_POSITION	it is the frame position information	
XML_XSD_PATH	t is the directory where xml schema (XSD files) are stored	

### **AXMEDIS Rule Scheduler Settings**

Config parameter	Possible values	
BACKUP_TIME	It is the interval of Backup	
RESOLUTION	It is the resolution in terms of time	
TIME_OUT	It is the value of time out for waiting in the communication	
DISCOVERING	It the discovering time	
LAUNCHING_TIME_OUT	It is the maximum interval time for launching a rule	
RULES_PATH	it is the directory where the rule will be saved	
PROFILES_PATH	It is the directory where profiles of executors are stored	
BACKUP_PATH	It is the directory where the backup file is saved	
LOGS_PATH	It is the directory where logs are stored	

Config parameter	Possible values
SERV_PORT	It is the value of the port used by the Grid Interface
SERV_PORT2	It is the value of the port used by the Grid Interface
SERV_PORT3	It is the value of the port used by the Grid Interface
SERV_PORT4	It is the value of the port used by the Grid Interface
SERV_PORT5	It is the value of the port used by the Grid Interface
DEFAULT_NET	It is the list of IP address

### AXMEDIS\_GRID\_SUPPORT\_SETTINGS

## **AXMEDIS Plugin Manager**

Config parameter	Possible values
PLUGINS_PATH	it is the frame size information

# WORKFLOW

<b>Config parameter</b>	Possible values	
workflowUrl	it is the URL for workflow plugin	
gatewayUrl	it is the gatewayURL for workflow plugin	

# 9.3.11 Activating and stopping a rule

When the user is happy with his AXCP Rule and validated it with a quick and/or full trial, the final option is to activate the AXCP Rule in the AXCP Rule Engine. In the current version of the prototype the user has to install manually the AXCP in the Scheduler by selecting "*Add rule*" in Program menu. The scheduler will process the rule information and at the specified times will distribute the rule to a rule executor. During the running of the rule, the user can also stop it from the Scheduler by selecting "*Kill Rule*" in the Command menu.

# 9.3.12 Conclusion

Using the AXCP Rule Scheduler, the user can manually setup the AXCP Rule Engine and install an AXCP Rule in the AXCP Rule Engine. The user can also monitor the whole activity of the engine by means of logs. Using the AXCP GRID Node Executor, the user add a new Node Executor to the GRID Environment. Using the AXCP Stand Alone Executor, the user can run AXCP Rule independently from the GRID.

# **10 AXMEDIS Rule Engine - Rule Executor (DSI)**

# **10.1 Main functionalities**

The AXCP Rule engine is divided in two main components:

- **Rule Scheduler (Server Side)** It consists of the an internal Scheduler and Dispatcher. It performs the operations of rule installation, rule firing, rule executor discovering and management, rules dispatching, communication with the AXMEDIS environment, etc....
- **Rule Remote Executor** (Client Side) It is the executor of rules and consists of a script engine based on JavaScript (JS) SpiderMonkey released by Mozilla. It runs the JavaScript code associated with rule.

# 10.2 Relationship with other tools

The AXCP Rule Scheduler is related to Workflow tools for monitoring the GRID activity and rules.

# 10.3 Detailed description of the functionalities and Screenshots

The AXCP Rule Executor is provided as two executable files:

- Stand alone AXCP Executor To run the Executor with an AXCP Rule, the user has to open the CMD dialog of Windows and type the line command using the option 0 as following: axruleexecutor.exe <rule path> -0
- **AXCP Grid Node Executor** To launch the AXCP Grid Node, the user has to double click on axcpgridnone.exe executable file, the application is ready to be discovered by the AXCP Rule Scheduler and it is in waiting state. The User Interface of the rule executor as GRID Node is shown in the following picture. It is a console application and the output of the engine for direct messages.

<pre>************************************</pre>	rogrammi\AXMEDIS Tools\AXCP-tools\ruleexecutor\axcpgridnode.exe 🗕 🗖 🗙
-> Starting GRID peer functions -> GRID peer functions started -> GRID Cpu Monitor started AXCP GRID NODE Ready Profile request	
	rting GRID peer functions D peer functions started D Cpu Monitor started RID NODE Ready e request

Before the first launch of both applications, the user should setup the configuration file in order to provide the right value to the constants and parameters used by the application. See the following tables for the Configuration Parameters

THIRITED IS Rule Life	
Config parameter	Possible values
XML_RULE_PATH	it is the directory where the rule will be saved
XML_XSD_PATH	It is the directory where xml schema (XSD files) are stored
LOGS_PATH	It is the directory where logs are stored

# **AXMEDIS Rule Executor**

#### AXMEDIS\_GRID\_SUPPORT\_SETTINGS (only for GRID Node)

Config parameter	Possible values	
SERV_PORT	It is the value of the port used by the Grid Interface	

SERV_PORT2	It is the value of the port used by the Grid Interface	
SERV_PORT3	t is the value of the port used by the Grid Interface	
SERV_PORT4	It is the value of the port used by the Grid Interface	
SERV_PORT5	It is the value of the port used by the Grid Interface	
DEFAULT_NET	It is the list of IP address	

#### **AXMEDIS Plugin Manager**

<b>Config parameter</b>	Possible values	
PLUGINS_PATH	It is the directory where the DLL of plug-ins with their profiles (workflow, adaptation,	
	descriptor and fingerprint estimators) are stored.	

### **AXMEDIS Database**

Config parameter	Possible values
user	The user name for logging into Database
passwd	The password for logging into Database
LoaderWSEndPoint	It is the URL for accessing to the load web service
HTTPPath	
UploadPath	
SaverWSEndPoint	It is the URL for accessing to the save web service

#### **AXMEDIS Selection**

Config parameter	Possible values
MAIN_QUERY_SUPPORT_WSDL	It is the URL of the WSDL for using the Main Query Support
SELECTION_ARCHIVE_WSDL	It is the URL of the WSDL for using the Selection Archive

### Conclusion

Using the AXCP Rule Scheduler, the user can manually setup the AXCP Rule Engine and install an AXCP Rule in the AXCP Rule Engine. The user can also monitor the whole activity of the engine by means of logs. Using the AXCP GRID Node Executor, the user add a new Node Executor to the GRID Environment. Using the AXCP Stand Alone Executor, the user can run AXCP Rule independently from the GRID.

# 10.4 How to use the GRID and Rule Executor stand alone, a small tutorial

In this tutorial we will see how to use the GRID (Rule Scheduler and Rule Executors) and the stand alone version of the Rule Executor by using the script of the rule created in section **Errore. L'origine riferimento non è stata trovata.** and reported below:

```
1
    // 1) create an empty resource
2
    var image = new AxResource();
3
4
    // 2) load the image file by the selected path
5
    image.load("C:\\AXMEDIS_logo.png");
6
7
    // 3) Use the Image Processing plugin for scaling the image
8
   ImageProcessing.Resize(image, 320, 200, true, image);
9
    // the Resize function of the Image Processing plugin scales the image at 320*200
10
   // size maintaining the Aspect ratio and overwriting the new image
11
12 // 4) the scaled image is saved as "img_scaled.png
13 image.save("c:\\img_scaled");
```

#### 10.4.1 Rule execution in the AXCP GRID environment

First of all it is necessary to install in one or more PCs the **Rule Executor**, then start them by double clicking on **axcpgridnode.exe** executable file. It is also possible to start it in the local machine. If the **Rule Executor** started correctly you will see the following messages.

📾 Z: Wxmedis\axmedis\Applications\ruleexecutor\bin\win32\axcpgridnode.exe	 ı ×	
**************************************	<b>^</b>	
Initializing AXCP GRID NODE -> Starting GRID peer functions -> GRID peer functions started -> GRID Cou Monitor started AXCP GRID NODE Ready -		-
	-	-1

Then start the Rule Scheduler executable file. In the menu Program select Start Grid Peer Functions;

🗖 АХМІ	DIS - Ru	le Scl	heduler	
Program	Settings	View	Commands	?
AddRu	e			Ctrl-A
Launch	scheduler			Ctrl-L
Stop Se	cheduler			Ctrl-S
Backup	uș			Alt-B
Restor	e			Alt-R
Minimiz	e			Alt-M
Exit				Alt-X
Start G	irid Peer fu	inctions		Ctrl-F
test re	place para	meters		
test re	place sche	dule		
test ins	tall whole	rule as	string	
test re	place para	meters	and schedule	

In the menu **Program** select **Launch Scheduler** 

🗗 АХМІ	EDIS - Ru	ile Scl	neduler	
Program	Settings	View	Commands	?
AddRu	le			Ctrl-A
Launch	scheduler			Ctrl-L
Stop S	cheduler			Ctrl-S
Backup				Alt-B
Restor	e			Alt-R
Minimiz	е			Alt-M
Exit				Alt-X
Start G	irid Peer fu	inctions		Ctrl-F
test re	place para	meters		
test re	place sche	dule		
test ins	stall whole	rule as	string	I
test re	place para	meters	and schedule	

After a few seconds the list of computer connected in the P2P network appears with a number of additional information

Executor N	IP Address	CPU Type	Clock	OS	Transfer Rate	HD Space	Status	Job ID	Executor ID	Cpu Usage	From	To
MUSICA-ATT IVAN-PORTA				Windows N Windows N	1 (MB/s) 14 (KB/s)	3.49 (GB) 23.45 (GB)	ready ready	-1 -1	1 6	30.00% 30.00%	15:00:00 15:00:00	15:59:00 15:59:00
<												>
						07/09/2	006		15:5	7:06		

The AXCPGrid node will show message about the profile request as depicted in the following picture:

🛤 C:\Programmi\AXMEDIS Tools\AXCP-tools\ruleexecutor\axcpgridnode.exe	- 🗆 🗙
икикикикикикикикикикикикикикикикикикик	<b>^</b>
Initializing AXCP GRID NODE -> Starting GRID peer functions -> GRID peer functions started -> GRID Cpu Monitor started AXCP GRID NODE Ready Profile request Profile sent -	
	-

Now it is possible to add a rule to be processed dragging it into the Scheduler or using the **Add Rule** function in the **Program** menu. The rule appears in the bottom area.

If the **Rule Status** is **Inactive**, the rule has to be activated by right-clicking on it and selecting **the Enable Rule** option in the contextual menu:

AXMEDIS	- Rule Sched	uler									
Program Sett	ings View Co	mmands ?									
Rule Name	AXRID	Rule Version	Rule Status	Job ID	Executor ID	Start Time	Start Date	Periodicity	Number of	Installation	Expiration
resize_image	axcprule:9		Inactive	0	Enable Rule	Alt-N 21	07/09/2006	0 Day(s)	0	2006-09-08	2007-08-31
					Disable Rule	Alt-D					
					Kill Rule	Alt-K					
					Pause Rule	Alt-P					
					Resume Rule	Alt-S					
					Suspend Rule	Alt-U					
					Remove Rule	Ctrl-M					

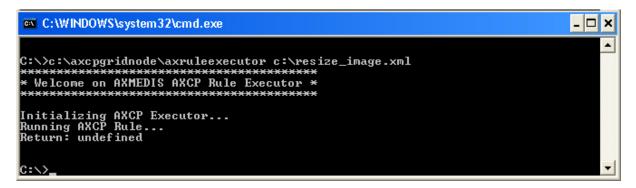
If the temporal conditions are not valid the status becomes failure. This means that you have to modify by using the rule editor the Schedule item by inserting the right value for start time, start date, expiration time and date. Then, installing again the rule in the scheduler.

During the rule execution the showed status is **Running** and the Rule Scheduler shows also the computer executing the rule in the **Executor ID** column.

When the rule has been executed its status changes in **Completed**.

Program Detti	ngs View Con	imanus :						-				
Rule Name	AXRID	Rule Version	Rule Status	Job ID	Executor ID	Start Time	Start Date	Periodicity	Number of	Installation	Expiration	
resize_image	axcprule:9		Completed	0	-1	15:36:21	07/09/2006	0 Day(s)	1	2006-09-07	2007-08-31	
Executor N	IP Address	CPU Type	Clock	OS	Transfer Rate	HD Space	Status	Job ID	Executor ID	Cpu Usage	From	То
MUSICA-ATT	IP Address 192.168.0.86 192.168.0.85	CPU Type x86 Family x86 Family	Clock 2.19 (GHz) 1.60 (GHz)	OS Windows N Windows N	Transfer Rate 1 (MB/s) 14 (KB/s)	HD Space 3.49 (GB) 23.45 (GB)	Status ready ready	Job ID -1 -1	Executor ID 1 6	Cpu Usage 30.00% 30.00%	From 15:00:00 15:00:00	To 15:59:00 15:59:00

During the rule execution, the Rule Executor window could show output messages if coming from the script or internal ones.



#### 10.4.2 Rule execution by means the stand alone version of the Rule Executor

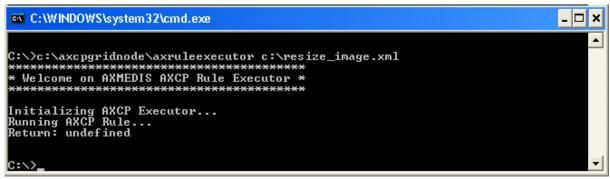
In this section we will see how to execute a rule using the Command Prompt. We suppose that the rule to be executed is stored in C:\ as *resize\_image.xml* and the **axcpgridnode.exe** executable running.

To open the Command Prompt click Run in the Start menu, type cmd and then click OK

To successfully launch the Rule Executor it is necessary also to specify the rule to be applied. For example, if the Rule Executor executable (axruleexecutor.exe) is in the path C:\AXCPGridNode\ and the rule is in c:\resize\_image.xml the command syntax is the following:

```
C:\AXCPGridNode\axruleexecutor c:\resize_image.xml
```

During the rule execution also the Rule Executor window shows output messages.



# 11 AXMEDIS Programme & Publication Editor (UNIVLEEDS)

The P&P Editor is a GUI, which interacts with AXMEDIS Query Support to make selections from the Query results in order to schedule some programmes (e.g. day, week, month, and year) with the following programme specifications (rules):

- WHAT: the AXMEDIS object of interest
- WHERE: destination channel, where to publish e.g. iTV or kiosk or other, and "where" profile
- WHEN: date, time, slot, duration
- HOW: direct transfer, reference or require formatting engine

The representation of the above programmes rules is represented using XML.

# **11.1 Main functionalities**

The Programme and Publication Programme Editor provides the following functionality:

- Create: a Programme Manager uses a GUI to create some P&P Programmes using the Query Support User Interface to browse the AXMEDIS database, to select, to schedule, and to return with a list of relevant objects
- Edit: a Programme Manager make changes to the programme rules selected from a list in the GUI read from the P&P Programme Repository. Changes can also include using Query Support to browse the AXMEDIS database to select and to return with a list of relevant objects
- Save: send the P&P Programme to a P&P Repository for archiving (configured local file)
- Test: Test the P&P Programme through the P&P Engine
- Activate: send the P&P Programme to the P&P Engine

Functionalities presented in the P&P Editor User Manual are sectioned with the following sections:

- Creating a P&P Programme
- Loading an Existing P&P Programme
- Editing a P&P Programme
- Querying for AXMEDIS Objects in the P&P Editor
- Testing a complete P&P Programme
- Activating and Stopping a P&P Programme
- Configuring the P&P Editor

# **11.2 Relationship with other tools**

The P&P Editor communicates with the P&P Engine either directly or using AXMEDIS Workflow and with the AXMEDIS Database (AXDB) using Query Support as shown in the following Figure.

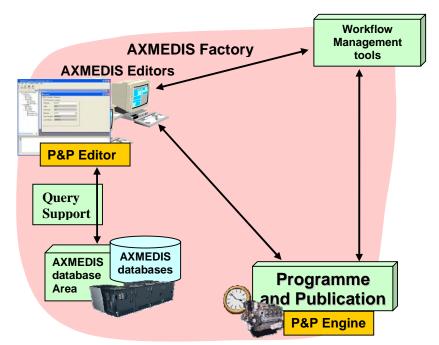
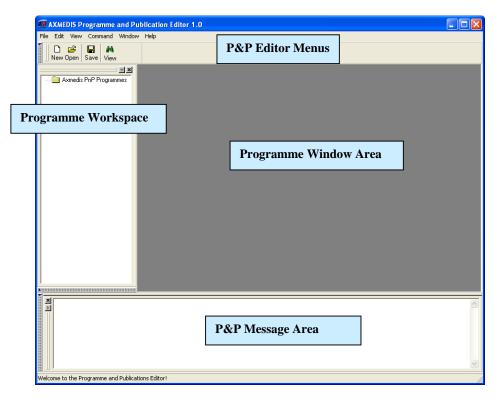


Figure: Relation between the P&P Editor and other AXMEDIS tools

When the actor is required to add a new object to the P&P Programme for scheduling, the actor opens the Query Support Dialog window in the P&P Editor and queries for an object by adding details to the query text fields and drop down selections. The results are returned to the Dialog and objects selected are added to the P&P Programme.

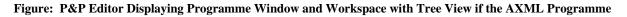
On activation or test, the P&P Editor connects to the P&P Engine (through AXMEDIS Workflow if it has been activated) and sends a completed P&P Programme for processing by the P&P Engine.



# 11.3 Detailed description of the functionalities and Screenshots

Figure: Initial P&P Editor View

AXMEDIS Programme and Put	blication Editor 1.0
File Edit View Command Window	Help
New Open Save View	
Axmedis PnP Programmes Noname Header Definition Schedule Schedule Schedule Schedule Schedule	Noname     Image: Comment
Programme Workspa with a Programme Tr view	
	P&P Programme Window
Welcome to the Programme and Publicati	ons Editor!



## 11.3.1 Creating a P&P Programme

To create a P&P Programme, the programme manager starts the P&P Editor and from the opening screen creates a new P&P Programme by selecting "*New*" from the tool bar or using the File menu (File  $\rightarrow$  New) or using the keyboard short cut "Ctrl-N" (see Figure 1). On requesting a new programme, the dialog box pops up and the programme managers enters the name of the draft P&P Programme and selects "OK" (see Figure 2).

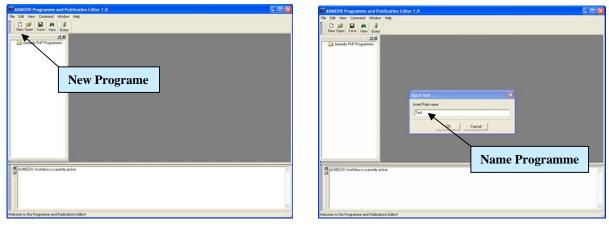


Figure 1

Figure 2

After the P&P Programme name has been OK'd, the new P&P Programme is ready for editing with the '*tree* view' used as a workspace and the P&P Programme window for editing the programme details and making a programme schedule (see Figure 3).

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		8
Welcome to the Programme and Publicat	ions Editor1	

Figure 3

# 11.3.2 Loading an Existing P&P Programme

The programme manager may wish to edit an existing draft programme that has already been saved. The programme manager may have saved the P&P Programme as a file on the local system or in the P&P Programme Repository. By selecting '*Open*', (see Figure 4 and 5) or '*P&P Programme Repository*', (see Figure 5 and 6), the programme manager can load an existing draft programme from either the P&P Programme Repository or elsewhere on the local system.

🥵 AXMEDIS Programme and Publi	cation Editor 1.0	AXMIDIS Programme and Publication Editor 1.0	
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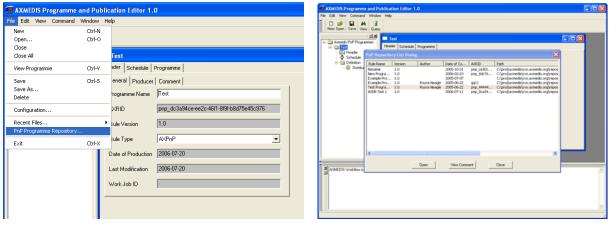


Figure 6

Figure 7

### 11.3.3 Editing a P&P Programme

The programme manager can use the editor to edit multiple P&P Programmes (as shown in Figure 8), and edit P&P Programme data such as general, producer and content information; and set the specifications for delivering a multimedia object. This includes setting the channel and terminal as well as distribution date and time.

AXMEDIS Programme and P		
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The second second second second		×
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Editing functionalities include being able to drag and drop information from one P&P Programme to another using the workspace tree area as shown in the tree view in Figure 9 and the popup box in Figure 10.

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Figure 9



## 11.3.4 Querying for AXMEDIS Objects in the P&P Editor

The P&P Editor has integrated the Query Selection Dialog to select AXMEDIS Objects to load into the P&P Programme. This is accessed by clicking on the Query button in the "Programme View" in the Programme Window or in the Tool Bar, as highlighted in Figure 11

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	11.

### Figure 11

In Figure 12 we see the Dialog Query view to create a search query to find AXMEDIS objects and in Figure 13 the result of a query. One or more objects can be selected in the results view and by clicking OK adds the objects the the P&P Programme

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# 11.3.5 Testing a complete P&P Programme

After the creation and editing of a complete P&P Programme ready for distribution, the programme manager has two options: the first is to run a quick trial; this ensures the programme devised is valid without any of the processing taking place in the P&P Engine (see Figure 14). This means request are made to AXMEDIS tools to make sure tasks can be accomplished for processing the P&P Programme. A message is return to the P&P Editor informing the user if the trial was successful or not. The second option is to run a full trial which enforces the P&P engine to request all the processing to be run if required with the exception of the final distribution to the distribution area. The processing jobs are requested and executed and on completion the results are returned. The final action of distribution is the only processing not requested in the full trial.

æ	AXMEDIS P	rogramme a	nd Pub	lication E	ditor 1.0			
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Figure 14

## 11.3.6 Activating and Stopping a P&P Programme

A complete P&P Programme to distribute AXMEDIS objects is activated in the Command menu (see Figure 14). This sends the P&P Programme to the P&P Engine to processes the programme information, request formatting if required for the specified distribution channel and at the specified times distributes the correctly adapted multimedia object to the distribution channel. During the lifespan of the active programme, the programme manager can also stop a P&P Programme from the P&P Editor by selecting "*Stop Programme*" in the Command menu as shown in Figure 14.

# 11.3.7 Configuring the P&P Editor

The P&P Editor has relationships with other modules within the AXMEDIS project and therefore the P&P Editor is required to be configured. This is achieved by opening the Configuration dialog using the File menu as shown in Figure 15 and Figure 16.

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The main configuration parameters required are the settings to communicate with the other AXMEDIS modules and tools and to define the Distribution Channels which are sent to the P&P Engine. The following are the parameters that are required to be set:

- Path to the schemas used for parsing the P&P Programmes (AXMEDIS\_PNP\_EDITOR → XML\_XSD\_PATH): This is currently in the same directory as the executable of the P&P Editor.
- Address to the P&P Engine (AXMEDIS\_PNP\_ENGINE → SERVER\_ADDRESS): The URI needs to be set with the port number 3000 (e.g. localhost:3000)

- Location of the P&P Programme Repository (AXMEDIS\_PNP\_REPOSITORY → REPOSITORY\_PATH): This can be defined anywhere on the local system.
- Address to the AXMEDIS Query Support (AXMEDIS\_SELECTION → MAIN\_QUERY\_SUPPORT\_WSDL)
- AXMEDIS Workflow: To configure this parameter, please see the manual related to Workflow (See section 14 and 15). If this is not set, then all communications go directly to the modules and not through Workflow.
  - The Plug-in path for AXMEDIS Plug-ins (AXMEDIS\_PLUGIN\_MANAGER  $\rightarrow$  PLUGINS\_PATH)
  - The Workflow Gateway URL if the editor is to be connected to the AXMEDIS Workflow (WORKFLOW  $\rightarrow$  gatewayUrl)
- And add the distribution channels to the P&P Editor (AXMEDIS\_PNP\_DISTRIBUTOR → <YOUR\_CHANNEL>)
  - Name of Channel (e.g. EUTELSAT) as the parameter
  - with values <Name to display>|<URI of the distribution channel> (e.g. test|localhost)

# 12 AXMEDIS Programme & Publication Engine (UNIVLEEDS)

The Programme and Publication Engine will be developed exploiting the work performed for the Publication tool in WP4.4. This will allow the reception of specific commands (requests) for creating content produced by exploiting the capabilities of the AXMEDIS formatting engine. In addition, the Programme and Publication Engine will also have the capabilities for the publication the Programme based on the specific programmes.

