

Oracle® *interMedia* Annotator

User's Guide

Release 1.5 for Windows NT and Macintosh

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ORACLE®

Oracle interMedia Annotator User's Guide, Release 1.5

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Primary Author: Max Chittister

Contributors: Marco Carrer, Kan Deng, Cheng Han, Sam Lee, Paul Lin, Susan Mavris, Susan Shepard, Alok Srivastava, Rod Ward

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Preface

Oracle *interMedia* Annotator is a utility that extracts metadata from audio, image, and video sources of certain formats and inserts the metadata, along with the media source file, into an Oracle8*i* database.

Intended Audience

This guide is intended for anyone who is interested in extracting metadata from a multimedia file and storing both the metadata and the multimedia file in an Oracle8*i* database. Advanced users who want to write their own PL/SQL Upload Templates should be familiar with PL/SQL. Advanced users who want to write their own annotation types should be familiar with Java and XML.

Structure

This guide contains six chapters and three appendixes:

- | | |
|-----------|---|
| Chapter 1 | Contains a general introduction. |
| Chapter 2 | Contains installation and configuration information. |
| Chapter 3 | Contains information on using <i>interMedia</i> Annotator to create and manipulate annotations. |
| Chapter 4 | Contains information on creating your own annotation types. |
| Chapter 5 | Contains instructions for uploading annotations to an Oracle8 <i>i</i> database. |
| Chapter 6 | Contains information on using Oracle <i>interMedia</i> Text to query stored annotations. |

- Appendix A Contains reference information on supported formats.
- Appendix B Contains reference information on annotation attributes.
- Appendix C Contains answers to frequently asked questions.

Conventions

In examples, an implied carriage return occurs at the end of each line, unless otherwise noted. You must press the Return key at the end of a line of input.

The following conventions are also used in this guide:

Convention	Meaning
. . .	Vertical ellipsis points in an example mean that information not directly related to the example has been omitted.
...	Horizontal ellipsis points in statements or commands mean that parts of the statement or command not directly related to the example have been omitted
boldface text	Boldface text indicates either a term defined in the text, the glossary, or in both locations; or a window name, button name, menu name, or menu item.
<code>monospace font</code>	Monospace font in text indicates a code example, a URL, or an absolute path name.
< >	Angle brackets enclose user-supplied names.
[]	Brackets enclose optional clauses from which you can choose one or none.

Introduction

This chapter supplies information on Oracle *interMedia* Annotator, which extracts text information (or **metadata**) from media sources of certain formats and inserts the metadata, along with the media source, into an Oracle8i database.

interMedia Annotator makes use of Oracle *interMedia*.

1.1 Purpose

When managing multimedia data in an object-relational database system, you will likely face the problem of how to extract, process, and manage metadata associated with your media sources. Metadata, which typically consists of text-based information that describes the media source, is usually embedded within the media source using a proprietary format, and is therefore not always easily accessible. To be able to efficiently manage and use metadata, you must be able to extract it from many different types of media sources. After extraction, you must have a consistent, accurate representation of the metadata, regardless of the original media source.

You can use Oracle *interMedia* Annotator to parse a media source, extract its metadata, and group the metadata into an organized structure called a **logical annotation** (or **annotation**). Every annotation is organized as a set of text attributes and optional samples. An **attribute** provides information about the media source, either its data format (such as MIME type or format) or data content (such as song title or movie director). **Samples** are multimedia data (such as audio clips or closed captions) extracted from the media source.

You can use *interMedia* Annotator to parse your audio, image, or video files (see Appendix A for a list of supported file formats) and extract attributes to build an annotation.

interMedia Annotator also creates a separate annotation for each track of the media source. For example, for an audio compact disc, *interMedia* Annotator creates an

annotation for the compact disc (CD) and separate annotations for each audio track (that is, each song). The annotations for the audio tracks are sub-annotations of the audio CD annotation. For a media source containing a movie, *interMedia* Annotator can create separate sub-annotations for the video data and audio data.