The active engine is continuous running software accessing the system clock to process a list of programmes, which consists of "rules" to make available AXMEDIS objects to the specified destination channels at the correct time, taking into account the transfer and/or formatting (if required) time. This is achieved by the input of *activated* P&P Programme for scheduled distribution.

# 12.1 Main functionalities

The active Programme and Publications Engine's main function is to continually run looking for active publication rules and make the objects in the rules available for distribution. The main points to consider:

- Access to correct system clock
- Keep a track of newly activated P&P Programmes to add to the delivery system
- The API to the AXMEDIS formatting engine (AXCP) to request an appropriate format for distribution and retrieving the correct object from the AXDB
- Providing the AXMEDIS objects to a AXMEDIS distribution server allowing for delivery time

# 12.2 Relationship with other tools

The P&P Engine is integrated with AXMEDIS Database (AXDB) and P&P Editor and the AXMEDIS Content Processing Engine (AXCP). Communication to the AXMEDIS tools can be performed with or without AXMEDIS Workflow. The relationship between the AXMEDIS tools and the P&P Engine can be seen in the Figure below.

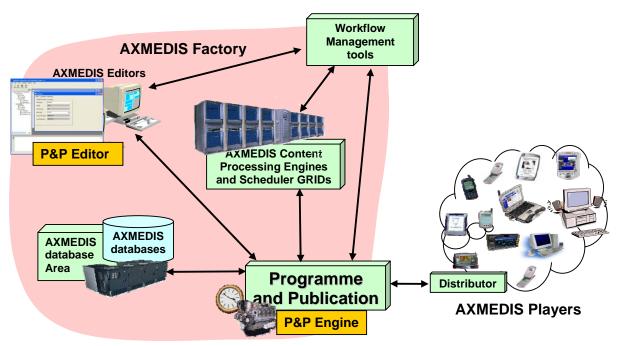


Figure: Relation between the P&P Engine and other AXMEDIS tools

# 12.3 Detailed description of the functionalities and Screenshots

The P&P Engine is a continuous running engine processing P&P Programmes from the P&P Editor or On-Demand either directly or through WF. When set running, the user is presented with a DOS window as shown in the Figure below including the port that the P&P Engine is using to listen to the P&P Editor (in this example 3000) and the port to listen to the P&P Engine Monitor (3001). Other communications are handled using the Workflow SOAP plugin.

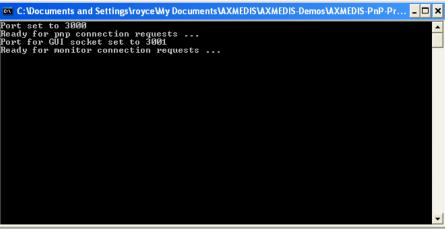


Figure: DOS Prompt with the initiated P&P Engine

The DOS prompt informs the user when P&P Programmes have been activated by displaying the parsed programme and starting the distribution of a multimedia object defined in the programme at the specified time. This can be seen in the figure below.

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ortfor GÛIîsocket set to 3001	
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eceived request to load pnp programme: xml version="1.0" encoding="UTF-8"</td <td>?&gt;</td>	?>
Rule xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceS	chem
Location="Rule_Axmedis.xsd">	
leader>	
Rule_Name>Example Programme 1	
AXRID>	
Rule_Version>1.0	
Rule_Type>AXPnP	
Software_NameX/Software_Name>	
Jersion_of_softwareX/Version_of_software>	
Date_of_production>2005-07-07	
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Figure: P&P Engine parsing and starting a programme to distribute and AXMEDIS object

# 13 AXMEDIS Programme & Publication Engine Monitor (UNIVLEEDS)

# 13.1 Main functionalities

The main functionality of the P&P Engine Monitor is to provide the user with information concerning the status of the P&P Engine and the status of the activated P&P Programmes being processed by the P&P Engine. It can also be used to send an abort request directly to the P&P Engine to remove a particular programme from the engine.

# 13.2 Relationship with other tools

The P&P Engine Monitor is a viewing management tool for the P&P Engine. It communicates to the P&P Engine requesting status information concerning the engine and active P&P Programmes currently being processed by the P&P Engine.

# 13.3 Detailed description of the functionalities and Screenshots

# 13.3.1 Running the Monitor

The first step when running the P&P Engine Monitor is to connect to the Engine. Select connect from the action menu and then enter the address and port number. Once a connection has been established the status tab will show that a connection has been made and a list of all active programmes will be displayed in the programme management tab.

AXMEDIS Programme and Publication Engine Monitor v.1.0		AXMEDIS Programme and Publication Engine Monitor v.1.0	
Action Help		Action Help	
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		Refresh Tree Now	Remove Selected Programme
Not connected	1.		Connected

Figure: P&P Engine Monitor with Status messages view (left screen shot) and P&P Programme Management View (right screenshot)

To delete an active programme from the engine the user must first select a programme. Then click on the 'remove selected programme' button. There is a small delay while the engine wakes up the programme and destroys it before the window is refreshed and the programme is removed.

### 13.3.2 Status Information

The status information tab is used to output all logging information (connection/disconnection/updates to programme list) and errors (connection errors etc.) to the user.

### 13.3.3 Programme Managements

The programme management tab displays information about programmes active on the P&P Engine. This information consists of programme IDs and the scheduled distribution time for the next object within the programme to be distributed. It also contains the 'remove selected programme' button which allows a user to delete an active programme from the engine.

# 14 AXMEDIS Workflow and Workflow manager - Openflow (IRC)

# 14.1 Main functionalities

- Openflow is a workflow engine developed and released as free software under a GNU GPL licence.
- It is based on an object-oriented structure and has a powerful exception handling system along with dynamic redesign support.
- These features make OpenFlow much more flexible than any other existing workflow engines.
- OpenFlow supports most of the open standards (XML/XML-RPC) including also the web standards.
- It has got a simple access to most of the relational DBMSs and thus it facilitates the integration of heterogeneous system.
- OpenFlow is activity-based, web-based, WFMC inspired, built and integrated with the application server Zope.
- OpenFlow is capable of running on most operating systems including Linux, Windows 9x, NT/2000, XP, MacOs.
- Through an integrated role assignment system, OpenFlow can assign tasks and activities to single users or workgroups and also to automatic applications.
- At every moment OpenFlow can trace the complete history of a certain situation e.g. participants involved, activities and actions executed and invoked.
- It is possible to carry out performance and efficiency analysis and verify the correct implementation of the adopted model.
- OpenFlow is strongly web-oriented and offers complete support for developing and executing workflows via a browser.
- The interaction with OpenFlow uses simple HTTP requests as in, for example, process modelling, assignment of users to activities, definition of the interaction with the applications.
- Every user receives his task which interacts with appropriate applications through the network

# 14.2 Relationship with other tools

The Openflow Engine should be deployed on Zope Server. Additionally the user should import the Workflow Adaptors (Prove\_WF.zexp and extensions) in the Zope Server. The openflow Engine communicates to AXMEDIS tools through Workflow Gateways (Request & Response) which should be deployed on IIS server with .NET V2 or later.

# 14.3 Detailed description of the functionalities and Screenshots

Openflow runs on the Zope platform which is managed through the "Zope Management Interface" using industry standard browsers, typically by logging on as the administrator (admin) at URL http://localhost:8080/manage. The screen shot below shows an example of this management interface.

Creating a new process in openflow is a multi-step process which begins with adding an OpenFlow container using the Zope management interface as shown below (delineated by a an ellipse in red).

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	D ale_id (ale)	88 Kb	2005-01-12 14:32
	browser_id_manager (Browser Id Manager)		2005-01-12 10:54
	🔲 🔇 error_log		2005-01-12 10:54
	🔲 🏠 index_html	1 Kb	2005-01-12 10:54
	🔲 🗀 leave (Leave request demo)		2005-01-12 18:38
	myOFlow (MyTest)		2005-01-12 19:13
	session_data_manager (Session Data Manager)		2005-01-12 10:54
	standard_error_message	1 Kb	2005-01-12 10:54
	standard_html_footer	1 Kb	2005-01-12 10:54

Figure 1: Adding an OpenFlow container through the Zope Management Interface

During the creation of the OpenFlow container, the name of the container must be specified as shown in the next screen-shot.



Figure 2: Creating the OpenFlow container

Next it is necessary to define the process and the activities pertaining to the process, together with their transitions (From Activity and To Activity). These operations are performed by accessing the tabs in the Openflow container as shown in the following screen-shots:

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Demos     Examples     Acl_users     leave     modeling	DpenFlow at /myOFlow/miaprova/	myOF	Help! Add process definition
C Temp_folder C Zope Corporation Refresh	Process myprocess altroProcess Delete process	Activities 3 2	Transitions 2 0
	<		>

Figure 3: The process definition tab

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Figure 4: Creating a new Process definition

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Root Folder     Gontrol_Panel	Map Setting	Contents	Properties Se	ecurity Un	do Owr	nership	Find
E Demos	Process at /myOFlow/m	iaprova/myOF/	myprocess				
🗉 🚞 Examples				Add	Activity	Add Tr	ansition
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🗉 🧰 leave							
myOFlow     imtemp_folder	Activities						
© Zope Corporation							
Refresh	Activity Kind JoinSplit	Application name	Push Application	Start mode	Finish mode		flow cess
	Begin standard and and			Manual	Manual		
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	standard and and		myapp	Automatic	Manual		
	Delete activity						
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	Transition		Condition			From	То
	Begin_myactiv	• •	instance.some_pro	• •		Begin	myactiv
	myactiv_End     Delete transition	python	instance.some_pro	perty=='value'	n	nyactiv	End
	Delete transition						

Figure 5: Management of activity and transitions of a process

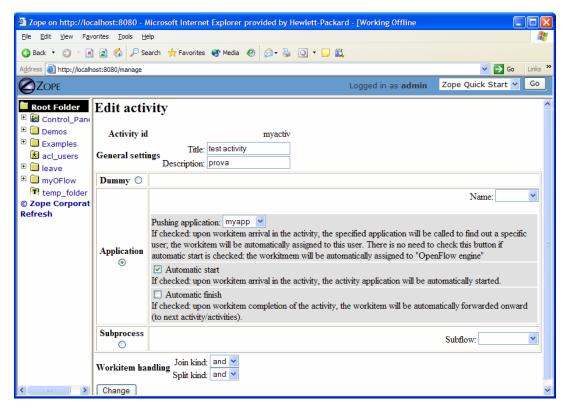


Figure 6: Editing a process activity

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A <u>d</u> dress 🙆	Address 🙆 http://localhost:8080/manage 🛛 💽 Go 🛛 Links 🍟					
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Figure 7: Defining process transition and related conditions

Applications associated to the activities are then specified selecting the Applications Tab.

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Root Folder     Gontrol_Pane	Worklist Roles Applications definitions instances Updates Contents Properti	ies
Demos     Demos     Examples     Acl_users	DenFlow at /myOFlow/miaprova/myOF H Add Application	elp!
<ul> <li>leave</li> <li>myOFlow</li> <li>temp_folder</li> </ul>	Application name Url	
© Zope Corporati Refresh	i myapp myApplication	
		>

Figure 8: Defining process applications

The users and roles are configured as Zope users and roles as access control list (acl\_users).

Once a process has been defined it can be tested. An instance of the process can be created and executed directly in the processflow-instance management tab shown below.

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Address 🙋 http://localho	ost:8080/manage	🔽 🄁 Go 🛛 Links 🎽
<b>Ø</b> ZOPE	Logged in as <b>admin</b>	Zope Quick Start 👻 🔽 Go
Root Folder     Gontrol_Pane	Worklist Roles Applications definitions instances Updates	Contents Properties Security
Demos     Examples	OpenFlow at /myOFlow/miaprova/myOF	Help!
i acl_users ⊡ leave		Add process instance
temp_folder	Title (Id) Status	Workitems ( active / total )
© Zope Corporati Refresh	□ (mm1105549651.89) nunning □ (ss1105549519.3) nunning □ Delete instance	0/ 1 0/ 1
<	× III	

Figure 9: Process instance management tab

The following Figure shows the of the workitems involved in the process instance that has been created.

Zope on http://localhost:8080 - M	icrosoft Internet Explor	er provided by Hewlett-F	Packard - [Worki 🔳 🗖 🔀
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Address 🙋 http://localhost:8080/manage			💙 🄁 Go 🛛 Links 🎽
	L	ogged in as <b>admin</b>	Zope Quick Start 👻 🔽 Go
Instance at /myOFlow/	miaprova/mvOF/P	rocessInstances/mm	1105549651.89
Each instance represents a proce	ss instance. Flowing thr		
I joined and routed through the pro	ocess activities.		
Situation			
The instance is <i>running</i> . Susp	end it. Terminate it.		
	_		
Blocked Workitem	S		
There are no blocked workiter	ns.		
Inactive Workitem	S		_
These are in a time work iter			
There are no inactive workiter	ns.		
Active Workitems			
There are no active workitems	5.		
Complete Workite	ms		
Workitem	Activity	Process	Action
0	Begin	myprocess	forward
> <			>

Figure 10: Monitoring and management of a specific process instance

### **Process Example:**

The following simple example illustrates a process to request a AXMEDIS object manipulation (*a mock-up process*). This is an example of explicit forwarding to different actors having different roles. The first actor requests the creation of a new AXMEDIS object by filling out a form. The request goes to the second actor (called Socius) who checks that the request is acceptable. The request is then forwarded to the third actor (called Prefectus) for approval.

The following steps are necessary for the above example process to be enacted:

The first actor (called Tertius) enters an AXMEDIS object manipulation request by filling out the following form as shown in the screen-shot below:

🙆 Leave req	uest demo - Microsoft Internet Explorer provided by Hewlett-Packard 🛛 🔲 🗖	×
<u>File E</u> dit <u>V</u> i	ew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp	
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A <u>d</u> dress 🙆 htt	tp://localhost:8080/leave/leave_startform	»
-	t for AXMEDIS object manipulation	<
Start date	2005-01-19 End date 2005-01-19	
Туре	Create new AXMEDIS object	=
Reason	Request	
	request	~

Figure 11: Tertius' AXMEDIS object manipulation form

According to the processflow, the request goes to the next actor (called Socius). When Socius logs in, his work list shows that there is a workitem in his worklist as shown in the screen-shot below:

🗿 Leave request demo - Microsoft Internet Explorer provided by Hewlett-Packard 💦 🔲 🔀					
<u>F</u> ile <u>E</u> dit	<u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp				<b>1</b>
🔇 Back 🔻	🕤 🝸 😰 🏠 🔎 Search 📌 Favorites 😵 Media 🎸	8 🔗 -	8	3 - 🗖	ii),
A <u>d</u> dress 🛃	http://localhost:8080/leave/mywork		~	🔁 🔁 Go	Links »
Worklist for socius					
Work	list for socius				1
Work Activity		Status	Actor	Action	

#### Figure 12: Socius' worklist and workitem activation

To execute the workitem, the actor (Socius) has to activate the workitem (Begin) and perform the related activities. Next this actor either forwards the workitem to the next actor, which in this case is the supervisor (called Prefectus), or rejects the request; as illustrated by the screen-shot below:

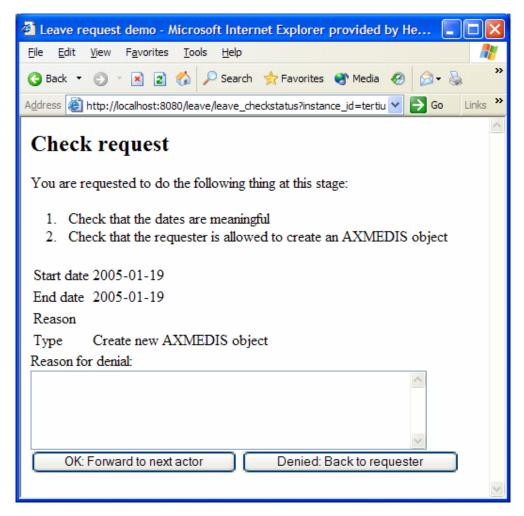


Figure 13: Socius' workitem execution and forwarding

Then the activity is forwarded to the last actor and the process ends.

# 15 AXMEDIS Workflow and Workflow manager – Microsoft Biztalk (IRC)

# **15.1 Main functionalities**

- BizTalk Server 2004, an integration server, lets you to develop, deploy, and manage integrated business processes and XML-based Web services
- Traditionally, BizTalk Server has been used for application integration, where the following two scenarios are most important:
  - Connecting applications within a single organization, commonly referred to as enterprise application integration (EAI)
  - Connecting applications in different organizations, often called business-to-business (B2B) integration
- BizTalk Server 2004 also adds technology for creating Human Workflow Services (HWS), making possible business processes that people can interact with from Microsoft Outlook and other familiar clients
- The HWS infrastructure is accessed through Web services, and so it can be used by any client application

# 15.2 Relationship with other tools

The Microsoft Biztalk Server Communicates to AXMEDIS Tools using Workflow Plug-ins directly without the need of Workflow Gateways.

# 15.3 Detailed description of the functionalities and Screenshots

Please refer to <u>http://www.microsoft.com/biztalk/default.mspx</u> for detailed description of functionality and usage for Microsoft Biztalk Server.

# **16 AXMEDIS PLUGINS**

# 16.1 Audio Adaptation Plugin (EPFL)

### 16.1.1 Main functionalities

The audio\_adaptation\_plug-in allows adapting audio content to various use cases. For example, it can be used for transcoding applications to transform a high-quality audio file into a low bit rate audio file well suited for distribution on a network with reduced bandwidth. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

## 16.1.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

## 16.1.3 Detailed description of the functionalities and Screenshots

### 16.1.3.1 FFMPEG

Here's an example on how to use the FFmpeg audio adaptation transcoding function as a plug-in with for the AXMEDIS editor.

The plug-in must be applied on an audio resource of an AXMEDIS object. The adaptation plug-in is called by right-clicking on the interesting resource and selecting the 'Plugin...' command:

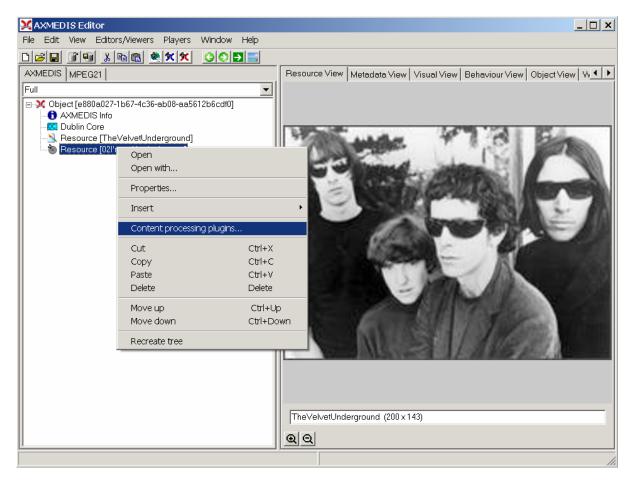


Figure 1 – Calling the content processing plug-ins

A window showing the functionalities available for the kind of resource selected appears:

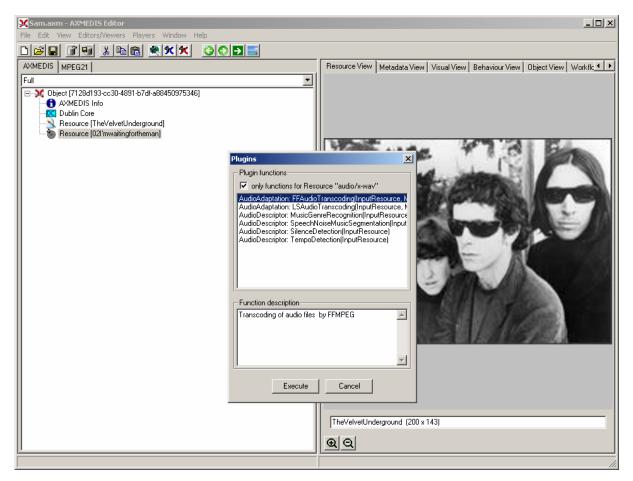


Figure 2 – Selecting the FFMPEG audio transcoding function

The first audio adaptation function available is the FFmpeg transcoding function which is selected by clicking on FFAudioAdaptation: FFAudioTranscoding. A new window appears showing the interface to the audio transcoding function. In the example of the following figure, the transcoding function is used to create a 10 second snapshot with reduced bit rate of the input audio file:

Mp3 compression is selected with a bit rate of 64 kB (which corresponds to a low quality)

Further bit rate reduction is achieved by using a lower sampling rate for the output (22050 Hz) and mixing audio channels into a single mono channel

Only a portion of 10 seconds of the input resource is selected (starting at time 10 seconds and ending at time 20 seconds)

A snapshot with reduced bit rate is particularly useful to allow a customer to pre-view an item before purchasing the corresponding high quality object.

P	AudioAdaptation: FFAudioTranscoding(InputResource, Mimetype, OutputResource, OutputSamplingRate, OutputNumChannels, O 🗴				
[	Parameters				
	in InputResource:RESOURCE	Resource [021'mwaitir 💌	The Resource to be converted		
	in Mimetype:STRING	audio/x-mpeg	Mimetype for output resource		
	out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored		
	in OutputSamplingRate:UINT32	22050	Sampling rate of the output audio file (default: sampling rate of the input)		
	in OutputNumChannels:UINT16	1	Number of channels of the output audio file (default: number of channels of the input)		
	in OutputBitRate:UINT16	64	Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb)		
	in ReadStartingTime:FLOAT	10.0	Starting time in the input audio file (default: beginning of the file)		
	in ReadEndingTime:FLOAT	20.0	Ending time in the input audio file (default: end of the file)		
	in OutputCodec:STRING	mp3	Codec of the output audio file (default: depends on the desired format of the output)		
ľ	Besult				
	result:STRING				
	The result of import, SUCCESS if ok, ERROR followed by a message in case of error				
			Execute Close		

Figure 3 – The FFMPEG audio transcoding function

Here follows a more complete description of the parameters of the FFMPEG audio transcoding function:

#### InputResource

Description: the resource to be converted Parameter Type: AxResource Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram) Ranges:

## MimeType

Description: MimeType for the output resource Parameter Type: string Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3 Ranges:

# OutputResource

Description: Where the output resource will be stored Parameter Type: AxResource Default Value: Constraints: Range:

#### **OutputSamplingRate**

Description: The sampling rate of the output resource in Hertz Parameter Type: uint32

Default Value: by default, the sampling rate of the input resource is used Constraints: Range:

#### **OutputNumChannels**

Description: The number of channels of the audio resource after transcoding Parameter Type: uint16 Default Value: by default, the number of channels of the input resource is used Constraints: Range:

#### **OutputBitRate**

Description: The bit rate of the audio resource after transcoding in kilo-Bytes (this parameter is used when transcoding towards a compressed audio format such as MP3) Parameter Type: uint16 Default Value: by default, the bit rate is set to 64 kB Constraints: Range:

### ReadStartingTime

Description: set the beginning of the output resource to ReadStartingTime seconds from the beginning of the input resource Parameter Type: float Default Value: by default, the read starting time is set to 0 seconds which means that the input resource is considered from the beginning Constraints: Range:

### ReadEndingTime

Description: set the end of the output resource at ReadEndingTime seconds from the beginning of the input resource Parameter Type: float Default Value: by default, the read ending time is set to the end of the input resource Constraints: Range:

#### OutputCodec

Description: set the codec of the output resource; depending on the mime type selected for the output resource, only a certain subset of codec will be supported (the following table shows the possible codecs according to the possible mime types) Parameter Type: string Default Value: the default codec depend on the mime type selected for the output resource (the following table shows the default codec according to the possible mime types) Constraints: Range:

#### Result

Result Type: string Result Description: the result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### **File Formats**

For a list of codecs and formats supported by FFMPEG, please refer to section 34.1. *AXMEDIS* 

Mime type accepted

audio/x-wav audio/x-ms-wma audio/basic audio/x-mpeg audio/x-vorbis audio/x-pn-realaudio audio/x-ac3 audio/x-dv audio/x-mace audio/x-adpcm audio/x-aac audio/32KADPCM audio/amr video/x-mpeg video/x-mpeg2 video/mp4 video/x-raw video/x-h263 video/x-mjpeg video/x-ms-wmv video/x-ms-asf video/x-flv video/x-svq video/x-dv video/x-h264 video/x-indeo video/x-vp3 video/x-ffv video/x-vcr video/x-msvideo video/x-nut application/x-pcm application/vnd.rn-realmedia

### 16.1.3.2 libsndfile

Here's an example on how to use the libsndfile audio adaptation transcoding function as a plug-in with for the AXMEDIS editor.

The plug-in must be applied on an audio resource of an AXMEDIS object. The adaptation plug-in is called by right-clicking on the interesting resource and selecting the 'Plugin...' command:

XAXMEDIS Editor		
File Edit View Editors/Viewers Playe	rs Window Help	
AXMEDIS MPEG21		Resource View   Metadata View   Visual View   Behaviour View   Object View   W
Full		
Object [e880a027-1b67-4c36-ab08-a AXMEDIS Info	a5612b6cdf0]	
Dublin Core		2.00.00
Resource [TheVelvetUndergroup     Resource [02]*	id]	The state of the state
U Open		
Open with		
Properties		
Insert		
Content proc	essing plugins	
Cut	Ctrl+X	
Сору	Ctrl+C	
Paste Delete	Ctrl+V Delete	
Move up Move down	Ctrl+Up Ctrl+Do	A CONTRACT OF A
	Ca1+D0	
Recreate tree		
		TheVelvetUnderground (200 x 143)
		<b>Q Q</b>
	]	
]		] ///

Figure 4 – Calling the content processing plug-ins

A window showing the functionalities available for the kind of resource selected appears:

🗙 Sam.axm - AXMEDIS Editor	_ D X
File Edit View Editors/Viewers Players Window Help	
AXMEDIS MPEG21	Resource View Metadata View Visual View Behaviour View Object View Workflc
Full  Guide (7128d193-cc30-4891-b7df-a88450975346)	
AXMEDIS Info	
Nesource [TheVelvetUnderground]	
	What was a first from
Plugins	X
Plugin functions	
✓ only functions for Re	source "audio/x-wav"
AudioAdaptation: LSAud	oTranscoding[InputResource.]
AudioDescriptor: Speech	enreRecognition(InputResource NoiseMusicSegmentation(Input
AudioDescriptor: Silence AudioDescriptor: Tempol	Detection(InputResource)
Function description	
Transcoding of audio file:	by LibSnd
	v I
Execute	Cancel
	TheVelvetUnderground (200 x 143)
	<b>QQ</b>
<u> -</u>	

Figure 5 – Selecting the libsndfile audio transcoding function

The first audio adaptation function available is the libsndfile transcoding function which is selected by clicking on LSAudioAdaptation: LSAudioTranscoding. A new window appears showing the interface to the audio transcoding function. In the example of the following figure, the transcoding function is used to create a 10 second snapshot with reduced bit rate of the input audio file:

### AIFF format

Only a portion of 8 seconds of the input resource is selected (just the beginning of the sound track)

Such a snapshot could be useful for small audio sampling.

P	udioAdaptation: LSAudioTran:	scoding(InputResource	e, Mimetype, OutputResource, ReadStartingTime, ReadEndingTime, 🗴				
[	Parameters						
	in InputResource:RESOURCE	Resource [021'mwaitir 💌	The Resource to be converted				
	in Mimetype:STRING	audio/x-aiff	Mimetype for output resource				
	out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored				
	in ReadStartingTime:FLOAT	0.0	Starting time in the input audio file (default: beginning of the file)				
	in ReadEndingTime:FLOAT	8.0	Ending time in the input audio file (default: end of the file)				
	in OutputCodec:STRING	default	Codec of the output audio file (default: depends on the desired format of the output)				
	Result						
	resultSTRING SUCCESS	STRING SUCCESS					
	The result of import, SUCCESS if ok, ERROR followed by a message in case of error						
	Execute Close						

Figure 6 – The libsndfile audio transcoding function

Description: encode an audio file in another format or another codec and change its sample rate and number of audio channels if needed.

#### Signature:

string Trancoding(AxResource InputResource, string MimeType, AxResource OutputResource, float ReadStartingTime, float ReadEndingTime, string OutputCodec)

Parameter List:

#### InputResource

Description: the resource to be converted Parameter Type: AxResource Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram) Ranges:

#### **MimeType**

Description: MimeType for the output resource Parameter Type: string Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg, x-aiff, x-wav, basic, x-vorbis, x-ac3 Ranges:

#### **OutputResource**

Description: Where the output resource will be stored Parameter Type: AxResource Default Value: Constraints:

#### Range:

#### ReadStartingTime

Description: set the beginning of the output resource to ReadStartingTime seconds from the beginning of the input resource Parameter Type: float Default Value: by default, the read starting time is set to 0 seconds which means that the input resource is considered from the beginning Constraints: Range:

#### ReadEndingTime

Description: set the end of the output resource at ReadEndingTime seconds from the beginning of the input resource Parameter Type: float Default Value: by default, the read ending time is set to the end of the input resource Constraints: Range:

# OutputCodec

Description: set the codec of the output resource; depending on the mime type selected for the output resource, only a certain subset of codec will be supported (the following table shows the possible codecs according to the possible mime types) Parameter Type: string

Default Value: the default codec depend on the mime type selected for the output resource (the following table shows the default codec according to the possible mime types) Constraints:

Range:

#### Result

Result Type: string Result Description: the result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.1.3.2.1 Libsndfile supported types and codecs

For a list of codecs and formats supported by the Libsndfile library, please refer to section 34.5.

Mime Type accepted :

audio/x-wav audio/x-basic audio/x-paris audio/x-paris audio/x-svx audio/x-nist audio/x-voc audio/x-voc audio/x-w64 audio/x-sd2 audio/x-flac application/x-pcm application/x-pagerecall

# 16.1.3.3 Tricks/Errors

Some tricks for plugin testing : Don't use the same file for input and output (generates an unknown error, due to the editor ?) Don't try to use vorbis related files with these actual FMPEG dlls (.ogg) We endured problems with AMR and it could still fails.

If the reply is that this is Unknown output mime type, check the corresponding mime-type table. If you don't have to trunk the audio files don't change ReadStartingTime and ReadEndingTime options. (the same caution may be used for other FFMPEG advanced options)

# 16.2 Audio Descriptor Plugin (EPFL)

## 16.2.1 Main functionalities

The audiodescriptorplugin aims at extracting automatically metadata from audio signals by audio signal analysis. The functionalities implemented include a segmentation algorithm, a music genre recognizer, a tempo detection algorithm plus a set of low level descriptors extraction algorithms. This document describes these functionalities forming a minimal user guide.

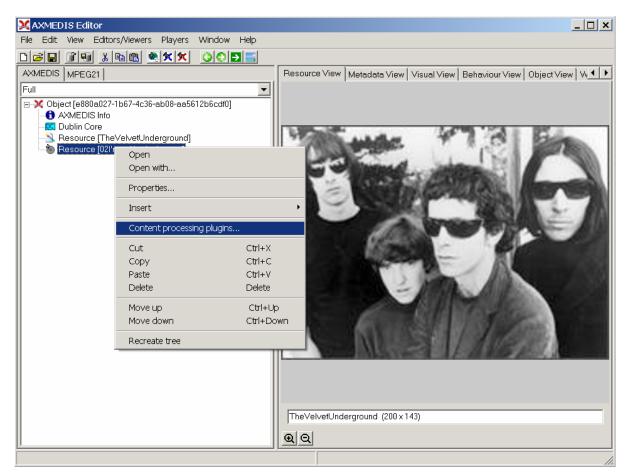
# 16.2.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

# 16.2.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with the AXMEDIS editor.

The plug-in must be applied on an audio resource of an AXMEDIS object. The descriptor extraction plug-in is called by right-clicking on the interesting resource and selecting the 'Plugin...' command (see figure 1).





A window showing the functionalities available for the kind of resource selected appears (see figure 2). *AXMEDIS* 

In the following parts, we discuss independently each available functionality.

## 16.2.3.1 Low Level Descriptors Extraction

The Low Level Descriptors extraction algorithm allows extracting MPEG-7 compliant descriptors of the audio signal. Such descriptors are said to be "low-level" since they describe the shape and the properties of the audio signal but can not be directly interpreted by humans (as opposed to "high-level" descriptors such as music genre or tempo). The Low-Level Descriptors extraction algorithm is launched by selecting the **AudioDescriptor: LowLevelDescriptors** function:

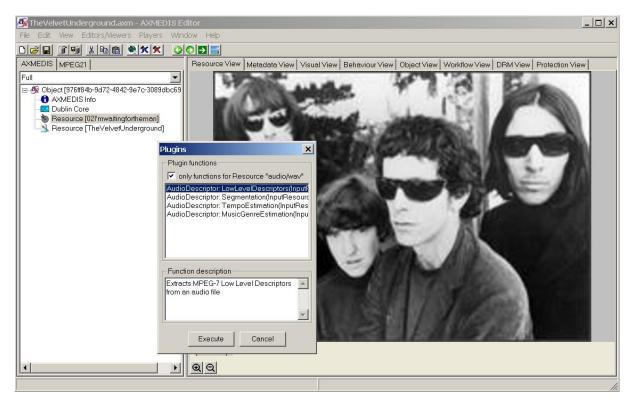


Figure 2 - Selecting the low level descriptors extraction function

A new window appears showing the interface to the low level descriptors extraction algorithm (see figure 3).

#### DE5.0.1.1 AXMEDIS Major Tools User Manuals

		criptors(inputResc	urce, HopSize, AudioPower, SpectralCentroid, SpectralSpre 🗴		
	Parameters				
DIS MPEG21	in InputResource:RESOURCE	Resource [021'mv 🔻	The Resource to be analyzed	View Protection View	
	in HopSize:FLOAT	0.010	Time (in seconds) between successive estimation of descriptors	- 10 - C	
Object [976ff84k	in AudioPower:UINT16	1	Compute AudioPower if set to 1	CO ASSA	
🛄 Dublin Core	in SpectralCentroid:UINT16	0	Compute SpectralCentroid if set to 1	- 300	
Resource [0 Resource Π	in SpectralSpread:UINT16	0	Compute SpectralSpread if set to 1	10	
	in SpectralEnvelope:UINT16	1	Compute SpectralEnvelope if set to 1	and the second s	
	in EnvLoEdge:FLOAT	62.5	Lower edge of logarithmically-spaced frequency bands		
	in EnvHiEdge:FLOAT	16000.0	Higher edge of logarithmically-spaced frequency bands	- DO	
	in BandsPerOctave:FLOAT	1.0	Frequency resolution of logarithmic spectrum [0.125,0.25,0.5,1,2,4,8,16,32]	- 111	
	in SpectralFlatness:UINT16	0	Compute SpectralFlatness if set to 1	-	
	in FlatLoEdge:FLOAT	250.0	Lower edge of logarithmically-spaced frequency bands	1000	
	in FlatHiEdge:FLOAT	16000.0	Higher edge of logarithmically-spaced frequency bands	1000	
	in ScaleRatio:UINT16	100	Scaling Ratio for scaling operations (means and variances)	1500	
	in EvalMeans:UINT16	1	Compute means of descriptors if set to 1		
	in EvalVariances:UINT16	1	Compute variances of descriptors if set to 1		
	out OutputResource:RESOURCE	New Resource 💌	Where the produced MPEG-7 description will be stored	Δ	
	Result	2			
				20	
	SUCCESS or ERROR followed by	CESS or ERROR followed by a message in case of error			

Figure 3 – The low level descriptors extraction function

The input audio file to be analysed is selected with first parameter. The last parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The other parameters allow selecting which low level descriptors should be extracted. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 4).

MEDIS       MPEG21       Resource View       Metadata View       Visual View       Behaviour View       Object View       Workflow View       Protection View         III       IIII       IIII       IIII       IIII       IIII       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	le Edit View Editors/Viewers Players Window	
Image: Construct of the second sec		
0.000307931 0.000321579 0.000284075	- International Core - Sesource [02!'mwaitingfortheman] - Resource [TheVelvetUnderground]	Resource View         Metadata View         View         Behaviour View         Object View         DRM View         Protection View         Media Time Point >         Media Time

Figure 4 – The resulting MPEG-7 description

Here follows a more complete description of the parameters of the tempo estimation function:

- <u>InputResource</u>: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):
  - 1. audio/x-aiff (.aif, .aiff)
  - 2. audio/x-wav (.wav)
  - 3. audio/x-basic (.au, .snd)
- **HopSize**: the HopSize defines the temporal distance (in seconds) between two successive analyses (set to 10 ms by default).
- AudioPower: computes the AudioPower descriptor if set to 1. The AudioPower descriptor describes the temporally-smoothed instantaneous power of the audio signal. Instantaneous power is a useful measure of the amplitude of a signal as a function of time.
- **SpectralCentroid**: computes the SpectralCentroid descriptor if set to 1. The SpectralCentroid descriptor describes the center of gravity of the log-frequency power spectrum. It is an economical description of the shape of the power spectrum. It indicates whether the power spectrum is dominated by low or high frequencies and, additionally, it is correlated with a major perceptual dimension of timbre, i.e. sharpness.
- **SpectralSpread**: computes the SpectralSpread descriptor if set to 1.The SpectralSpread descriptor describes the second moment of the log-frequency power spectrum. SpectralSpread is an economical descriptor of the shape of the power spectrum that indicates whether it is concentrated in the vicinity

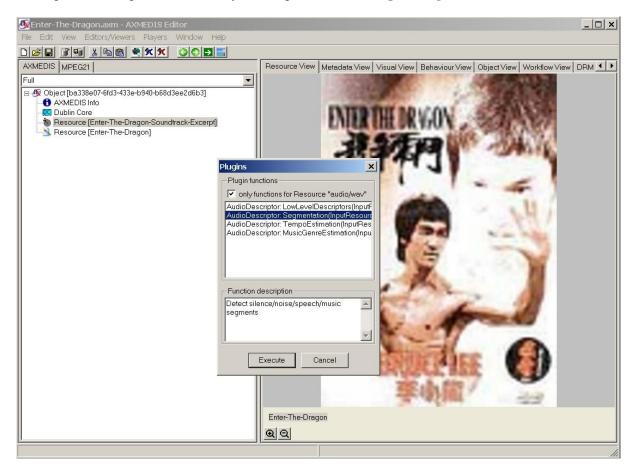
of its centroid, or else spread out over the spectrum. It allows differentiating between tone-like and noise-like sounds.

- **SpectralEnvelope**: computes the SpectralEnvelope descriptor if set to 1. The SpectralEnvelope descriptor describes the spectrum of the audio according to a logarithmic frequency scale. A logarithmic frequency axis is used to conciliate requirements of concision and descriptive power. Peripheral frequency analysis in the ear roughly follows a frequency axis.
- **EnvLoEdge**: set lower edge of logarithmically-spaced frequency bands for the extraction of the SpectralEnvelope descriptor (62.5 Hz by default).
- **EnvHiEdge**: set higher edge of logarithmically-spaced frequency bands for the extraction of the SpectralEnvelope descriptor (16000.0 Hz by default).
- **BandsPerOctave**: frequency resolution of logarithmic spectrum for the extraction of the SpectralEnvelope descriptor (width of each spectrum band between EndLoEdge and EnvHiEdge).
- **SpectralFlatness**: computes the SpectralFlatness descriptor if set to 1. The SpectralFlatness descriptor properties of the spectrum of an audio signal within a given number of frequency bands. This descriptor expresses the deviation of the signal's power spectrum over frequency from a flat shape (corresponding to a noise-like or impulse-like signal). A high deviation from a flat shape may indicate the presence of tonal components.
- **FlatLoEdge**: set lower edge of logarithmically-spaced frequency bands for the extraction of the SpectralFlatness descriptor (250.0 Hz by default).
- **FlatHiEdge**: set higher edge of logarithmically-spaced frequency bands for the extraction of the SpectralFlatness descriptor (16000.0 Hz by default).
- **ScaleRatio**: the ScaleRatio is the number of original samples represented by each scaled sample when using a scaling operation (such as mean or variance of the descriptors)
- EvalMeans: computes the mean of the descriptors if set to 1.
- **EvalVariances**: computes the variance of the descriptors if set to 1.
- **<u>OutputResource</u>**: the MPEG-7 description of the audio resource.

### 16.2.3.2 Segmentation into Silence / Speech / Noise / Music

The Silence / Speech / Noise / Music segmentation algorithm allows segmenting the audio stream into 4 kind of semantically coherent segments:

- Silence segment: silence segments are defined as regions of the audio file in which no significant sound is heard.
- Speech segment: speech segments are defined as regions of the audio file in which spoken content is dominant.
- Music segment: music segments are defined as regions of the audio file in which music content is dominant.
- Noise segment: noise segments are defined as regions of the audio file in which noise is dominant; noise is loosely defined as audio content which is not speech, music nor silence.



The segmentation algorithm is called by selecting the AudioDescriptor: Segmentation function:

Figure 5 – Selecting the segmentation function

A new window appears	showing the interfa	ce to the segmentation	function (see figure 6).
----------------------	---------------------	------------------------	--------------------------

💁 Enter-The-Dragon.axm - AXMEDIS Editor	
File Edit. View Editors/Viewers Players Window Help	
AXMEDIS MPEG21 Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM	• •
Full	
Object [ba338e07-6fd3-433e-b940-b68d3ee2d6b3] Object [ba338e07-6fd3-438e07-6fd3-438e07-6fd3-438e07-6fd3-488e0	
in InputResource:RESOURCE Resource [Enter- The Resource to be analyzed out OutputResource:RESOURCE New Resource V Where the produced MPEG-7 description will be stored	
resultSTRING SUCESS	
SUCCESS or ERROR followed by a message in case of error	
SOCCESS or EMPORTIDITOWed by a message in case of error	
Execute Close	
Building ()	
Enter-The-Dragon	
<u> </u>	

Figure 6 – The speech/noise/music segmentation function

The input audio file to be analysed is selected with first parameter while the second parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 7).

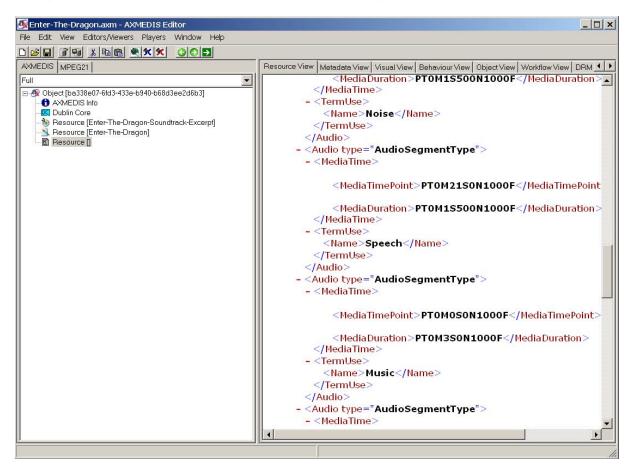


Figure 7 - The resulting MPEG-7 description

Here follows a more complete description of the parameters of the segmentation function:

- <u>InputResource</u>: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):
  - 1. audio/x-aiff (.aif, .aiff)
  - 2. audio/x-wav (.wav)
  - 3. audio/x-basic (.au, .snd)
- **<u>OutputResource</u>**: the MPEG-7 description of the audio resource.

#### 16.2.3.3 Music Genre recognition

The Music Genre recognizer allows characterizing music segments in terms of music genres. The provided model classifies music into one of the following categories:

- Classical
- Jazz

- Rap
- Rock

The Music Genre recognizer is called by selecting the AudioDescriptor: MusicGenreEstimation function:

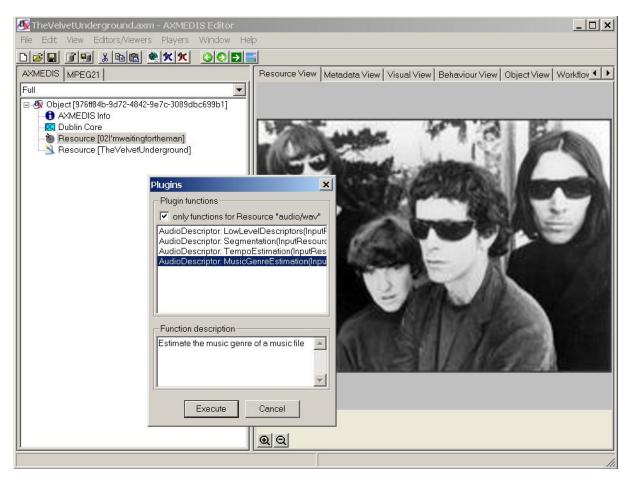


Figure 8 – Selecting the music genre recognition function

А	new window	appears sl	nowing th	e interface	to the m	nusic genre	recognizer	(see figure	9).

🐼 The Velvet Underground.axm - AXMEDIS Editor	X
File Edit View Editors/Viewers Players Window Help	
AXMEDIS MPEG21	Resource View Metadata View Visual View Behaviour View Object View Workflov
Full Object [976ff84b-9d72-4842-9e7c-3089dbc699b1]	
AXMEDIS Info	
🛄 Dublin Core 🍖 Resource [02!'mwaitingfortheman]	Manual 47 8 Bas
Resource [TheVelvetUnderground]	
AudioDescriptor: MusicGenre	Estimation(InputResource, OutputResource)
Parameters	
in InputResource:RESOURCE	Resource [02!'mw  The Resource to be analyzed
out OutputResource:RESOURC	E New Resource Vere the produced MPEG-7 description will be stored
Result	
resultSTRING SUCESS	
SUCCESS or ERROR followed	by a message in case of error
	Execute Close
	(200 x 143)
	ଭ୍ର

Figure 9 – The music genre recognition function

The input audio file to be analysed is selected with first parameter while the second parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 10).

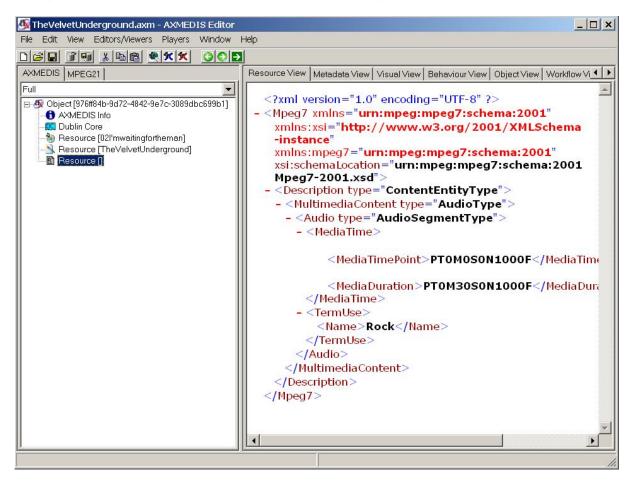


Figure 10 – The resulting MPEG-7 description

Here follows a more complete description of the parameters of the music genre recognition function:

- **InputResource**: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):
  - 4. audio/x-aiff (.aif, .aiff)
  - 5. audio/x-wav (.wav)
  - 6. audio/x-basic (.au, .snd)
- **<u>OutputResource</u>**: the MPEG-7 description of the audio resource.

# 16.2.3.4 Tempo detection

The tempo detection algorithm allows detecting the tempo in beats per minute of a music segment. It is launched by selecting the **AudioDescriptor: TempoEstimation** function:

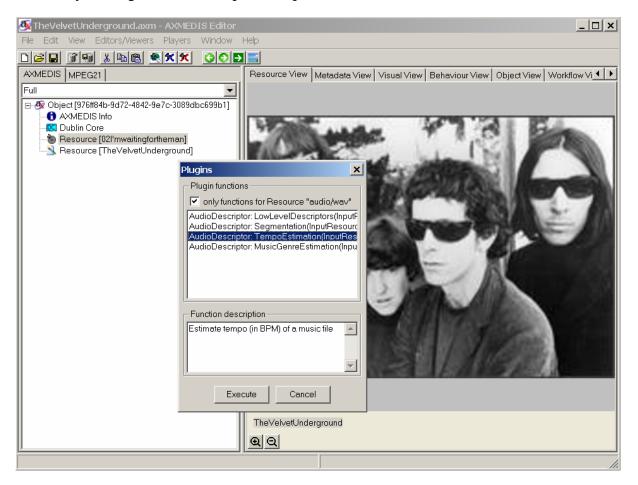


Figure 11 – Selecting the tempo estimation function

💁 The Velvet Underground.axm - AXMEDIS Edito	
File Edit View Editors/Viewers Players Window	Help
AXMEDIS MPEG21	Resource View   Metadata View   Visual View   Behaviour View   Object View   Workflow Vi
Object [976ff84b-9d72-4842-9e7c-3089dbc699b1]     AXMEDIS Info	
Dublin Core	Manual 47 8 Bin
Resource [02l'mwaitingfortheman]	
100 <sup>-100</sup>	
	imation(InputResource, BpmLoLimit, BpmHiLimit, OutputResource) 🗙
Parameters	
in InputResource:RESOURCE	
in BpmLoLimitFLOAT	60 Minimum acceptable tempo in beats per minute
in BpmHiLimitFLOAT	180 Maximum acceptable tempo in beats per minute
out OutputResource:RESOUF	ICE New Resource Verentiate the produced MPEG-7 description will be stored
Result	
resultSTRING SUCESS	
SUCCESS or ERROR followe	d by a message in case of error
	Execute Close
	TheVetvetUnderground
<u></u>	<u>ee</u>

A new window appears showing the interface to the music genre recognizer (see figure 12).

Figure 12 – The tempo estimation function

The input audio file to be analysed is selected with first parameter. The last parameter allows specifying where the resulting MPEG-7 compliant description will be saved. The parameters **BpmLoLimit** and **BpmHiLimit** allow to set boundaries to the estimation of tempo, i.e. the estimated tempo will fit in between these limits. The analysis is launched by clicking on the **Execute** button. Once the analysis completed, one can display the resulting MPEG-7 description by double-clicking on the resource in which the description was saved (figure 13).

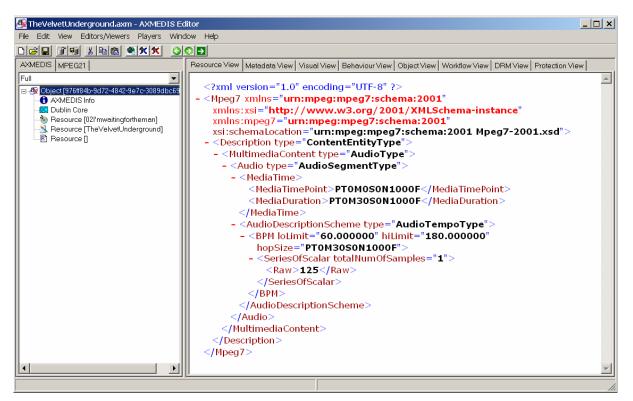


Figure 13 - The resulting MPEG-7 description

Here follows a more complete description of the parameters of the tempo estimation function:

- **InputResource**: the audio resource to be analysed; reading of audio resources is supported for the following mime types (corresponding to uncompressed audio formats):
  - 1. audio/x-aiff (.aif, .aiff)
  - 2. audio/x-wav (.wav)
  - 3. audio/x-basic (.au, .snd)
- **BpmLoLimit**: the minimum acceptable tempo in beats per minute (BPM).
- **BpmHiLimit**: the maximum acceptable tempo in beats per minute (BPM).
- **OutputResource**: the MPEG-7 description of the audio resource.

# 16.3 Multimedia Adaptation Plugin (EPFL)

# 16.3.1 Main functionalities

The multimedia\_adaptation\_plug-in allows adapting multimedia content to various use cases. For example, it can be used to transcode an MP4 file into a 3GP file or to extract the media resources embedded into a complex multimedia file. The plug-in is composed by five functions that are: Extract Media Track, Mp4 To 3GP, Mp4 to Isma, Add Media files and Cat Media Files. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

# 16.3.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

# 16.3.3 Detailed description of the functionalities and Screenshots

Here is an example on how to use the plug-in with the AXMEDIS editor.

The plug-in must be applied on an mp4 resource of an AXMEDIS object. The adaptation plug-in is called by right-clicking on the interesting resource and selecting the 'Content processing plugins...' command (see figure 1).

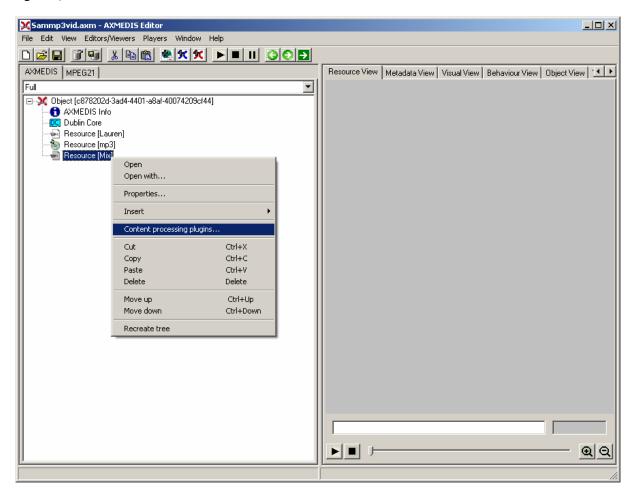


Figure 1 – Calling the multimedia adaptation plug-in

A window showing the functionalities available for the kind of resource selected appears (see figure 2).

lugins X
Plugin functions
✓ only functions for Resource "video/mp4"
AudioAdaptation: FFAudioTranscoding(InputResource, N MultimediaAdaptation: Mp4To3gp(InputResource, Output MultimediaAdaptation: Mp4ToISMA(InputResource, Output MultimediaAdaptation: AddMultimediaFiles(InputResource MultimediaAdaptation: ToMp4(InputResource, OutputRe MultimediaAdaptation: ExtractMediaTrack(InputResource MultimediaAdaptation: CatMultimediaFiles(InputResource MultimediaAdaptation: CatMultimediaFiles(InputResource MultimediaAdaptation: CatMultimediaFiles(InputResource MultimediaAdaptation: CatMultimediaFiles(InputResource, Delay MultimediaAdaptation: DelayTrack(InputResource, Delay MultimediaAdaptation: RemoveTrack(InputResource, Tr MultimediaAdaptation: Mp4ToAvi(InputResource, FPS, \
Function description
Convert an mp4 file to 3gp
Execute Cancel

Figure 2 – Selecting one of the multimedia adaptation functions

The following section summarizes the multimedia adaptation functions.

### 16.3.3.1 EXTRACT MEDIA TRACK

This function extracts one track from the original source (without deleting this track) and leaves it into a separated new file. The supported output mime types are: video/x-cmp, video/x-msvideo, video/mp4 and audio/x-gsm.

This function is selected by clicking on MultimediaAdaptation: ExtractMediaTrack.. After clicking "execute", a new window appears showing the interface to the extraction function (see figure 3).

٢	MultimediaAdaptation: ExtractMediaTrack(InputResource, OutputResource, TrackID, Mimety 🗴					
Г	Parameters					
	in InputResource:RESOURCE	Resource [Mix]	Input file to extract track			
	out OutputResource:RESOURCE	New Resource 💽	Where the produced resource (track) will be stored			
	in TrackID:UINT32	1	Track to extract			
	in Mimetype:STRING	video/x-msvideo	Mimetype for output resource			
	Result resultSTRING					
	The result of the extraction, SUCCESS if ok, ERROR followed by a message in case of error					
	Execute					

Figure 3 – The Extract Media Track function

Here follows a brief description of the parameters of the Extract Media Track function:

- <u>InputResource</u>: the multimedia resource where the track is going to be extracted (not deleted). Its use is only allowed for the video/mp4 (.mp4) files.
- <u>OutputResource</u>: the multimedia resource after the extraction, it is to say, the track already extracted into a new file. It can be part of all the allowed mpeg-4 compilant formats.
- <u>**TrackID**</u>: track to be extracted from the InputResource. If the track does not exist, the result will show "ERROR: Bad parameter".
- <u>Mimtype</u>: mime type of the OutputResource. Supports video/x-cmp, video/x-msvideo, video/mp4 and audio/x-gsm.

### 16.3.3.2 MP4 TO 3GP

This function will translate the input resource that is supposed to be .mp4 into a new file with the 3gp format. This function is selected by clicking on MultimediaAdaptation: Mp4To3GP. After clicking "execute", a new window appears showing the interface to the Mp4 to 3GP function (see figure 4).

r	fultimediaAdaptation: Mp4To3	Bgp(InputResource, Ou	itputResource, KeepSys) 🛛 🗙	I
[	Parameters			
	in InputResource:RESOURCE	Resource [Mix]	Input File to be converted	
	out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored	
	in KeepSys:BOOLEAN	true	Keep systems tracks	
	Result result:STRING The result of 3gp conversion, SUC		red by a message in case of error	

Figure 4 – The Mp4 to 3GP function

Here follows a brief description of the parameters of the Mp4 to 3GP function:

- <u>InputResource</u>: The multimedia resource to be translated into 3gp. At first, it is only allowed to use an mp4 resource.
- **OutputResource**: The multimedia output that is obtained after the transformation performed by the function. The obtained file is an .3gp file.
- KeepSys: If it should keep system tracks within the translation.

# 16.3.3.3 CAT MULTIMEDIA FILES

This function concatenates two whole multimedia resources and gives a new file containing the result of the concatenation.

This function is selected by clicking on MultimediaAdaptation: CatMultimediaFiles. After clicking "execute", a new window appears showing the interface to the concatenation function (see figure 5).

٢	MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResourceB, O 🗙				
	Parameters				
	in InputResourceA:RESOURCE	Resource [Mix] Input file A to concatenate			
	in InputResourceB:RESOURCE	Resource [Lauren] Input file B to concatenate			
	out OutputResource:RESOURCE	New Resource			
	Result				
	resultSTRING				
	The result of the concatenation, SUCCESS if ok, ERROR followed by a message in case of error				
		Execute			

Figure 5 – The Cat Media Files function

Here follows a brief description of the parameters of the Cat Media Files function:

- **InputResourceA**: It is one of the multimedia sources to concatenate. It will be the first in the timeline of the output file. By the moment, it is only allowed to introduce .mp4 files.
- **InputResourceB**: It is one of the multimedia sources to concatenate. It will be included after the InputResourceA into the new output resource. By the moment, it is only allowed to introduce .mp4 files.
- <u>OutputResource</u>: Is the result of the concatenation of InputResourceA and InputResourceB. The format of this file is .mp4.

# 16.3.3.4 MP4 TO ISMA

This function converts the input resource to the ISMA specification.

The function is selected by clicking on MultimediaAdaptation: Mp4ToISMA. After clicking "execute", a new window appears showing the interface to the conversion function (see figure 6).

~	1ultimediaAdaptation: Mp4ToISMA(InputResource, OutputResource)
[	Parameters
	in InputResource:RESOURCE Resource [Mix]  File to be converted
	out OutputResource:RESOURCE New Resource I Where the produced resource will be stored
	Result
	resultSTRING
	The result of ISMA conversion, SUCCESS if ok, ERROR followed by a message in case of error
	Execute

Figure 6 - The Mp4 to ISMA function

Here follows a brief description of the parameters of the Mp4 to ISMA function:

- InputResource: Mp4 file to be converted into the ISMA specification.
- <u>**OutputResource**</u>: Output file of the conversion to ISMA of the InpupResource.

# 16.3.3.5 ADD MULTIMEDIA FILES

This function takes multimedia resources and adds them as new tracks into new or already existing mp4 file. It must specify the size (amount of seconds) of the multimedia resource that is imported and when should it begin inside the destination file, it is to say, the delay of the new track.

The function is selected by clicking on MultimediaAdaptation: AddMultimediaFiles. After clicking "execute", a new window appears showing the interface to the Add Multimedia Files function (see figure 7).

MultimediaAdaptation: AddMul	timediaFiles(InputRes	ource, BaseResource, Delay, ImportLength, TrackID, FPS, 🗙		
Parameters				
in InputResource:RESOURCE	Resource [Lauren]	The media to add		
in BaseResource:RESOURCE	Resource [mp3]	Base resource where to add the new media		
in Delay:UINT32	1000	Delay in milliseconds of the new track		
in ImportLength:DOUBLE	5	Number of seconds to import from input file (starting from the beginning)		
in TrackID:STRING	1	Track to extract		
in FPS:UINT32	24	Frames per sample		
in Lang:STRING		Language code		
out OutputResource:RESOURCE	New Resource 💌	Where the produced resource will be stored		
Result				
result:STRING				
The result of adding files, SUCCESS if ok, ERROR followed by a message in case of error				
(Execute) Close				

Figure 7 – The Add Media Files function

Here follows a brief description of the parameters of the Add Media Files function:

- **<u>InputResource</u>**: File to be included into a new MP4 file.
- **<u>BaseResource</u>**: Base MP4 file where to add the InputResource
- **Delay**: Delay in milliseconds to be applied at the track to be included into the MP4 output file.
- **<u>ImportLength</u>**: Number of seconds to import from the input file starting from the beginning.
- <u>TrackID</u>: Track to extract in the file. If empty take the whole file.
- **<u>FPS</u>**: Frames per sample of the new track. 0 means source file FPS.
- **Lang**: Optional: Language code of the new track
- <u>**OutputResource**</u>: Output file where the track is included

# 16.3.3.6 TO MP4

This function converts the input resource to Mp4.

The function is selected by clicking on MultimediaAdaptation: ToMp4. After clicking "execute", a new window appears showing the interface to the conversion function (see figure 8).

~	1ultimediaAdaptation: ToMp4(InputResource, OutputResource)
[	Parameters
	in InputResource:RESOURCE Resource [mp3] The Resource to be converted
	out OutputResource:RESOURCE New Resource Vhere the produced resource will be stored
[	Result
	resultSTRING
	The result of mp4 conversion, SUCCESS if ok, ERROR followed by a message in case of error
	Execute Close

Figure 8 – The To Mp4 function

Here follows a brief description of the parameters of the To Mp4 function:

- **InputResource**: File to be converted to Mp4.
- **<u>OutputResource</u>**: Output file of the conversion to Mp4 of the InputResource.

# 16.3.3.7 DELAY TRACK

This function set the delay to a track from a mp4 file.

The function is selected by clicking on MultimediaAdaptation: DelayTrack. After clicking "execute", a new window appears showing the interface to the Delay Track function (see figure 9).

MultimediaAdaptation: DelayTrack(InputResource, Delay, TrackID, OutputResource) 🛛 🔀		
Parameters		
in InputResource:RESOURCE	Resource [Mix]	File to be converted
in Delay:UINT32	500	Delay in milliseconds of the track
in TrackID:STRING	1	Track to delay
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
Result resultSTRING		
The result of track delay, SUCCESS if ok, ERROR followed by a message in case of error		
Execute Close		

Figure 9 – The Delay Track function

Here follows a brief description of the parameters of the Delay Track function: *AXMEDIS* 

- **<u>InputResource</u>**: Mp4 file where to delay a track.
- **Delay**: New delay in milliseconds applied at the track of the MP4 output file.
- **<u>TrackID</u>**: Track to be delayed in the file.
- **<u>OutputResource</u>**: Output Mp4 file where the track is included delayed.

# 16.3.3.8 REMOVE TRACK

This function removes a track from a mp4 file.

The function is selected by clicking on MultimediaAdaptation: RemoveTrack. After clicking "execute", a new window appears showing the interface to the Remove Track function (see figure 10).

MultimediaAdaptation: RemoveTrack(InputResource, TrackID, OutputResource)			
Parameters			
in InputResource:RESOURCE	Resource [Mix] File to be converted		
in TrackID:STRING	1 Track to remove		
out OutputResource:RESOURCE	New Resource Where the produced resource will be stored		
_ Result			
resultSTRING			
The result of track removing, SUCCESS if ok, ERROR followed by a message in case of error			
	Execute Close		

Figure 10 – The Remove Track function

Here follows a brief description of the parameters of the Remove Track function:

- **InputResource**: Mp4 file where to remove a track.
- **<u>TrackID</u>**: Track to be removed from the file.
- **<u>OutputResource</u>**: Output mp4 file where the track is removed.

# 16.3.3.9 EXTRACT FROM START TO END

This function extracts a new mp4 file from a mp4 file by time limitation.

The function is selected by clicking on MultimediaAdaptation: ExtractFromStartToEnd. After clicking "execute", a new window appears showing the interface to the Extract from Start to End function (see figure 11).

٢	MultimediaAdaptation: ExtractFromStartToEnd(InputResource, Start, End, OutputResou 🗙		
	Parameters		
	in InputResource:RESOURCE	Resource [Mix]	File to be converted
	in Start:DOUBLE	5	Start of extraction in seconds
	in End:DOUBLE	15.5	End of extraction in seconds
	out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
	Result result:STRING The result of the extraction by time, SUCCESS if ok, ERROR followed by a message in case of error		
	Execute Close		

Figure 11 – The Extract from Start to End function

Here follows a brief description of the parameters of the Extract from Start to End function:

- **<u>InputResource</u>**: File where to extract the new mp4 file.
- <u>Start</u>: Start of extraction in seconds
- **End**: End of extraction in seconds
- **<u>OutputResource</u>**: Output mp4 file limited by time

# 16.3.3.10 MP4 TO AVI

This function will translate the input resource that is supposed to be .mp4 pure BIFS file into a new file with the avi format.

This function is selected by clicking on MultimediaAdaptation: Mp4ToAvi. After clicking "execute", a new window appears showing the interface to the Mp4 to Avi function (see figure 12).

٢	IultimediaAdaptation: Mp4To/	Avi(InputResource, FP	5, Width, Height, OutputResource)	×
[	- Parameters			
	in InputResource:RESOURCE	Resource [Mix]	Input MP4 BIFS pure file(no audio, no image, no video) to convert to AV	4
	in FPS:FLOAT	0	Extraction framerate (default:0 computed from the BIFS track duration)	
	in Width:UINT32	0	Width of the bifs scene (default:0 original size)	
	in Height:UINT32	0	Height of the bifs scene (default:0 original size)	
	out OutputResource:RESOURCE	New Resource	Result file	
Result				
	resultSTRING			
The result of the conversion to avi, SUCCESS if ok, ERROR followed by a message in case of error				
	Execute Close			

Figure 12 - The Mp4 to Avi function

Here follows a brief description of the parameters of the Mp4 to Avi function:

- InputResource: The Mp4 pure BIFS file to be translated to Avi format.
- **<u>FPS</u>**: Extraction frame rate (0 compute from the BIFS track duration )
- <u>Width</u>: Width of the bifs scene (0 takes original size)
- <u>**Height**</u>: Height of the bifs scene (0 takes original size)
- **<u>OutputResource</u>**: The multimedia output that is obtained after the transformation performed by the function. The obtained file is an .avi file.

# 16.4 CryptLib Plugin (DIPITA)

# 16.4.1 Main functionalities

Cryptlib plugin is a protection tool that brings into AXMEDIS the ability to exploit cryptlib functionalities, this way any kind of file can be encrypted/decrypted with several symmetric cryptography algorithms. This plugin is an IPMP tool. It cannot be used directly from a user but it should rather be used by developers.

Implemented algorithms:

- BlowFish
- AES
- 3DES
- CAST128

# 16.4.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

# 16.4.3 Detailed description of the functionalities and Screenshots

Please refer to the cryptlib manual for further implementation details. (www.cryptlib.com)

Parameters:

Every encryption tool should be created with the following parameters, described in cryptlib.xml:

- Key: the key for the encryption
- Iv: the initialization vector for the encryption
- Keylength: the length of the key
- Ivlength: the length of the initialization vector

If a mismatch is detected between the length and the corresponding string an exception is raised. If length is not specified the plugin defaults to an appropriate length which is different for each algorithm.

# 16.5 Language Guesser Plugin (DIPITA)

### 16.5.1 Main functionalities

Language\_guesser\_plug-in is a tool that can detect the main language of a text document. Supported languages are: German, English, Spanish, French and Italian. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

# 16.5.2 Relationship with other tools

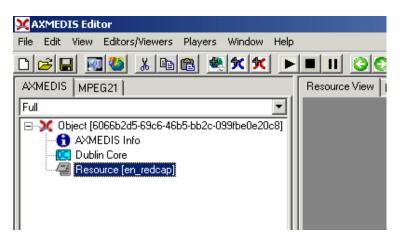
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

# 16.5.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with Axeditor.

The plug-in can be applied only to plain text. In the resourcePath directory, you can choose any of the .txt files (e.g. en\_redcap.txt, which is the well known Red Cap tale).

Create a new AXMEDIS object and add the txt file as an embedded resource.



Then select 'Content Processing Plug-in...' command; the following window should appear:

Plugins 💦	X
Plugin functions	
✓ only functions for Resource "text/plain"	
LanguageGuesser: LanguageGuesser(InputResource, Language) Plagiarism: Compare(Source, Target) Plagiarism: Compare(Source, Target) TextDescriptors: KWFromComparisons(InputResource, MaxKWNumber, DetailedResults, Keywords) TextDescriptors: KWFromSemanticAnalysis(InputResource, MaxKWNumber, Keywords) TextDocsAdaptation: DocumentConversion(InputResource, ConversionFormat, DutputResource)	I
Function description	
Retrieves the main language of the document.	]
Execute Cancel	

Select LanguageGuesser and press execute.

LanguageGuesser: LanguageGuesser(InputResource, Language) 🛛 🛛 🔀
Parameters
in InputResource:RESOURCE Resource [en_redcap - The Resource to be processed
out Language:STRING A string representing the language (one of {de, en, es, fr, it} values)
Result result:STRING
The result of detection, SUCCESS if ok, ERROR followed by a message in case of error
Execute Close

Press Execute again. In the out field a string of the detected language should appear. Possible values are:

	Output string de en es fr it	<b>Language</b> German English Spanish French Italian	
LanguageGuesser: Langu           Parameters           in InputResource:RESOURCE           Resource           out Language:STRING	e [en_redcap 💽 The Resourc	utResource, Languag ce to be processed esenting the language (one of (de,	
Result         result:STRING         SUCCESS         The result of detection, SUCCESS if ok, ERROR followed by a message in case of error         Execute       Close			

# 16.6 Plagiarism Detection Plugin (DIPITA)

### 16.6.1 Main functionalities

The plagiarism plugin is meant to detect possible plagiarism of textual documents.

It is based on an algorithm that takes into account the plagiarist behaviour.

This behaviour is modeled as a set of actions like insertion, deletion, substitution or transposition and gives as a result a similarity value which is normalized between 0 and 1.

Next we will show the main functionalities provided by a first prototype of the tool.

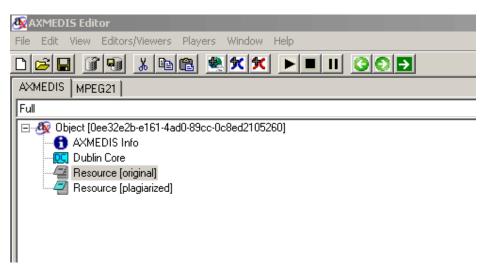
#### 16.6.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

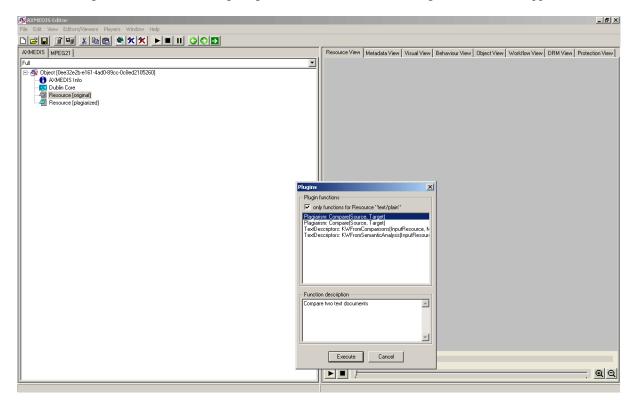
#### 16.6.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in within the Axeditor. The plug-in can be applied only to plain text resource.

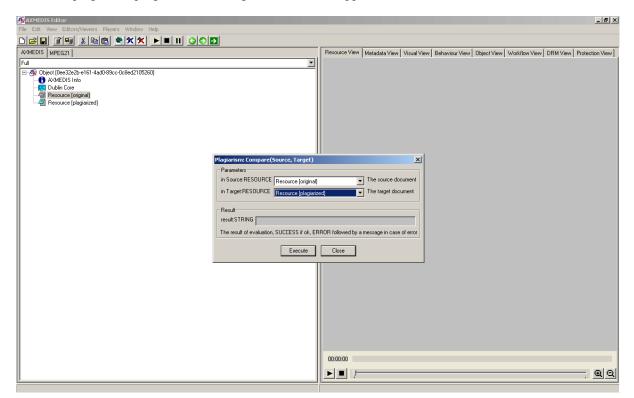
Create a new AXMEDIS object and add the text files to be checked (original and suspect plagiarized) as embedded resources.



Then selecting the 'Content Processing Plug-in...' command; the following window should appear:



Select the plagiarism plugin the following window should appear:



Select the the source and target file to be compared and then click on execute.

Clicking on execute makes the plug-in run. The algorithm compares two plain text documents and gives as a result a similarity value which is normalized between 0 and 1. Output is given in the 'out' field.

	11		
lagiarism: Compare(9	iource, Target)	×	
- Parameters			
in Source:RESOURCE	Resource (original)	The source document	
in Target:RESOURCE	Resource [plagiarized]  The target document		
Result result:STRING 0.8833 The result of evaluation,	33 SUCCESS if ok, ERROR followed by a	message in case of error	
	Execute Close		

# 16.7 Document Descriptor Extractor Plugin (DIPITA)

# 16.7.1 Main functionalities

Descriptor\_extractor\_plug-in is a tool that can extract high-level metadata from text documents. So far, metadata include single and multi-word keywords. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

### 16.7.2 Relationship with other tools

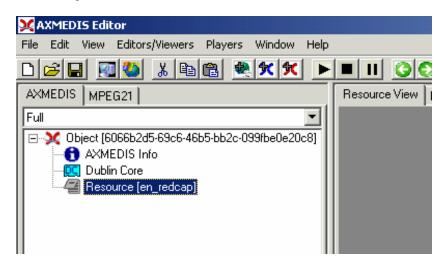
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

# 16.7.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with Axeditor.

The plug-in can be applied only to plain text resources and will give meaningful results only to English texts. In the resourcePath directory, there is a sample file to test: en\_redcap.txt. It's the well known Red Cap tale.

Create a new AXMEDIS object and add the txt file as an embedded resource.



Then select 'Content Processing Plug-in...' command; the following window should appear:

XAXMEDIS Editor	
File Edit View Editors/Viewers Players Window Help	
D 😹 🖬 🧶 🔌 👗 🕒 🛍 🗶 🗶 🛌 🕨	
AXMEDIS MPEG21	Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Protection View
Full       Image: State of the	Plugins I
	only functions for Resource "text/plain"
	TextDescriptors: KWFromComparisons[InputResource, MaxKWNumber, DetailedResults, Keywords] TextDescriptors: KWFromSemanticAnalysis[InputResource, MaxKWNumber, Keywords]
	Function description
	Execute Cancel

There are 2 functions available:

- KWFromComparisons: extracts single and multi-words making a statistical comparison against a reference corpus (British National Corpus);
- KWFromSemanticAnalysis: extracts single and multi-words making a further analysis with the help of a semantic resource (WordNet).

Both functions accept a parameter, the number of keywords requested:

TextDescriptors: KWFromCo	mparisons(InputResou	urce, MaxKWNumber, DetailedResults, Keywords)
Parameters		
in InputResource:RESOURCE	Resource [en_redcap	The Resource to be processed
in MaxKWNumber:UINT16	6	How many keyword requested as a maximum.
in DetailedResults:BOOLEAN	false	Returns keywords with ranking values
out Keywords:STRING		A string containing keywords separated by carriage return + newline chars
Result result:STRING		
The result of conversion, SUCC	ESS if ok, ERROR followe	d by a message in case of error
	Exec	Close

Clicking on execute makes the plug-in run. Output is given in the 'out' field as a carriage-return separated list of words/multi-words:

TextDescriptors: KWFromCo	mparisons(InputReso	urce, MaxKWNumber, DetailedResults, Keywords)
Parameters		
in InputResource:RESOURCE	Resource [en_redcap	The Resource to be processed
in MaxKWNumber:UINT16	6	How many keyword requested as a maximum.
in DetailedResults:BOOLEAN	false	Returns keywords with ranking values
out Keywords:STRING	grandmother  wolf  great_	A string containing keywords separated by carriage return + newline chars
Result result:STRING SUCCESS		
The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error		
Execute Close		

# 16.8 Document Adaptation Plugin (DIPITA)

# 16.8.1 Main functionalities

Document\_adaptation \_plug-in is a tool that can transcode text documents between various formats. The following text formats are supported: Adobe© PDF, Rich Text Format (RTF), plain text, Postscript, Hyper-Text Markup Language (HTML). It is possible any type of transcoding among these formats. In order to exploit the plugin MIME types for supported formats must be known:

Format	MIME type
Plain text	text/plain
HTML	text/html
Postscript	application/postscript
PDF	application/pdf
RTF	Application/rtf

This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

# 16.8.2 Relationship with other tools

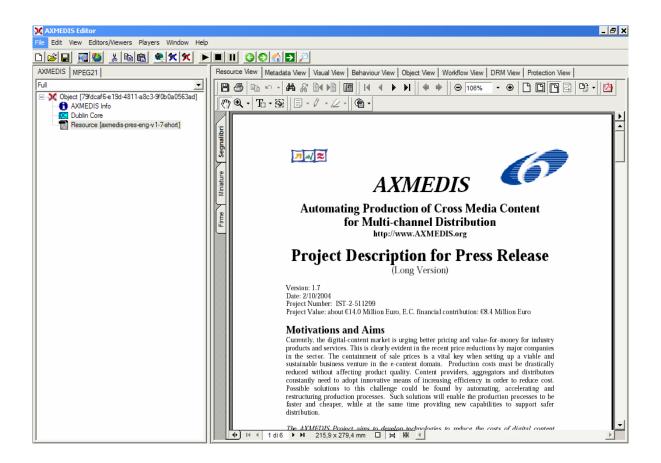
This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

# 16.8.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with Axeditor.

In the package there is a sample PDF file to test: AXMEDIS-pres-eng-v1-7-short.pdf.

Create a new AXMEDIS object and add the PDF file as an embedded resource.



Then select 'Content Processing Plug-in...' command; the following window should appear:

Seg	
	Plugins X
Miniature	Plugin functions
Minik	✓ only functions for Resource "application/pdf"
ШЧI	TextDocsAdaptaion: DocumentConversion(InputResource, ConversionFormat, OutputResource)
Firme	
ji ji	
	Transcodes the given text document in the supplied format.
	Execute Cancel
	Tossicke sociations to time channenge could be found by automating, accelerating and

There is only one function available:

• DocumentConversion: it will make the transcoding to the format specified as the requested parameter.

For example, let's convert the document to plain text, so let's write in the ConversionFormat text box: text/plain

Make output a new resource, and click execute

TextDocsAdaptaion: DocumentConversion(InputResource, ConversionFormat, OutputResource) 🗙						
Parameters						
in InputResource:RESOURCE	Resource [axmedis-pr					
in ConversionFormat:STRING	text/plain The format to which the resource will be conv	verted.				
out OutputResource:RESOURCE	New Resource Where the produced resource will be stored					
Result						
The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error						
Execute Close						

Here's the plain text version of the file:

X AXMEDIS Editor							
File Edit View Editors/Viewers Players Window Help							
AXMEDIS MPEG21	Resource View Metadata View Visual View Behaviour View Object View Workflow View DRM View Protection View						
Full <ul> <li>Object (79fdcaf6-e19d-4811-a8c3-9f0b0a0563ad)</li> <li>AXMEDIS Info</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Construction</li> <li>Resource (axmedis pres-eng-v1-7-short)</li> <li>Resource (1)</li> <li>Resource</li></ul>	AMMEDIS Automating Froduction of Cross Media Content for Multi-channel Distribution http://www.AXMEDIS.org Project Description for Press Release (Long Version) Version: 1.7 Date: 2/10/2004 Project Number: IST-2-511299 Project Value: about 14.0 H Motivations and Aims Currently, the digital-content market is urging better pricing and value-for-money fr AXMEDIS Project Description for Press Release 1 content producers and distributors at a high confidence level; to increase the access Challenges, Objectives and Goals AXMEDIS Project Description for Press Release 2 It is easy and beneficial for all to gain access to the AXMEDIS technologies. Some di AXMEDIS Consortium The consortium consists of a number of relevant and recognised project partners, repr AXMEDIS Project Description for Press Release 3						

# 16.9 Audio FP Plugin (FHGIGD)

# 16.9.1 Main functionalities

Audio\_fingerprint \_\_plug-in is a tool that extracts an audio fingerprint of a given audio stream within a multimedia file. The audio stream can be embedded either in a normal audio file (mpg, wav, wma, etc...) or within a video file (mpeg, wmv, avi, etc...).

# 16.9.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

# 16.9.3 Detailed description of the functionalities and Screenshots

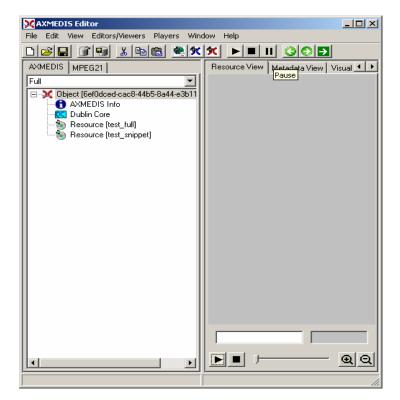
Information related to the installation can be found in file README.txt.

Audio\_fingerprint \_plug-in is a tool that extracts an audio fingerprint of a given audio stream within a multimedia file. The audio stream can be embedded either in a typical audio file (mpg, wav, wma, etc...) or within a video file (mpeg, wmv, avi, etc...). This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide. For testing purposes the prototype also includes a basic matching function.

The plug-in can be applied to any audio or video resources, provided this was declared in the mime type attribute of the resource. The output is a binary file containing the fingerprint itself and an image file of any supported format (more than 90 MIME-type image formats). The PNG format is recommended.

For demonstration purposes the package contains a 10 second sample wave file: "test\_full.wav" and a 3 second short extract of this file: "test\_snippet.wav".

Create a new AXMEDIS object and add the wave files as embedded resources by right clicking on the object.



Right click on the "test\_full.wav" resource and select 'Content Processing Plug-ins'

Plugins X		
Plugin functions		
only functions for Resource "audio/wav"		
AudioFingerprintExtraction: AxAFPExtract(InputResource, Mimetype, OutputRes		
Function description Extracts a fingerprint of the first audio stream in a given Multimedia File(Audio		
Execute Cancel		

Select 'AudioFingerprintExtraction' and the following window should appear:

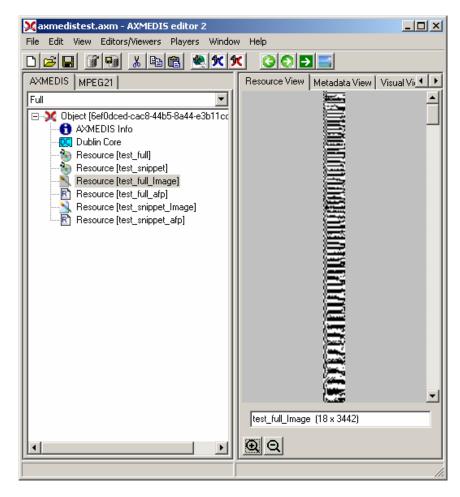
AudioFingerprintExtraction: AxAFPExtract(InputResource, Mimetype, OutputResource, OutputResource2, nFeatur 🗴					
Parameters					
in InputResource:RESOURCE	Resource [test_full]	The Resource to extract the fingerprint from			
in Mimetype:STRING	image/png	Mimetype for the output resource			
out OutputResource:RESOURCE	Resource [test_full]	Where the fingerprint image will be stored (choose new resource)			
out OutputResource2:RESOURCE	Resource [test_full]	Where the binary fingerprint resource will be stored(choose new resource)			
in nFeatures:INT32	18	Number of Features for the finger print, 18 is the desired Standard			
in frameSize:INT32	512	Size of the windowing Size for the Subfingerprints			
in frameShift:INT32	128	Frame overlap for the subfingerprints			
in offset:INT32	0	Frame offset for the fingerprint calculation			
Devel					
resultSTRING					
The result of import, SUCCESS if ok, ERROR followed by a message in case of error					
Execute Close					

The recommended value for the MIME-type parameter is: image/png. Choose for both outputs a new resource and click execute.

AudioFingerprintExtraction: AxAFPExtract(InputResource, Mimetype, OutputResource, OutputResource2, nFeatur 🗴							
☐ Parameters							
in InputResource:RESOURCE	Resource [test_full]	The Resource to extract the fingerprint from					
in Mimetype:STRING	image/png	Mimetype for the output resource					
out OutputResource:RESOURCE	New Resource	Where the fingerprint image will be stored (choose new resource)					
out OutputResource2:RESOURCE	New Resource	Where the binary fingerprint resource will be stored(choose new resource)					
in nFeatures:INT32	18	Number of Features for the finger print, 18 is the desired Standard					
in frameSize:INT32	512	Size of the windowing Size for the Subfingerprints					
in frameShift:INT32	128	Frame overlap for the subfingerprints					
in offset:INT32	0	Frame offset for the fingerprint calculation					
- Result							
resultSTRING Success!							
The result of import, SUCCESS if ok, ERROR followed by a message in case of error							
[Execute] Close							

After receiving the "success"-message, close the window and you should have a new image resource and a new resource of the mimetype "fingerprint/audio" in the AXMEDIS editor. It is advised to edit the objects properties with the original resource filename

🔀 axmedistest.axm - AXMEDIS editor 2		
File Edit View Editors/Viewers Players Window	/ Help	
D 🖻 🖬 🗊 💀 🔈 🎘 🕅 🏙 🗮 🗶 🛠 🏞		
AXMEDIS MPEG21	Resource View Metadata View Visual Vic 💶 🕨	
Full            • Object [6ef0dced-cac8-44b5-8a44-e3b11cc         • AXMEDIS Info         • Dublin Core         • Resource [test_full]         • Resource [test_snippet]         • Resource [test_snippet]         • Resource [test_snippet]         • Resource [test_snippet_lmage]         • Resource [test_snippet_lmage]         • Resource [test_snippet_afp]         • Resource [test_snippet_afp]         • Resource [test_snippet_afp]         • Object [test_snipet_afp]		
	111	



To view it, just double-click on the image resource. Here's the graphical display of the fingerprint:

For demonstration purposes a basic matching function was implemented. To apply it the, extraction steps for the "test\_snippet.wav" file have to be repeated. After the extraction process has finished right click on any "fingerprint/audio" object, select the "AXAFPCompare" function and execute it:

Plugins X
Plugin functions
☑ only functions for Resource "fingerprint/audio"
AudioFingerprintExtraction: AxAFPCompare(InputResource, InputRes AudioFingerprintExtraction: AxAFPCompare(InputResource, InputRes
Function description Compares two audio fingerprint files and returns the lowest BER and time position.
Execute Cancel

On the following window just select the two fingerprint files to be compared and click on execute.

The order is not important; the algorithm automatically decides the candidate and reference object order:

A	AudioFingerprintExtraction: AxAFPCompare(InputResource, InputResource2, CLENGTH, RLENGTH, MI 🗙				
Γ	Parameters				
	in InputResource:RESOURCE	Resource [test_full_afp]	The candidate object to compare		
	in InputResource2:RESOURCE	Resource [test_snippet_afp]	The reference object to compare		
	out CLENGTH:INT32		Length of the candidate Object(in seconds)		
	out RLENGTH:INT32		Length of the reference Object(in seconds)		
	out MINBER:FLOAT		Minimal BER found (in percent)		
	out TIMEPOS:INT32		Time position for the minimal BER found (in seconds)		
L	-Result				
	resultSTRING				
	The result the comparison, SUCCESS if ok, ERROR followed by a message in case of error				
	Execute				

The result shows the length in seconds of the original candidate and reference objects (the audio files the fingerprint was extracted from).

P	AudioFingerprintExtraction: AxAFPCompare(InputResource, InputResource2, CLENGTH, RLENGTH, MI 🗙				
[	Parameters				
	in InputResource:RESOURCE	Resource [test_full_afp]	The candidate object to compare		
	in InputResource2:RESOURCE	Resource [test_snippet_afp] 💌	The reference object to compare		
	out CLENGTH:INT32	2	Length of the candidate Object(in seconds)		
	out RLENGTH:INT32	9	Length of the reference Object(in seconds)		
	out MINBER:FLOAT	9.175	Minimal BER found (in percent)		
	out TIMEPOS:INT32	2	Time position for the minimal BER found (in seconds)		
	Result				
	resultSTRING Success!				
	The result the comparison, SUCCESS if ok, ERROR followed by a message in case of error				
	[Execute] Close				

The MINBER value is the minimal BER found during the comparison. The TIMEPOS is the time position for the minimal BER.

The result value will show "Success!" if the comparison was performed without errors. Else an error message will display. Please note, that the "Success!" message is a display of the technical success of the comparison process and not the matching probability.

# 16.10 M2ANY - Audio FP Plugin (FHGIGD)

## 16.10.1 Main functionalities

M2ANYAudio\_fingerprint \_plug-in is a tool that extracts an audio fingerprint of a given audio stream within a WAV file. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide. A matching function is still in development.

## 16.10.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

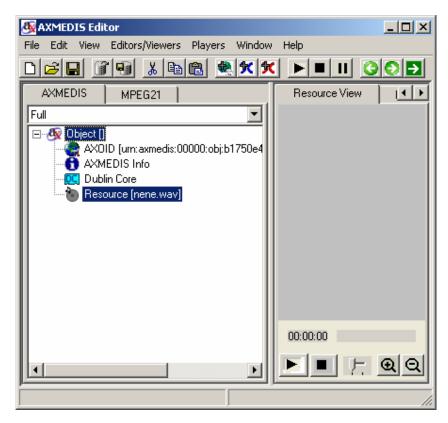
## 16.10.3 Detailed description of the functionalities and Screenshots

**CAVEAT:** This guide assumes you licensed the corresponding technology from M2ANY! The licensed executables (cfymain.exe, xtrmain.exe, cfy.dll, xtr.dll and asign.dll) have to be installed in the plug-in directory! You also need to indicate the path to an existing fingerprint database which is also provided by M2ANY.

Information related to the installation can be found in file README.txt.

The plug-in can be applied to WAV files, provided this was declared in the MIME type attribute of the resource. The output is a binary file containing the fingerprint in binary format.

Create a new AXMEDIS object and add a wave file as an embedded resource by right clicking on the object. The provided audio file excerpt ("nene.wav") is used here as a complete fingerprint of the complete song is contained within the M2ANY Database.



Right click on the WAV resource and select 'Content Processing Plug-ins'

Plugins		
Plugin functions		
☑ only functions for Resource "audio/wav"		
AudioDescriptor: LowLevelDescriptors(InputResource, H AudioDescriptor: Segmentation(InputResource, OutputR AudioDescriptor: TempoEstimation(InputResource, BpmL AudioDescriptor: MusicGenreEstimation(InputResource, AudioFingerprintExtraction: AxAFPExtract(InputResource M2ANYAudioFingerprintExtraction: AxM2ANYAFPExtrac		
Function description Extracts a fingerprint of a audio stream in a WAV File using the M2ANY Engine		
Execute Cancel		

Select 'M2ANYAudioFingerprintExtraction' and click "Execute" the following window should appear:

~	M2ANYAudioFingerprintExtraction: AxM2ANYAFPExtract(InputResource, OutputResource, tuID, tempR 🗴				
[	Parameters				
	in InputResource:RESOURCE	Resource [nene.wav]	The Resource to extract the fingerprint from		
	out OutputResource:RESOURCE	Resource [nene.wav] 💌	Where the fingerprint file will be stored (choose new resource)		
	in tulD:INT32	1	insert track unique id to n (n > 0 !) into feature stream		
	in tempRes:INT32	32	set temporal resolution to n (n = 4,8,16,32,)		
	in nOfBands:INT32	16	set number of frequency bands to n (1 to 20)		
l	Dent				
	Result				
	result:STRING				
	The result of import, SUCCESS if ok, ERROR followed by a message in case of error				
	Execute Close				

M2ANYAudioFingerprintExtract	ion: AxM2ANYAFPExtra	act(InputResource, OutputResource, tuID, tempR 🗴		
Parameters				
in InputResource:RESOURCE	Resource [nene.wav]	The Resource to extract the fingerprint from		
out OutputResource:RESOURCE	New Resource 📃	Where the fingerprint file will be stored (choose new resource)		
in tulD:INT32	1	insert track unique id to n (n $\geq$ 0 !) into feature stream		
in tempRes:INT32	32	set temporal resolution to n (n = 4,8,16,32,)		
in nOfBands:INT32	16	set number of frequency bands to n (1 to 20)		
Besult				
resultSTRING Success!				
The result of import, SUCCESS if ok, ERROR followed by a message in case of error				
Close				

Choose for the output a new resource and click execute.

A console window will shortly appear indicating the extraction process. After receiving the "success"message, close the window and you should have a new resource of the MIME type "fingerprint/m2anyAfp" in the AXMEDIS editor. It is advised to edit the objects properties with the original resource filename

AXMEDIS Editor	<u>_ 0 ×</u>
File Edit View Editors/Viewers Players Window	Help
AXMEDIS MPEG21	Resource View
Full	
E& Object [] AXOID [urn:axmedis:00000:obj:b1750e4	
AXMEDIS Info	
Dublin Core	
	00:00:00

For demonstration purposes a basic matching function was included. For this section the fingerprint previously generated will be used.

After the extraction process has finished right click on any "fingerprint/ m2anyAfp" object, select the "M2ANYAXAFPCompare" function and execute it:

Plugins 🗴	1
Plugin functions	1
only functions for Resource "fingerprint/m2anyAfp"	
M2ANYAudioFingerprintExtraction: AxM2ANYAFPCompa	
Function description Compares an Audio fingerprint against a Database using the M2ANY Engine	
Execute Cancel	

On the following window select a new resource as the output resource and provide the path to an existing database directory (containing at least 10 fingerprint files in it) and click on execute:

٢	M2ANYAudioFingerprintExtraction: AxM2ANYAFPCompare(InputResource, OutputResource, path2DB, nrRes 🗙			
Г	Parameters			
	in InputResource:RESOURCE	Resource [nene.wav 💌	The query object	
	out OutputResource:RESOURCE	New Resource 💽	The Results in text form	
	in path2DB:STRING	D:\jvargas\db	Path to load audio-signatures from(DataBase directory)	
	in nrResEntries:INT32	10	number of result entries to display	
	in loadDepth:INT32	50	recursive database load depth	
	in featureUse:INT32	0	use feature [ 0=SFM, 2=ASE (more robust)]	
	in tempRes:INT32	32	temporal resolution [ 4, 8,16,32,64,128] (default: SFM:32, ASE:4)	
	in nrOfBands:INT32	16	number of frequency bands (1 to 20) (default: SFM:16, ASE:ignore	
	in qPos:INT32	0	take excerpt as query: position in milli seconds	
	in qDuration:INT32	20000	take excerpt as query: duration in milli seconds	
	- Result			
	resultSTRING			
	The result of import, SUCCESS if ok, ERROR followed by a message in case of error			
	Execute Close			

M2ANYAudioFingerprintExtraction: AxM2ANYAFPCompare(InputResource, OutputResource, path2DB, nrRes 🗙				
Parameters				
in InputResource:RESOURCE	Resource []	The query object		
out OutputResource:RESOURCE	New Resource	The Results in text form		
in path2DB:STRING	D:\jvargas\db	Path to load audio-signatures from(DataBase directory)		
in nrResEntries:INT32	10	number of result entries to display		
in loadDepth:INT32	50	recursive database load depth		
in featureUse:INT32	0	use feature [ 0=SFM, 2=ASE (more robust)]		
in tempRes:INT32	32	temporal resolution [ 4, 8,16,32,64,128] (default: SFM:32, ASE:4)		
in nrOfBands:INT32	16	number of frequency bands (1 to 20) (default: SFM:16, ASE:ignore		
in qPos:INT32	0	take excerpt as query: position in milli seconds		
in qDuration:INT32	20000	take excerpt as query: duration in milli seconds		
L				
Result				
result:STRING Success!				
The result of import, SUCCESS if ok, ERROR followed by a message in case of error				
[Execute]] Close				

The result value will show "Success!" if the comparison was performed without errors. Else an error message will display. The resulting resource will be a text file. Please edit its properties and add an arbitrary content ID. This prevents the AXEditor from crashing. This issue is soon to be fixed.

The matching TUID (Track unique ID) for the excerpt should be the ID: 1038200000000002 which belongs to the song "7 Seconds" by Neneh Cherry. (Unfortunately the provided binary demonstration package does not allow resolving the TUIDs to their source files.)

<b>AXMEDIS</b> Editor					
File Edit View Editors/Viewe	rs Players Window	Help			
	à 🖻 👱 🗙 🗲				
AXMEDIS M • •	Resource View	Metadata View	Visual View	Behaviour View	Object •
Full	Rank	TUID	Confidence	Position	<u> </u>
AXOID [urn:axm AXMEDIS Info	1 1038	32000000000000	100.0	1 %	1:36 sec
	2 1038	3200000000000	.33 0.0	1 %	2:17 sec
Resource [nene	3 1038	32000000000002	209 0.0	1 %	3:20 sec
R Resource []	4 1038	320000000000000	0.0	l %	1:48 sec
Resource [d]		320000000000000			2:23 sec
	I	320000000000000			2:24 sec
		3200000000000			1:12 sec
		3200000000000			1:57 sec
		32000000000000			3:25 sec
	10 1038	3200000000000	269 0.0	1 %	2:21 sec
	<b>1</b>				<b>•</b>

# 16.11 Video FP Plugin (FHGIGD)

## 16.11.1 Main functionalities

Video\_fingerprint \_plug-in is a tool that extracts a fingerprint of a given video stream. The video stream can be embedded in a video file (mpeg, wmv, avi, etc...).

This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

## 16.11.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

## 16.11.3 Detailed description of the functionalities and Screenshots

Information related to the installation can be found in file README.txt.

The plug-in can be applied to any video resources, provided this was declared in the mime type attribute of the resource. The output can be any mimetype within the image/\* format. The **PNG** format is recommended. In the package there is a sample mpg file to do a test: <test.mpg>.

Create a new AXMEDIS object and with a right click, add the mpg file as an embedded resource.

XAXMEDIS Editor	
File Edit View Editors/Viewers Players Window Help	
AXMEDIS MPEG21	Resource View Metadata View Visual View Behaviour
Full	
Object [c9b62b89-cdf7-4183-b711-78cace727052]     AXMEDIS Info     Dublin Core     Resource [test]	
li j	10

With a right Click on the resource, select 'Content Processing Plug-ins'. Then you should search for the option 'VideoFingerprintExtraction' and click execute.

After the selection, the following window should appear:

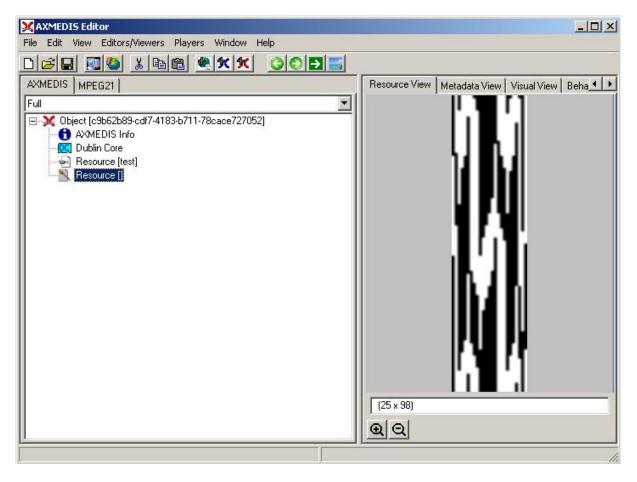
in InputResource:RESOURCE	Resource [test]	The Resource to extract the fingerprint from
in Mimetype:STRING		Mimetype for the output resource
out OutputResource:RESOURCE	Resource [test]	Where the produced resource will be store
in frames:INT32	50	Number of frames to be processed
Result result:STRING		

The recommended value for the Mimetype parameter is: image/png. Make output a new resource, select the desired number of frames to be processed and click execute.

n InputResource:RESOURCE	Resource [test]	The Resource to extract the fingerprint from
n Mimetype:STRING	image/png	Mimetype for the output resource
out OutputResource:RESOURCE	New Resource	Where the produced resource will be stored
n frames:INT32	100	Number of frames to be processed
Result result:STRING		

After receiving the 'success' message, close this window. You should have a new resource in the AXMEDIS editor. With a right click in these resource, select 'Properties' and declare its mimetype as the same you declared on the execution window.

With a double click in the resource, the following graphical of the fingerprint will be showed:



# 16.12 Generic Resource Files FP Plugin (FHGIGD)

## 16.12.1 Main functionalities

GenericFiles\_fingerprint \_plug-in is a tool that calculates a fingerprint (a cryptographic hash) for a given arbitrary file. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

## 16.12.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

## 16.12.3 Detailed description of the functionalities and Screenshots

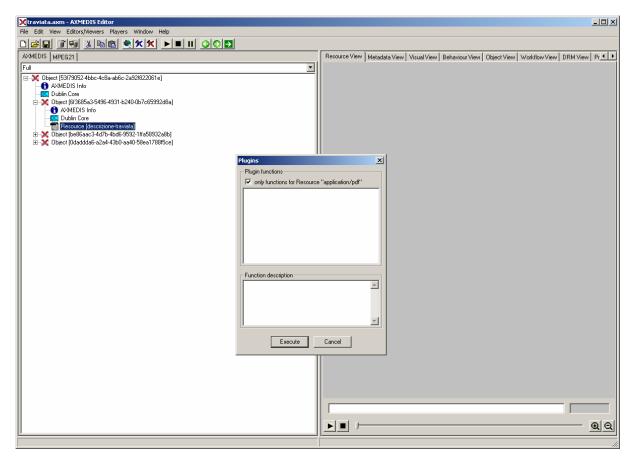
Information related to the installation can be found in file README.txt.

The plug-in can be applied to any content type. The output is a string. In the package there is a test file: test.pdf.

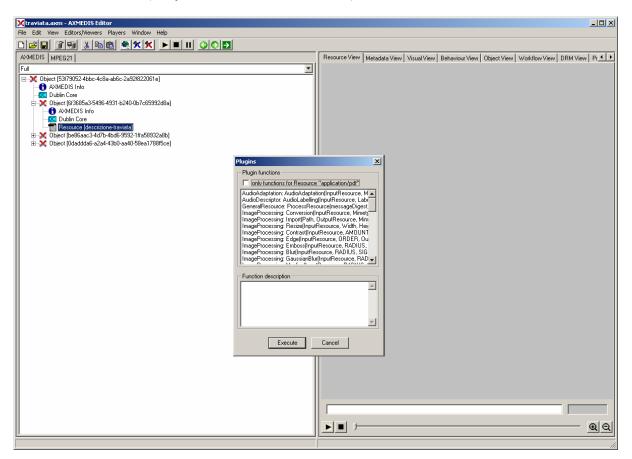
Create a new AXMEDIS object and add the wav file as an embedded resource.

XAXMEDIS Editor	
File Edit View Editors/Viewers Players Window Help	
AXMEDIS MPEG21	Resource View Metadata View Visual View Behaviour
Full	
Object [b814cf0d-1dc5-408d-8ea3-e5b049e093ca]     Object [b814cf0d-1dc5-408d-8ea3-e5b049e093ca]     AXMEDIS Info	
🖳 🛄 Dublin Core	
Resource [test]	
	test

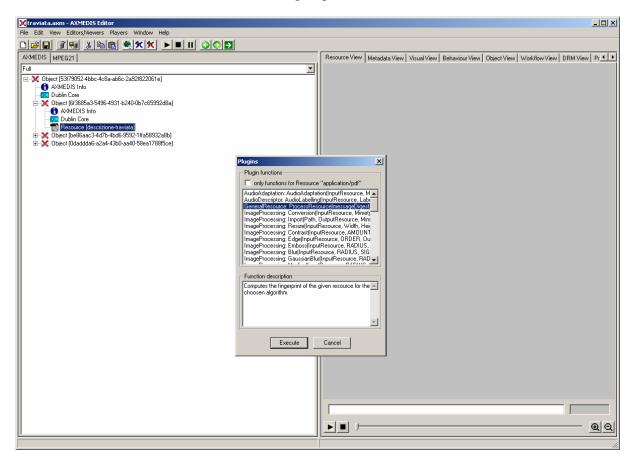
Right Click on the resource and select 'Content Processing Plug-ins'. The following window should appear:



Unselect the check-box ("only functions for Resource XXX"):



Select 'GenericRessource::ProcessResourceMessageDigest'



Select the available algorithm (5: MD5, 6: SHA-1):

🔀 traviata.axm - AXMEDIS Editor	
File Edit View Editors/Viewers Players Window Help	
AXMEDIS MPEG21	Resource View   Metadata View   Visual View   Behaviour View   Object View   Workflow View   DRM View   Pr.
Full	
E-X Object [53/79052-4bbc-4c8a-ab6c-2a92/822061e]	
- 🔂 AXMEDIS Info	
Diject [6f3685a3-5496-4931-b240-0b7c65992d8a]	
AXMEDIS Info     Info     Dublin Core	
Resource [descrizione-traviata]	
GeneralResource: ProcessResource(messageDigest, resource, digestAlgorithm)	   
Parameters	
out messageDigest:STRING Will contain the computed fingerprint ("message digest") as its ASC	II representation.
in resource:RESOURCE Resource descrizion	
	respectively. A debug version of the MD5 module runs faster than one of SHA-1. On the other hand, SHA-1 is more secure.
_ Result	
resultSTRING	
The result of bar, SUCCESS if ok, ERROR followed by a message in case of error	
Execute	Close
	▶■ ;—

So far, the result is calculated and shown in a dialog:

🔀 traviata.axm - AXMEDIS Editor		
File Edit View Editors/Viewers Players Window Help		
AXMEDIS MPEG21	Resource View   Metadata View   Visual View   Behaviour View   Object View   Workflow View   DRM View   Pr ()	
Full		
- Content and the second secon		
Object [6/3685a3-5496-4931-b240-0b7c65992d8a]		
AXMEDIS Info     Info     Dublin Core		
Resource (descrizione-traviata)		
GeneralResource: ProcessResource(messageDigest, resource, digestAlgorithm)	  X	
Parameters		
out messageDigest:STRING F257954BA0CEB22D057 Will contain the computed fingerprint ("message digest") as its ASC	II representation.	
in resource:RESOURCE Resource [descrizion] The resource stream for which the fingerprint is to be computed.		
	respectively. A debug version of the MD5 module runs faster than one of SHA-1. On the other hand, SHA-1 is more secure.	
Result		
result:STRING SUCCESS		
The result of bar, SUCCESS if ok, ERROR followed by a message in case of error		
Execute	Close	
	▶■ ;	
<u>1</u>		

# 16.13 Video Descriptor Plugin (FHGIGD)

## 16.13.1 Main functionalities

MP7 Videodescriptor Extraction plug-in is a tool that extracts a MPEG-7 XML descriptor from a given MPEG video file. This document shows the main functionalities provided by a first prototype of the tool forming a minimal user guide.

## 16.13.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

## 16.13.3 Detailed description of the functionalities and Screenshots

Information related to the installation can be found in file README.txt.

The plug-in can be applied to video MPEG resources, provided this was declared in the mime type attribute of the resource. The output is a XML file containing the descriptor data.

Create a new AXMEDIS object and add a MPEG file as a embedded resource by right clicking on the new created object.

AXMEDIS Editor		_ 🗆 🗙
File Edit View Editors/Viewers Players Window Help		
AXMEDIS MPEG21	Resource View	Metadata View 🛛 🚺 🕨
Full		
□-     ∅ Object []     □-		
AXMEDIS Info		
esource (Ocuts.mpg)		
	00:00:00	
		<u> </u>
		//

Right click on the MPEG resource and select 'Content Processing Plug-ins'

Plugins X	
Plugin functions	
only functions for Resource "video/mpeg"	
AudioFingerprintExtraction: AxAFPExtract(InputResource, Mimetype, Outp MP7 Videodescriptor Extraction: AxMPEG7GoFGop(InputResource, Outp MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource MultimediaAdaptation: AddMultimediaFiles(InputResource, BaseResource MultimediaAdaptation: ToMp4(InputResource, OutputResource) MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResource MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResource) MultimediaAdaptation: CatMultimediaFiles(InputResourceA, InputResource)	
- Function description	
This library implements the GoF/GoP Color descriptor which is used to describe the color characteristics of a collection of video frames (and a collection of images). Consists of one primary and four secondary attributes. Since the feature vector is short, a simple absolute distance or squared distance	
Execute Cancel	

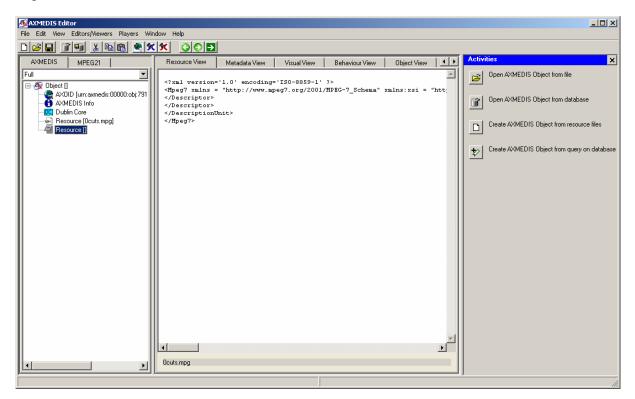
In the upcoming menu select 'MP7 Videodescriptor Extraction: AxMPEG7GoFGop'. Press "Execute" and the following window should appear:

MP7 Videodescriptor Extraction: AxMPEG7GoFGop(InputResource, OutputResource, NoOfMatches, Coding 🗙			
[	Parameters		
	in InputResource:RESOURCE	Resource (Ocuts.mpg 💌	A Video File to extract the descriptor from
	out OutputResource:RESOURCE	Resource (Ocuts.mpg	A XML File containing the descriptor(choose new resource)
	in NoOfMatches:INT32	8	Default number of matches
	in CodingMode:INT32	0	0= DDL, 1=BiM, 2= Binary
	in AggregationMode:INT32	1	Three modes: 1=Average, 2=Median, 3=Intersection
	in NumberOfBitplanesDiscarded:INT32	0	0, 1, 2, 3, 4, 6 or 8
	in NumberOfCoefficients:INT32	64	16, 32, 64, 128 or 256
	Result		
	result:STRING		
	The result the operation, SUCCESS if ok, ERROR followed by a message in case of error		
	Execute Close		

The present configuration should be optimal for most use cases. Choose as the output a new resource and click "Execute". A console window will appear and stay for a few seconds. This is normal due to the nature of the used original Extraction module.

MP7 Videodescriptor Extraction: AxMPEG7GoFGop(InputResource, OutputResource, NoOfMatches, Coding 🗙			
Г	Parameters		
	in InputResource:RESOURCE	Resource (Ocuts.mpg 💌	A Video File to extract the descriptor from
	out OutputResource:RESOURCE	New Resource 📃	A XML File containing the descriptor(choose new resource)
	in NoOfMatches:INT32	8	Default number of matches
	in CodingMode:INT32	0	0= DDL, 1=BiM, 2= Binary
	in AggregationMode:INT32	1	Three modes: 1=Average, 2=Median, 3=Intersection
	in NumberOfBitplanesDiscarded:INT32	0	0, 1, 2, 3, 4, 6 or 8
	in NumberOfCoefficients:INT32	64	16, 32, 64, 128 or 256
	- Result		
	result:STRING Success!		
	The result the operation, SUCCESS if ok, ERROR followed by a message in case of error		
	(Execute Close		

After receiving the "success"-message, close the window and you should have a text resource in the AXMEDIS editor containing the XML descriptor data. It is advised to edit the objects properties and add the original resource filename



# 16.14 Video Adaptation Plugin (FHGIGD)

NOT INCLUDED IN THIS VERSION

## 16.14.1 Main functionalities

NOT INCLUDED IN THIS VERSION

# 16.14.2 Relationship with other tools

NOT INCLUDED IN THIS VERSION

# 16.14.3 Detailed description of the functionalities and Screenshots

NOT INCLUDED IN THIS VERSION

# 16.15 Workflow Editor Plugin (IRC)

## 16.15.1 Main functionalities

The Workflow Editor Plug-in is a library used by AXMEDIS Editor to enable communication with AXMEDIS workflow engine. It exposes following functions:

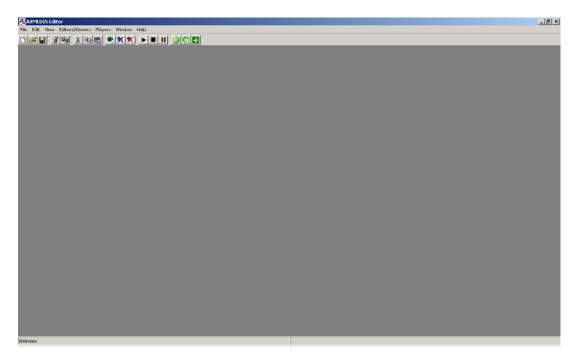
Functionality	Details
Notification of Completion	This method is invoked by the editor to send back the notification towards workflow engine for the completion of previously issues asynchronous request.
Get Workflow Information	This method is invoked by the application to request workflow information from workflow engine.
Editing of Object	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will load the specified object (AXOID) and will allow the user to edit the object in the AXMEDIS Editor.
View Object Attributes	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will allow the workflow engine to retrive the object attributes for the object specified by the AXOID.
Add History Information	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will allow the workflow engine to add the object history for the object specified by the AXOID.

## 16.15.2 Relationship with other tools

The Workflow Editor Plug-in is loaded by the AXMEDIS Editor. This plug-in communicates directly with AXMEDIS Workflow Request Gateway and AXMEDIS Workflow Response Gateway. For Microsoft Biztalk server, this plug-in communicates directly with the workflow engine.

## 16.15.3 Detailed description of the functionalities and Screenshots

The functions of this plug-in are invoked by AXMEDIS Editor. Also the Functions can be invoked by the workflow engine automatically. The following Screenshots shows the empty AXMEDIS Editor.



## Figure 1: Empty AXMEDIS Editor

When the Workflow Editor Plug-in receives request from Workflow Engine for the editing of Object, it will load the specified object from the AXMEDIS Database or if the AXOID is not specified then it will create a new object as shown in the following figure:

AXMEDIS Editor		x
File Edit View Editors/Newers Players Window Help		
AVMEDIS MPEG21	Resource View Metadata View Visual View Behaviour View Object View Walkflow View DRM View Protection View	
XonEUS   MPE UZ1   Ful G @ Divine II A 400D lum xmmds:00000.obj5se2de69-412o-400r92o1-s/46/c4b/275   A 204EDIS Info D Ublin Core	TREVOLGE VIEW   Metadoska View   Viewal View   Benvindar View   Ubject View   Wolkinger View   Protection View	
	00.00.00	
	E	21
1	. 22	2

## Figure 2: Creation of new Object following the Workflow Request

The user can also select the "Workflow View" tab from the Editor. This will display the workflow related information for the object currently being edited/viewed as shown in following figure.

KAXMEDIS Editor	X
File Edit View Editors/Viewers Players Window Help	
AVMEDIS MPEG21	Resource View Metadata View Visual View Behaviour View Object View Workflow View DBM View Protection View
Ful	- Workflow Information
	Process:
- C Dublin Core	Activity
	Priority:
	Statur
	Actor
	AMRQID:
	Request Workflow Information from Workflow Server
	Heguest workdow Information from workdow Server
	worktow server
	Process Process
	Worklist Roles Applications definitions instances Updates Contents Properties Security Undo
	OpenFlow at /Prove WE/workflow Help!
	OpenFlow at /Prove_WF/workflow Help!
	West Bat
	Work list
	This page represents the to-do list of a given actor (the currently logged zope user). The to-do list is the collection of all instances the actor can work on, ordered by activity the instance is pending
	on. Clicking on an instance will start its activity application.
	🗷 Logged user:
	name admin
	Manager
	roles Authenticated
history and the second s	

Figure 3: The Workflow View for the Object

When the editing of Object is completed. The user can notify workflow by selecting "Notify Workflow Activity Completion" command from the File Menu as shown in the following figure. This will send a notification signal to workflow engine.

AXMEDIS Editor													_ 8 ×
File Edit View Editors/Viewers Pla	ayers Window	Help											
New	Ctri+N (												
Open	C00+0 -			1.5	for a constant	for ur	Behaviour View	Louis are	Jacked Service		In	1	
Close	Alt+C			ource vies addiow Infr		w Visual View	Behaviour View	I Object View	WORSDW VI	DEM VIEW	Protection Vie	**	
Save Save as	Ctrl+S Ctrl+A				011100001								
		12b-430f-92a1-af46fc4bf275]											
Notify Workflow activity completion		120400-5281-846(040)275)		cess:									
Open from database			Ad	ivity:									
Upload into Database			Pri	eity:									
Configuration			Ste	tus:									
Plugins			Ac	oc 🗌									
Recent files	•		AX	RQID:									
Ext	Ctrl+E		B	ow steues	rkflow Informatio	n from Workflow	w Server						
			-144	xkflow Ser									
					-		T Durante	Duncase					
				Work	list Roles	Application	Process definitions	Process instances	Updates	Contents	Properties	Security	Undo
				🗀 Ope	enFlow at 🖊	Prove_WF	F/workflow					H	elp!
				Wc	ork li	st							
				This na	ae rennesent	ts the to-d	lo list of a giv	en actor (B	he current	ly logged a	nne user). T	he to-do l	ict
				is the c	ollection of	all instance	es the actor o	an work on	, ordered l	by activity	the instanc	e is pendin	g
				on. Clic	king on an ir	nstance wil	ll start its act	ivity applica	ation.				
				_									
				🖲 Lo	ogged	user:							
					_								
				name	admin								
						_							
				roles	Manager								
					Authentica	ted							-1
<u>j</u>													
🎝 Start 😟 💿 🙆 " 😼 orlat	Leve Meet	n [Pausa	- chumpou				it 🛛 🗛 🗛 🕅	enversite	_				a 12:02
🚛 scare 👿 💟 🕲 " 🔮 onut	c - nome - Plozilis	Pr White	C:IMINDOM	stavaceura.	Z Docur	nenta - Microso	*** AXM	EDIS Editor			" 🕲 🕓	T T T T T T	12:02

Figure 4: Sending Notification of Completion to Workflow Engine

# 16.16 Workflow Rule Editor Plugin (IRC)

## 16.16.1 Main functionalities

The Workflow Rule Editor Plug-in is a library used by AXCP Rule Editor and AXMEDIS PnP Editor to enable communication with AXMEDIS workflow engine. It exposes following functions:

Functionality	Details			
Notification of Completion	This method is invoked by the editor to send back the notification towards workflow engine for the completion of previously issues asynchronous request.			
Editing of AXCP Rule	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will load the AXCP Rule editor with the specified Rule Header and will allow the user to edit the AXCP Rule in the AXCP Rule Editor.			
Edit PnP Programme	This method is invoked through a webservice call coming from Workflow Request Gateway. This method will load the AXMEDIS PnP editor with the specified Programme Header and will allow the user to edit the AXMEDIS PnP Programme in the PnP Editor.			

## 16.16.2 Relationship with other tools

The Workflow Rule Editor Plug-in is loaded by the AXCP Rule Editor and PnP Editor. This plug-in communicates directly with AXMEDIS Workflow Request Gateway and AXMEDIS Workflow Response Gateway. For Microsoft Biztalk server, this plug-in communicates directly with the workflow engine.

## 16.16.3 Detailed description of the functionalities and Screenshots

The functions of this plug-in are invoked by AXCP Rule Editor. Also the Functions can be invoked by the workflow engine automatically. The following Screenshots shows the empty AXCP Rule Editor.

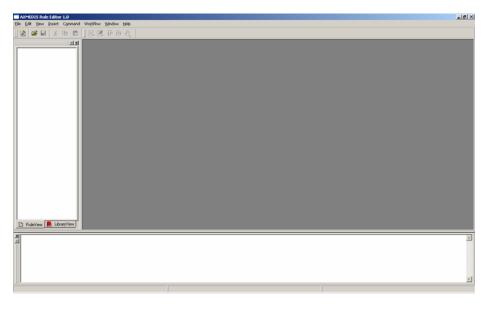


Figure 1: Empty AXCP Rule Editor

When the Workflow Rule Editor Plug-in receives request from Workflow Engine for the editing of a Rule, it will load the specified XML Rule from the Workflow Request as shown in the following figure:

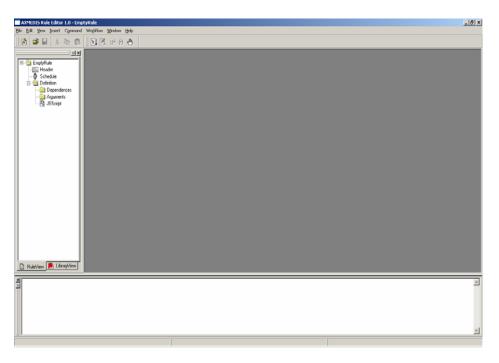


Figure 2: Rule Loaded from Workflow Engine

When the editing of the rule is completed. The user can notify workflow by selecting "Notify Workflow Activity Completion" command from the Workflow Menu as shown in the following figure. This will send a notification signal to workflow engine.

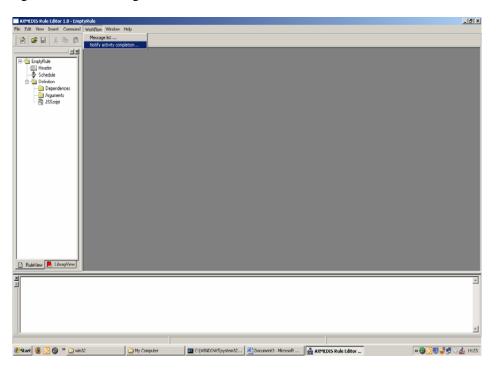
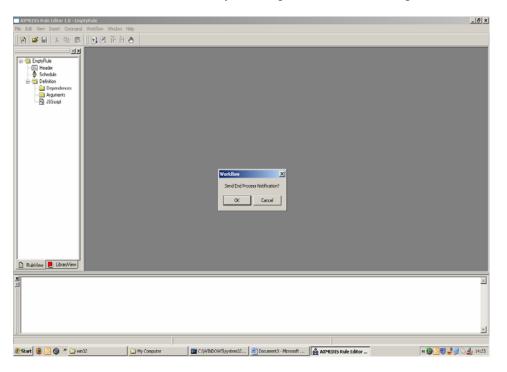


Figure 3: Sending of Notification of Completion



The User can confirm the notification command by selecting 'OK' from the message box.

**Figure 4: Confirmation for the Notification** 

The functions of this plug-in can also be invoked by PnP Editor. Also the Functions can be invoked by the workflow engine automatically. The following Screenshots shows the empty PnP Editor.

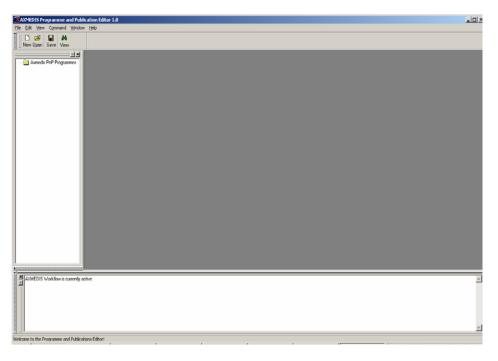


Figure 5: Empty PnP Editor

When the Workflow Rule Editor Plug-in receives request from Workflow Engine for the editing of a PnP Programme, it will load the specified XML from the Workflow Request as shown in the following figure:

Ele Edit View Command Windo		
New Open Save View		
E Comple Programme 4 (	Benergia Programme 4         Hender       Schedule       Programme 1         Grannial       Producer       Comment         Programme Name       Example Programme 4         AVRID       programme 1         Rule Vesion       1.0         Rule Type       AVRP         Date of Production       2005:06:22         Last Modification       2006:06:27         Work Job ID       #dmin1151418695:9:0	
AddEDIS Workflow is currently a		ک ۲

Figure 6: Programme Loaded from Workflow Engine

When the editing of the Programme is completed. The user can notify workflow by Activating the Programme in the PnP Engine as shown in the following figure. This will send a notification signal to workflow engine.

AXMEDIS Programme and Publication Editor 1.0	× DL
File Edit View Command Window Help	
Activate programme Alt+A New Open Programme test	
Stop programme Alt+S	
contraction of the second seco	
Example Programme 4	
Header     General Producer Comment     Schedule	
Schedule     Programme Name Example Prog	aanne 4
AX810 prp 444444	444444
Bule Version 1.0	
Rule Type AXPhP	
Date of Production 2005-06-22	
Last Modification 2006-06-27	
Work Job ID admin115141	3695.9:0
X ANALEDIC Markeline is supported active	
AVMEDIS Workflow is currently active	
	<u>×</u>
Activates the programme	
🐮 Start 😻 🗿 🍘 🦇 🔤 C:\WINDOWS\sy 🔯 Microsoft PowerP.	🔁 win32 🛛 🛃 AXMEDIS Program 🛃 Document2 - Micr 👹 AXMEDIS Program 🔯 Ci(Axmedis CVS) 🛛 🛪 😇 🥥 👰 🛒 🙄 😂 🛠 🤀 🚛 15:34

**Figure 7: Sending of Notification of Completion** 

# 16.17 Workflow Engine Plugin (IRC)

The Workflow Engine Plug-in is loaded by the AXCP Scheduler and by PnP Engine. Generally the functions offered by this plug-in are invoked automatically by these tools without the intervention of the User.

# 16.17.1 Main functionalities

Functionality	Details			
Notification of Completion	This method is invoked by the editor to send back the notification towards workflow engine for the completion of previously issues			
	asynchronous request.			
Workflow Process Request	This method is invoked by the PnP engine to send request for activation			
<b>X</b> , <b>11 1 A</b> , <b>*</b> ,	of a workflow process identified the supplied processID.			
Install and Activate	This method allows the workflow engine to install a new rule in the AXCP engine. The ruleID of the newly installed rule will be returned as ruleID.			
Run Rule	This method allows the workflow engine to run a rule in the AXCP engine as per the supplied parameters.			
Deactivate Rule	This method allows the workflow engine to deactivate a rule in the AXCP engine as per the supplied parameters.			
Suspend Rule	This method allows the workflow engine to suspend a rule in the AXCP engine as per the supplied parameters.			
Pause Rule	This method allows the workflow engine to pause a rule in the AXCP engine as per the supplied parameters.			
Kill Rule	This method allows the workflow engine to kill a rule in the AXCP engine as per the supplied parameters.			
Remove Rule	This method allows the workflow engine to remove a rule from the AXCP engine as per the supplied parameters.			
Resume Rule	This method allows the workflow engine to resume a rule in the AXCP engine as per the supplied parameters.			
Get Rule Status	This method allows the workflow engine to know the status of the a rule in the AXCP engine as per the supplied parameters.			
Get Rule Log	This method allows the workflow engine to know the run log for a rule in the AXCP engine as per the supplied parameters.			
Get List of Rules	This method allows the workflow engine to retrieve the list of currently installed rules in the AXCP engine as per the supplied parameters.			
Get Rule	This method allows the workflow engine to retrieve the rule schema from the AXCP engine as per the supplied parameters.			
Status Request to PnP Engine	This method allows the workflow engine to retrieve the status of the PnP engine.			
Suspend PnP Programme	This method allows the workflow engine to suspend a program in the PnP engine.			
Abort PnP Programme	This method allows the workflow engine to abort a program in the PnP engine.			
Resume PnP Programme	This method allows the workflow engine to resume a program in the PnP engine.			
Activate PnP Programme	This method allows the workflow engine to activate a program in the PnP engine.			
Workflow Notification	This method allows the workflow engine to send the notification to the PnP engine for the previously issues request to activate a process.			

# 16.17.2 Relationship with other tools

The Workflow Engine Plug-in is loaded by the AXCP Scheduler and PnP Engine. This plug-in communicates directly with AXMEDIS Workflow Request Gateway and AXMEDIS Workflow Response Gateway. For Microsoft Biztalk server, this plug-in communicates directly with the workflow engine.

## 16.17.3 Detailed description of the functionalities and Screenshots

The functionality offered by this plug-in is hidden from the user. Hence there are no screenshots for it.

# 16.18 Ringtone Adaptation Plugin (IRC)

## 16.18.1 Main functionalities

Ringtone Adaptation refers to the adaptation of ringtones of popular formats to enhance usability and manage the variable delivery to cater for heterogeneous client devices and user requirements on-demand. It can be used to transcode the ringtones depending on the client devices. For eg some mobile phones may support only low bit rate ringtones while others will be having restrictions on the size of the ringtone.

## 16.18.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

## 16.18.3 Detailed description of the functionalities and Screenshots

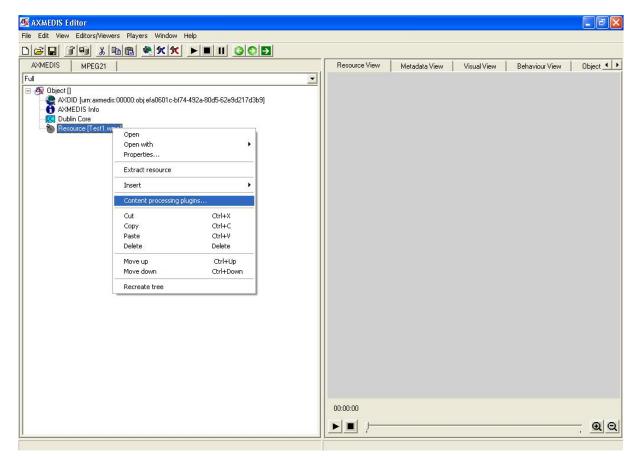
A step by step Example showing how to use the functions is given below.

# 16.18.3.1 Convert Function

**Description:** Used to Convert a ringtone to different formats. The formats supported currently are x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

### How to use:

Load an embedded resource (audio/ringtone file) into the AXMEDIS Editor Right click on the resource and select Content processing plugins



It will pop up a new window showing the different content process plugins available for the particular resource, in our case it is ringtone.

Plugins
Plugin functions           Image: style="text-align: center;">
AudioAdaptation: FFAudioTranscoding(InputResource, Mimetype, OutputResource, OutputSamplingRate, OutputNumChannels, OutputBitRate, Re- RingtoneAdaptation: convert(InputResource, Mimetype, OutputResource) RingtoneAdaptation: getInfo(InputResource, SamplingRate, NumChannels, BitRate, Duration) RingtoneAdaptation: clip(InputResource, ContputResource, Mimetype, ReadStartingTime, ReadEndingTime) Function description
Convert from one format to another
Execute Cancel

Select the Convert function to convert the ringtone to any popular format. The formats supported are x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

It will take you to the next screen where you can specify the various parameters for converting the ringtone. Once you enter the parameters and click execute, it will convert the ringtone to the appropriate format. If the ringtone conversion is successful then in result's space you can see SUCCESS or else it will return Error along with an error message.

🚳 AXMEDIS Editor						_ ð X
File Edit View Editors/Viewers Players Window He	P					
AXMEDIS MPEG21		Resource View	Metadata View	Visual View	Behaviour View	Object 🔺 🕨
Full						
Object []     AXOID [urr:axmedis:00000:objefa0601c-bi74-4     AXOID [urr:	RingtoneAdaptation:         convert(Input           Parameters         in InputResource:RESOURCE         Resource           in Mimetype:STRING         audio/x           out OutputResource:RESOURCE         New Re           - Result         result:STRING         SUCCESS           The result of import, SUCCESS if ok, ERRO         SUCCESS if ok, ERRO	mpeg Mime ssource V When	Resource to be conver type for output resource the produced resource	ted e		
		00:00:00				
						QQ

The description of each parameter is given below.

### InputResource

Description: The Resource to be converted Paramater Type AxResource Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x- ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

Ranges:

#### Mimetype

Description: Mimetype for output resource Paramater Type *string* Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg, x-aiff, x-way, basic, x-vorbis, x-ac3

### OutputResource

Description: Where the produced resource will be stored Paramater Type *AxResource* Default Value: Constraints:

#### Result

Result type: *string* Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.18.3.2 Resample Function

**Description:** Resamples the input file (i.e. changing frequency, bitrate, sampling rate etc)

RingtoneAdaptation: resamp	ole(InputResource, M	imetype, OutputResource, OutputSamplingRate, OutputNumChann 🔀
Parameters in InputResource.RESOURCE in Mimetype:STRING	Resource [Test1.wm.	The Resource to be converted Mimetype for output resource
out OutputResource:RESOURCE in OutputSamplingRate:UINT32 in OutputNumChannels:UINT16	New Resource  44100 2	Where the produced resource will be stored Sampling rate of the output audio file (default: sampling rate of the input) Number of channels of the output audio file (default: number of channels of the input)
in OutputBitRate:UINT16	192	Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb)
result:STRING SUCCESS		
The result of import, SUCCESS if o	k, ERROR followed by a m	lessage in case of error
	[	Execute Close

#### InputResource

Description: The Resource to be converted Paramater Type RESOURCE Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

# Ranges:

## Mimetype

Description: Mimetype for output resource Paramater Type STRING Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg, x-aiff, x-way, basic, x-vorbis, x-ac3

### **OutputResource**

Description: Where the produced resource will be stored Paramater Type RESOURCE Default Value: Constraints:

#### OutputSamplingRate

Description: Sampling rate of the output audio file (default: sampling rate of the input) Paramater Type UINT32 Default Value: Constraints: Resource Type: Ranges:

#### **OutputNumChannels**

Description: Number of channels of the output audio file (default: number of channels of the input) Paramater Type UINT16 Default Value: Constraints: Resource Type: Ranges:

## **OutputBitRate**

Description: Bit rate of the output audio file - Only applies to compressed audio file formats (default: 64 kb) Paramater Type UINT16 Default Value: Constraints: Resource Type: Ranges:

#### Result

Result type: STRING Result Description: The result of import, SUCCESS if ok, ERROR followed by a message in case of error

## 16.18.3.3 getInfo Function

Description: Get all the information about the input Ring Tone

nfo(InputResource, S	amplingRate , NumChannels , Bi 🔀
Resource [Test1.wm -	The Resource to be converted Sampling rate of the input ring tone
2	Number of channels of the input ring tone
128 0:2:5:1	Bit rate of the input ring tone - (default: 64 kb) Duration of the Ringtone File
	in a base of some
	wed by a message in case of error
	Resource [Test1.wm * 44100 2 128 0:2:5:1

#### InputResource

Description: The Resource to be converted Paramater Type RESOURCE Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

Ranges:

### SamplingRate

Description: Sampling rate of the input ring tone Paramater Type UINT32 Default Value: Constraints: Resource Type: Ranges:

### NumChannels

Description: Number of channels of the input ring tone Paramater Type UINT16 Default Value: Constraints: Resource Type: Ranges:

## BitRate

Description: Bit rate of the input ring tone - (default: 64 kb) Paramater Type UINT16 Default Value: Constraints: Resource Type: Ranges:

### Duration

Description: Duration of the Ringtone File (In the format Hours: Mins: Secs: milliseconds) Paramater Type STRING Default Value: Constraints: Resource Type: Ranges:

#### Result

Result type: STRING

Result Description: The result of import, SUCCESS if ok, ERROR followed by a message in case of error

# 16.18.3.4 Clip Function

Description: Clips the file for the specified time (for e.g. reducing it to a 30 sec clip)

RingtoneAdaptation: clip(In Parameters	putKesource, Outpu	tResource , Mimetype , ReadStartingT 📡
in InputResource:RESOURCE out OutputResource:RESOURCE in Mimetype:STRING	Resource [Test1.wmk   New Resource  audio/x-mpeg	The Resource to be converted Where the produced resource will be stored Mimetype for output resource
in ReadStartingTime:FLOAT in ReadEndingTime:FLOAT	0.0	Starting time for the clip(default: beginning of the file) Ending time for the clip (default: end of the file)
Result result:STRING SUCCESS The result of import, SUCCESS if o	k, ERROR followed by a n	nessage in case of error
r ne result or import, SULLESS if o	K, ERRUR followed by a n	Close

#### InputResource

Description: The Resource to be converted Paramater Type RESOURCE Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg (.mp3), x.aiff (.aif, .aiff), x-wav (.wav), basic (.au, .snd), x-ms-wma (.wma), x-vorbis (.ogg), x-pn-realaudio (.ra, .ram)

Ranges:

#### **OutputResource**

Description: Where the produced resource will be stored Paramater Type RESOURCE Default Value: Constraints:

#### Mimetype

Description: Mimetype for output resource Paramater Type STRING Default Value: Constraints: Resource Type: audio Resource Format: x-mpeg, x-aiff, x-way, basic, x-vorbis, x-ac3

#### ReadStartingTime

Description: Starting time for the clip(default: beginning of the file) Paramater Type FLOAT Default Value: Constraints: Resource Type: Ranges:

# ReadEndingTime

Description: Ending time for the clip (default: end of the file) Paramater Type FLOAT Default Value: Constraints: Resource Type: Ranges:

#### Result

Result type: STRING Result Description: The result of import, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19 Image Processing Plugin (DSI)

# 16.19.1 Main functionalities

The image processing plug-in allows adapting image resources to various use case. For example it can be used to convert different image formats, to apply various effects, to resize, to mirror, etc. In total the plug-in is composed of forty-one functions that are:

- **Conversion**, to convert the image
- Import, to import an image
- **Resize**, to resize the image
- **Contrast**, to change the image contrast
- Edge, to highlight edges of the image
- Embross, to highlight edges with 3D effect
- **Blur**, to blur the image
- GaussianBlur, to apply a Gaussian Blur to the image
- Median, to apply a median filter to the image
- **Mirror**, to mirror the image
- Noise, to add noise in the image
- Despeckle, to reduce the noise from the image using the despeckle filter
- Equalize, to apply an histogram equalization to the image
- Enhance, to minimize the noise of the image
- ExtractChannel,
- GrayScale, to convert a coloured image to grayscale
- Magnify, to scale up the image
- Minify, to scale down the image
- Modulate, to modulate hue, saturation, and brightness of the image
- Monochrome, to create a monochrome image
- Negate, to negate colours in the image
- Normalize, to increase contrast by normalizing the pixel values
- **OilPaint**, to create a image looks like oil painting
- Quality, to change the JPEG/MIFF/PNG compression
- Quantize, to set the preferred number of colours in the image
- Raise, to highlight or dark the edges of an image to give a 3D raised or lowered effect
- ReduceNoise, to reduce the noise of the image
- **Replace**, to replace the image
- **FloodFill**, to apply a flood-fill texture
- Rool, to roll the image by a specified number of columns and rows
- Rotate, to rotate the image specifying a number of degrees
- Scale, to scale the image by using a specified ratio
- Shear, to create a parallelogram by sliding the image by X of Y axis
- Shade, to shade the image using distant light source
- Spread, to spread pixels randomly
- SetOpacity, to set the opacity of the image
- SubImage,
- GetInfo, to see information about the image
- SetMaskColour,
- **Paste**, to paste the image
- **Test,** to test the image

A More detailed description of these functionalities is available in section 16.19.3

#### 16.19.2 Relationship with other tools

This tool is implemented as a plug-in. Like other plug-ins, its functionality is available via the AXMEDIS Editor and the AXMEDIS Processing Engine.

#### 16.19.3 Detailed description of the functionalities and Screenshots

Here's an example on how to use the plug-in with AXMEDIS Editor.

The plug-in can be applied to all images resources in all formats embedded into an AXMEDIS object. Selecting one resource in the tree and right clicking, select **Content Processing plugins...** 

🌆 kandinsky-exan	iple.axm - AXMEDIS	Editor
File Edit Resource V	iewer Window Help	
1 🖻 🖬 🖬 🗊		🗶 🛠 🛠
AXMEDIS View	MPEG21 View	
Full		
- T AXMEDIS - C Dublin Co	Info e [kandinskii_nortrait.ing]	298e1-a8ab-43f1-8bea-2808
	Open Open with	
	Edit Properties	
	Insert	•
	Content processing p	olugins
	Extract resource	
	Cut	Ctrl+X
	Сору	Ctrl+C
	Paste	Ctrl+V
	Delete	Delete
	Move up	Ctrl+Up
	Move down	Ctrl+Down
	Refresh	

A new dialog will appear will the list of available functionalities. Selecting a functionality will a appear a brief description in the **Function description** box.

Plugins 🔀
Plugin functions ✓ only functions for Resource "image/jpeg"
ImageProcessing: Conversion(InputResource, Mimet ImageProcessing: Import(Path, OutputResource, Mimet ImageProcessing: Resc[InputResource, WithIt ImageProcessing: Edge[InputResource, MODER, OL ImageProcessing: Edge[InputResource, ADIUS, ImageProcessing: Bust(InputResource, RADIUS, ImageProcessing: Bust(InputResource, RADIUS, SIG ImageProcessing: Bust(InputResource, RADIUS, SIG ImageProcessing: GaussianBlut(InputResource, RADIUS, ImageProcessing: Mitro(InputResource, KeepDirectii ImageProcessing: Noise(InputResource, TYPE, Outper Function description
Resizes an image
Execute Cancel

Selecting the appropriate function and pressing the **Execute** button a new dialog appears with a number of fields to be filled-in. the aspect of the dialog and the number of fields is different for each function.

Please, refer to next sections for a detailed description of the values needed for each functionalities.

In the **Output Resource** cascading menu is possible to decide if the function will produce a new resource or will overwrite the old one.

Here's a brief analysis of image processing functionalities.

Since the image processing plug-in is based on the GPL source code of ImageMagick, for a more detailed description of these functionalities, please refer to the following links:

- ImageMagick website: <u>http://www.imagemagick.org/script/index.php</u>
- The Definitive Guide to ImageMagick by Michael Still, available on: <u>http://www.amazon.com/Definitive-Guide-ImageMagick/dp/1590595904/sr=8-</u> <u>1/qid=1157030444/ref=pd\_bbs\_1/104-0533291-5821542?ie=UTF8</u>
- Examples of ImageMagick usage are available here: <u>http://www.cit.gu.edu.au/~anthony/graphics/imagick6</u>

# 16.19.3.1 Conversion

STRING Conversion (RESOURCE InputResource, STRING Mimetype, RESOURCE OutputResource)

Version: 1.0	
Description: Convert an image	
Parameter List	
Name: InputResource	
<b>Description:</b> The Resource to be converted	
Paramater Type RESOURCE	
Default Value:	
Constraints:	
Resource Type: image	
Resource Format: jpeg gif png	
Ranges:	
Name: Mimetype	
Description: Mimetype for output resource	
Paramater Type STRING	
Default Value:	
Constraints:	
Name: OutputResource	
Description: Where the produced resource will be stored	
Paramater Type RESOURCE	
Default Value:	
Constraints:	
Result: Result	
Result type: STRING	
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a messa	ige in
case of error	

# 16.19.3.2 Import

STRING Import (STRING Path, RESOURCE OutputResource, STRING MimeType)

Version: 1.0 Description: Import an image Parameter List Name: Path Description: Path to the image Paramater Type STRING Default Value: Constraints: Name: OutputResource

Description: Where the imported resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: MimeType **Description:** Test **Paramater Type STRING Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.3 Resize

STRING Resize (RESOURCE InputResource, INT32 Width, INT32 Height, BOOLEAN KeepAspectRatio, RESOURCE OutputResource )

Version: 1.0 Description: Resizes an image **Parameter List** Name: InputResource Description: The Resource to be resized **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: Width **Description:** The new image width **Paramater Type INT32 Default Value: Constraints:** Name: Height Description: The new image height Paramater Type INT32 **Default Value: Constraints:** Name: KeepAspectRatio Description: Indicates to preserve image aspect ratio or not **Paramater Type BOOLEAN Default Value: Constraints:** Name: OutputResource Description: Where the resized resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING AXMEDIS

**Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.4 Contrast

STRING Contrast (RESOURCE InputResource, INT32 AMOUNT, RESOURCE OutputResource)

Version: 1.0 **Description:** Change image contrast **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: AMOUNT Description: The contrast amount **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.5 Edge

STRING Edge (RESOURCE InputResource, INT32 ORDER, RESOURCE OutputResource)

Version: 1.0

**Description:** Edge image (highlight edges in image). The radius is the radius of the pixel neighbourhood.. Specify a radius of zero for automatic radius selection.

**Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: ORDER **Description:** The Order Edge **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource AXMEDIS

**Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.6 **Emboss**

STRING Emboss (RESOURCE InputResource, INT32 RADIUS, INT32 SIGMA, RESOURCE OutputResource)

#### Version: 1.0

**Description:** Emboss image (highlight edges with 3D effect). The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels.

#### **Parameter List**

Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: RADIUS **Description:** The Radius Emboss **Paramater Type INT32 Default Value: Constraints:** Name: SIGMA **Description:** The sigma Emboss Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.7 Blur

STRING Blur (RESOURCE InputResource, INT32 RADIUS, INT32 SIGMA, RESOURCE OutputResource)

Version: 1.0

Description: Blur image. The radius parameter specifies the radius of the Gaussian, in pixels, not counting the center pixel. The sigma parameter specifies the standard deviation of the Laplacian, in pixels. AXMEDIS 295

Parameter List
Name: InputResource
Description: The Resource to be manipulated
Paramater Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: RADIUS
Description: The Radius Blur
Paramater Type INT32
Default Value:
Constraints:
Name: SIGMA
Description: The sigma Blur
Paramater Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Paramater Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
<b>Result Description:</b> The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.8 GaussianBlur

STRING GaussianBlur (RESOURCE InputResource, INT32 RADIUS, INT32 SIGMA, RESOURCE OutputResource )

Version: 1.0 Description: GaussianBlur the image Parameter List Name: InputResource

**Description:** Gaussian blur image. The number of neighbor pixels to be included in the convolution mask is specified by 'width\_'. For example, a width of one gives a (standard) 3x3 convolution mask. The standard deviation of the gaussian bell curve is specified by 'sigma'.

Paramater Type RESOURCE Default Value: Constraints: Resource Type: image Resource Format: jpeg gif png Ranges: Name: RADIUS Description: The Radius GaussianBlur Paramater Type INT32 Default Value: Constraints: Name: SIGMA Description: The sigma GaussianBlur Paramater Type INT32 Default Value: Constraints: Name: OutputResource Description: Where the manipulated resource will be stored Paramater Type RESOURCE Default Value: Constraints: Result Result Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.9 Median

STRING Median (RESOURCE InputResource, INT32 RADIUS, RESOURCE OutputResource)

Version: 1.0 **Description:** Median the image **Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image Resource Format: jpeg gif png **Ranges:** Name: RADIUS **Description:** The Radius Median Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

### 16.19.3.10 Mirror

STRING Mirror (RESOURCE InputResource, BOOLEAN KeepDirection, RESOURCE OutputResource)

Version: 1.0 Description: Mirror the image Parameter List Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE Default Value: Constraints:

**Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: KeepDirection Description: The KeepDirection Mirror **Paramater Type BOOLEAN Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.11 Noise

STRING Noise (RESOURCE InputResource, INT32 TYPE, RESOURCE OutputResource)

Version: 1.0 **Description:** Noise the image **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type** RESOURCE **Default Value: Constraints: Resource Type:** image Resource Format: jpeg gif png **Ranges:** Name: TYPE **Description:** The Type Noise Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.12 Despeckle

STRING Despeckle (RESOURCE InputResource, RESOURCE OutputResource )

Version: 1.0 Description: Despeckle image (reduce speckle noise) Parameter List AXMEDIS

Name: InputResource
<b>Description:</b> The Resource to be manipulated
Paramater Type RESOURCE
Default Value:
Constraints:
Resource Type: image
<b>Resource Format:</b> jpeg gif png
Ranges:
Name: OutputResource
Description: Where the manipulated resource will be stored
Paramater Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
<b>Result Description:</b> The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.13 Equalize

STRING Equalize (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0

**Description:** Equalize image (histogram equalization) **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type: STRING** Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.14 Enhance

STRING Enhance (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0 **Description:** Enhance image (minimize noise) **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints:** 

Resource Type: image Resource Format: jpeg gif png Ranges: Name: OutputResource Description: Where the manipulated resource will be stored Paramater Type RESOURCE Default Value: Constraints: Result: Result Result: Result Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.15 ExtractChannel

STRING ExtractChannel ( RESOURCE InputResource, INT32 CHANNEL, RESOURCE OutputResource )

Version: 1.0 **Description:** ExtractChannel the image **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: CHANNEL **Description:** The Channel ExtractChannel **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.16 Grayscale

STRING Grayscale (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0 Description: Grayscale the image Parameter List Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE Default Value: Constraints: Resource Type: image Resource Format: jpeg gif png Ranges: Name: OutputResource Description: Where the manipulated resource will be stored Paramater Type RESOURCE Default Value: Constraints: Result Value: Result: Result Result type: STRING Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.17 Magnify

STRING Magnify (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0 Description: Magnify image by integral size **Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.18 Minify

STRING Minify (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0 Description: Reduce image by integral size **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image Resource Format: jpeg gif png **Ranges:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.19 Modulate

STRING Modulate (RESOURCE InputResource, INT32 BRIGHTNESS, INT32 SATURATION, INT32 HUE, RESOURCE OutputResource)

Version: 1.0

**Description:** Modulate percent hue, saturation, and brightness of an image. Modulation of saturation and brightness is as a ratio of the current value(1.0 for no change). Modulation of hue is an absolute rotation of -180 degrees to +180 degrees from the current position corresponding to an argument range of 0 to 2.0 (1.0 for no change).

#### **Parameter List**

Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints:** Resource Type: image Resource Format: jpeg gif png **Ranges:** Name: BRIGHTNESS **Description:** Brightness modulate Paramater Type INT32 **Default Value: Constraints:** Name: SATURATION **Description:** Saturation modulate Paramater Type INT32 **Default Value: Constraints:** Name: HUE AXMEDIS

Description: Hue modulate Paramater Type INT32 Default Value: Constraints: Name: OutputResource Description: Where the manipulated resource will be stored Paramater Type RESOURCE Default Value: Constraints: Result Value: Result: Result Result type: STRING Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.20 Monochrome

STRING Monochrome (RESOURCE InputResource, RESOURCE OutputResource)

Version: 1.0 Description: Monochrome the image **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type** RESOURCE **Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.21 Negate

STRING Negate (RESOURCE InputResource, BOOLEAN GRAYSCALE, RESOURCE OutputResource)

Version: 1.0

**Description:** Negate colors in image. Replace every pixel with its complementary color (white becomes black, yellow becomes blue, etc.). Set grayscale to only negate grayscale values in image.

**Parameter List** 

Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE Default Value: Constraints: Resource Type: image Resource Format: jpeg gif png 

 Ranges:

 Name: GRAYSCALE

 Description: Where the manipulated resource will be stored

 Paramater Type BOOLEAN

 Default Value:

 Constraints:

 Name: OutputResource

 Description: Where the manipulated resource will be stored

 Paramater Type RESOURCE

 Default Value:

 Constraints:

 Result Value:

 Constraints:

 Result: Result

 Result type: STRING

 Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.22 Normalize

STRING Normalize (RESOURCE InputResource, RESOURCE OutputResource)

#### Version: 1.0

**Description:** Normalize image (increase contrast by normalizing the pixel values to span the full range of color values)

#### Parameter List

Name: InputResource
<b>Description:</b> The Resource to be manipulated
Paramater Type RESOURCE
Default Value:
Constraints:
Resource Type: image
<b>Resource Format:</b> jpeg gif png
Ranges:
Name: OutputResource
<b>Description:</b> Where the manipulated resource will be stored
Paramater Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message
case of error

#### 16.19.3.23 OilPaint

STRING OilPaint (RESOURCE InputResource, INT32 RADIUS, RESOURCE OutputResource)

Version: 1.0 Description: Oilpaint image (image looks like oil painting) Parameter List Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE Default Value: Constraints: Resource Type: image

**Resource Format:** jpeg gif png **Ranges:** Name: RADIUS **Description:** the radius OilPaint Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.24 Quality

STRING Quality (RESOURCE InputResource, INT32 LEVEL, RESOURCE OutputResource)

### Version: 1.0 **Description:** JPEG/MIFF/PNG compression level (default 75). **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: LEVEL **Description:** the quality of the compress level **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.25 Quantize

STRING Quantize (RESOURCE InputResource, INT32 NCOLORS, RESOURCE OutputResource)

# Version: 1.0

**Description:** Preferred number of colors in the image. The actual number of colors in the image may be less than your request, but never more. Images with less unique colors than specified with this option will have any duplicate or unused colors removed. AXMEDIS
30

Parameter List
Name: InputResource
<b>Description:</b> The Resource to be manipulated
Paramater Type RESOURCE
Default Value:
Constraints:
Resource Type: image
<b>Resource Format:</b> jpeg gif png
Ranges:
Name: NCOLORS
<b>Description:</b> the number of color
Paramater Type INT32
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Paramater Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
<b>Result Description:</b> The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.26 Raise

STRING Raise (RESOURCE InputResource, INT32 WIDTH, INT32 HEIGHT, INT32 XOFFSET, INT32 YOFFSET, BOOLEAN RISED, RESOURCE OutputResource)

Version: 1.0 Description: Raise image (lighten or darken the edges of an image to give a 3-D raised or lowered effect) **Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints:** Resource Type: image **Resource Format:** jpeg gif png **Ranges:** Name: WIDTH Description: The width is parts of the geometry specification are measured in pixels Paramater Type INT32 **Default Value: Constraints:** Name: HEIGHT **Description:** The height is parts of the geometry specification are measured in pixels **Paramater Type INT32 Default Value: Constraints:** Name: XOFFSET **Description:** The left edge of the object is to be placed xoffset pixels in from the left edge of the

image.

Paramater Type INT32

Default Value:
Constraints:
Name: YOFFSET
<b>Description:</b> The top edge of the object is to be yoffset pixels below the top edge of the image.
Paramater Type INT32
Default Value:
Constraints:
Name: RISED
Description: raisedFlag
Paramater Type BOOLEAN
Default Value:
Constraints:
Name: OutputResource
Description: Where the manipulated resource will be stored
Paramater Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
<b>Result Description:</b> The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.27 ReduceNoise

STRING ReduceNoise (RESOURCE InputResource, INT32 ORDER, RESOURCE OutputResource )

Version: 1.0 Description: Reduce noise in image using a noise peak elimination filter. **Parameter List** Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE **Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: ORDER Description: order **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.28 Replace

STRING Replace (RESOURCE InputResource, INT32 R1, INT32 G1, INT32 B1, INT32 R2, INT32 G2, INT32 B2, RESOURCE OutputResource)

Version: 1.0 **Description:** Replace the image **Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: R1 Description: r1 Paramater Type INT32 **Default Value: Constraints:** Name: G1 **Description:** g1 Paramater Type INT32 **Default Value: Constraints:** Name: B1 Description: b1 Paramater Type INT32 **Default Value: Constraints:** Name: R2 **Description:** r2 Paramater Type INT32 **Default Value: Constraints:** Name: G2 **Description:** g2 Paramater Type INT32 **Default Value: Constraints:** Name: B2 **Description:** b2 Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.29 FloodFill

STRING FloodFill (RESOURCE InputResource, INT32 X, INT32 Y, INT32 B, INT32 R, INT32 G, RESOURCE OutputResource)

Version: 1.0

**Description:** Flood-fill texture across pixels that match the color of the target pixel and are neighbors of the target pixel. Uses current fuzz setting when determining color match.

**Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: X **Description:** x Paramater Type INT32 **Default Value: Constraints:** Name: Y **Description:** y Paramater Type INT32 **Default Value: Constraints:** Name: B **Description:** b Paramater Type INT32 **Default Value: Constraints:** Name: R **Description:** r **Paramater Type INT32 Default Value: Constraints:** Name: G **Description:** g Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

### 16.19.3.30 Roll

STRING Roll (RESOURCE InputResource, INT32 X, INT32 Y, RESOURCE OutputResource)

Version: 1.0

**Description:** Roll image (rolls image vertically and horizontally) by specified number of columnms and rows)

**Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: X **Description:** x Paramater Type INT32 **Default Value: Constraints:** Name: Y **Description:** v Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.31 Rotate

STRING Rotate (RESOURCE InputResource, INT32 ANGLE, RESOURCE OutputResource)

Version: 1.0 Description: Rotate image counter-clockwise by specified number of degrees. Parameter List Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE Default Value: Constraints: Resource Type: image Resource Format: jpeg gif png Ranges: Name: ANGLE Description: Number of the degrees Paramater Type INT32 Default Value: Constraints: Name: OutputResource Description: Where the manipulated resource will be stored Paramater Type RESOURCE Default Value: Constraints: Result: Result Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.32 Scale

STRING Scale (RESOURCE InputResource, INT32 WIDTH, INT32 HEIGHT, INT32 MODE, RESOURCE OutputResource )

Version: 1.0 Description: Resize image by using simple ratio algorithm **Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image Resource Format: jpeg gif png **Ranges:** Name: WIDTH **Description:** Width Paramater Type INT32 **Default Value: Constraints:** Name: HEIGHT **Description:** Height **Paramater Type INT32 Default Value: Constraints:** Name: MODE Description: Mode Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

### 16.19.3.33 Shear

STRING Shear (RESOURCE InputResource, INT32 XSHEAR, INT32 Yshear, RESOURCE OutputResource)

#### Version: 1.0

**Description:** Shear image (create parallelogram by sliding image by X or Y axis). Shearing slides one edge of an image along the X or Y axis, creating a parallelogram. An X direction shear slides an edge along the X axis, while a Y direction shear slides an edge along the Y axis. The amount of the shear is controlled by a shear angle. For X direction shears, x degrees is measured relative to the Y axis, and similarly, for Y direction shears y degrees is measured relative to the X axis. Empty triangles left over from shearing the image are filled with the color defined as borderColor.

#### **Parameter List**

Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image Resource Format: jpeg gif png **Ranges:** Name: XSHEAR **Description:** XSHEAR Paramater Type INT32 **Default Value: Constraints:** Name: Yshear **Description:** Yshear **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.34 Shade

STRING Shade (RESOURCE InputResource, INT32 AZIMUTH, INT32 ELEVATION, BOOLEAN COLOR, RESOURCE OutputResource)

#### Version: 1.0

**Description:** Shade image using distant light source. Specify azimuth\_ and elevation\_ as the position of the light source. By default, the shading results as a grayscale image.. Set colorShading\_ to true to shade the red, green, and blue components of the image.

Parameter List

Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE Default Value:

Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: AZIMUTH
Description: AZIMUTH
Paramater Type INT32
Default Value:
Constraints:
Name: ELEVATION
Description: ELEVATION
Paramater Type INT32
Default Value:
Constraints:
Name: COLOR
Description: COLOR
Paramater Type BOOLEAN
Default Value:
Constraints:
Name: OutputResource
<b>Description:</b> Where the manipulated resource will be stored
Paramater Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
<b>Result Description:</b> The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.35 Spread

STRING Spread (RESOURCE InputResource, INT32 AMOUNT, RESOURCE OutputResource)

Version: 1.0 Description: Spread pixels randomly within image by specified amount. **Parameter List** Name: InputResource Description: The Resource to be manipulated Paramater Type RESOURCE **Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: AMOUNT **Description:** AMOUNT **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result AXMEDIS

Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.36 SetOpacity

STRING SetOpacity (RESOURCE InputResource, INT32 LEVEL, RESOURCE OutputResource)

Version: 1.0 **Description:** Set the opacity of the image. **Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: LEVEL **Description:** LEVEL Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.37 SubImage

STRING SubImage (RESOURCE InputResource, INT32 X, INT32 Y, INT32 WIDTH, INT32 HEIGHT, RESOURCE OutputResource)

Version: 1.0 Description: SubImage image. **Parameter List** Name: InputResource Description: The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: X **Description:** x coordinate of the top-level corner of the rectangle **Paramater Type INT32 Default Value: Constraints:** AXMEDIS

Name: Y
<b>Description:</b> y coordinate of the top-level corner of the rectangle
Paramater Type INT32
Default Value:
Constraints:
Name: WIDTH
Description: Width member
Paramater Type INT32
Default Value:
Constraints:
Name: HEIGHT
Description: Height member
Paramater Type INT32
Default Value:
Constraints:
Name: OutputResource
<b>Description:</b> Where the manipulated resource will be stored
Paramater Type RESOURCE
Default Value:
Constraints:
Result: Result
Result type: STRING
<b>Result Description:</b> The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.38 GetInfo

STRING GetInfo (RESOURCE InputResource, INT32 WIDTH, INT32 HEIGHT)

Version: 1.0 Description: Return the size of the image. Parameter List Name: InputResource
<b>Description:</b> The Resource under analisys
Paramater Type RESOURCE
Default Value:
Constraints:
Resource Type: image
Resource Format: jpeg gif png
Ranges:
Name: WIDTH
<b>Description:</b> The width of the Image
Paramater Type INT32
Default Value:
Constraints:
Name: HEIGHT
<b>Description:</b> The height of the Image
Paramater Type INT32
Default Value:
Constraints:
Result: Result
Result type: STRING
<b>Result Description:</b> The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.39 SetMaskColour

STRING SetMaskColour (RESOURCE InputResource, INT32 R, INT32 G, INT32 B, RESOURCE OutputResource )

Version: 1.0 **Description:** Set the color **Parameter List** Name: InputResource **Description:** The Resource to be manipulated **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: R **Description:** Red **Paramater Type INT32 Default Value: Constraints:** Name: G **Description:** Green Paramater Type INT32 **Default Value: Constraints:** Name: B **Description:** Blue **Paramater Type INT32 Default Value: Constraints:** Name: OutputResource **Description:** Where the manipulated resource will be stored **Paramater Type RESOURCE Default Value: Constraints: Result:** Result Result type: STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

#### 16.19.3.40 Paste

STRING Paste (RESOURCE InputResource1, RESOURCE InputResource2, INT32 X, INT32 Y, INT32 COMPOSE, RESOURCE OutputResource)

Version: 1.0 Description: Paste image Parameter List Name: InputResource1 Description: The Resource to be manipulated Paramater Type RESOURCE Default Value: Constraints: Resource Type: image

**Resource Format:** jpeg gif png **Ranges:** Name: InputResource2 **Description:** The Resource paste **Paramater Type RESOURCE Default Value: Constraints: Resource Type:** image **Resource Format:** jpeg gif png **Ranges:** Name: X **Description:** X **Paramater Type INT32 Default Value: Constraints:** Name: Y **Description:** Y Paramater Type INT32 **Default Value: Constraints:** Name: COMPOSE **Description:** Compose Paramater Type INT32 **Default Value: Constraints:** Name: OutputResource Description: Where the manipulated resource will be stored **Paramater Type** RESOURCE **Default Value: Constraints:** Result: Result **Result type:** STRING Result Description: The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error

# 16.19.3.41 Test

RESOURCE Test (RESOURCE InputResource, AXOM Axom) Version: 1.0 **Description:** Test an image **Parameter List** Name: InputResource **Description:** The Resource to be tested **Paramater Type RESOURCE Default Value: Constraints:** Name: Axom **Description:** The object Paramater Type AXOM **Default Value: Constraints:** Result: Result **Result type:** RESOURCE **Result Description:** The result of conversion, SUCCESS if ok, ERROR followed by a message in case of error