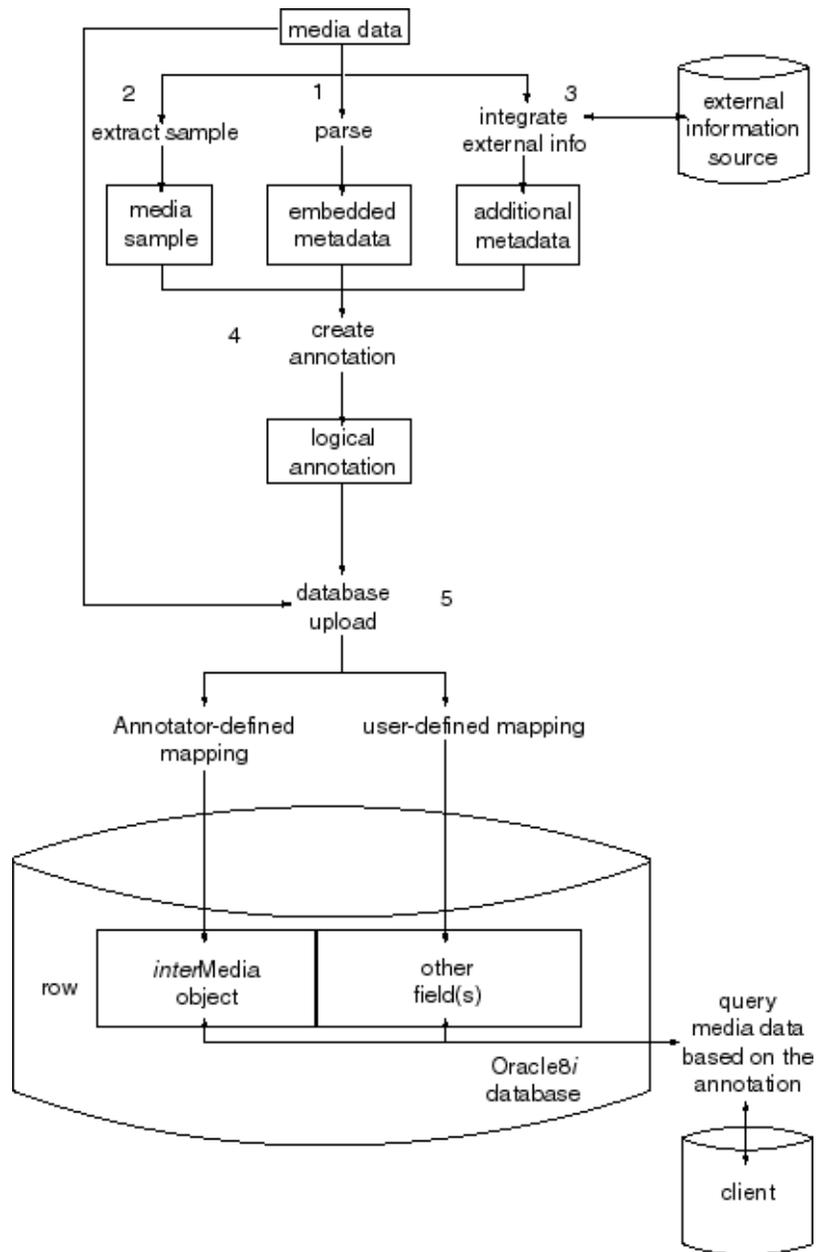
You can use *interMedia* Annotator to insert the annotation along with the media source into an Oracle8i database. Once the annotation is in the database, you can use Oracle *interMedia* Text to query the annotation.

1.2 *interMedia* Annotator Operations Overview

The main functions of *interMedia* Annotator are to build a logical annotation from a media source and to then upload both the annotation and the source file to an Oracle8i database. You can then query the media data in the database based on information in the annotation.

Figure 1-1 provides an overview of this process.

Figure 1-1 Overview of interMedia Annotator Operations



interMedia Annotator performs the following operations:

1. Parse the media source. *interMedia* Annotator extracts the metadata from the source file.
2. Extract samples from the media source. *interMedia* Annotator can extract a sample from the media data (such as a selection from an audio CD).
3. Integrate information from additional sources. Some information that would be useful in an annotation is not necessarily included in the metadata. For example, audio CD metadata does not necessarily include song names. *interMedia* Annotator can contact an Internet CD database (or **CDDB**) that contains CD information, such as album titles, artists, and song titles, and add this information to an annotation. For more information on CDDB, see: <http://www.cddb.com>
4. Create a logical annotation. *interMedia* Annotator combines the extracted samples and the metadata, and builds a logical annotation.

Users can edit the annotation at this point. See Chapter 3 for more information.

5. Upload the annotation and the media source to an Oracle8i database. Through the *interMedia* Annotator **Preferences** window, you specify the location and the connection parameters of the Oracle8i database in which you want to store the media source and the annotation.

interMedia Annotator will upload the media source and the annotation (in XML format) into an *interMedia* object in the database. *interMedia* Annotator can also upload individual attributes from the annotation into other columns of the database. You specify the *interMedia* object to which you will upload, along with the rest of the information to be uploaded, in a PL/SQL Upload Template. You can create a template with a text editor or the PL/SQL Template Wizard.

See Chapter 5 for more information on the upload process.

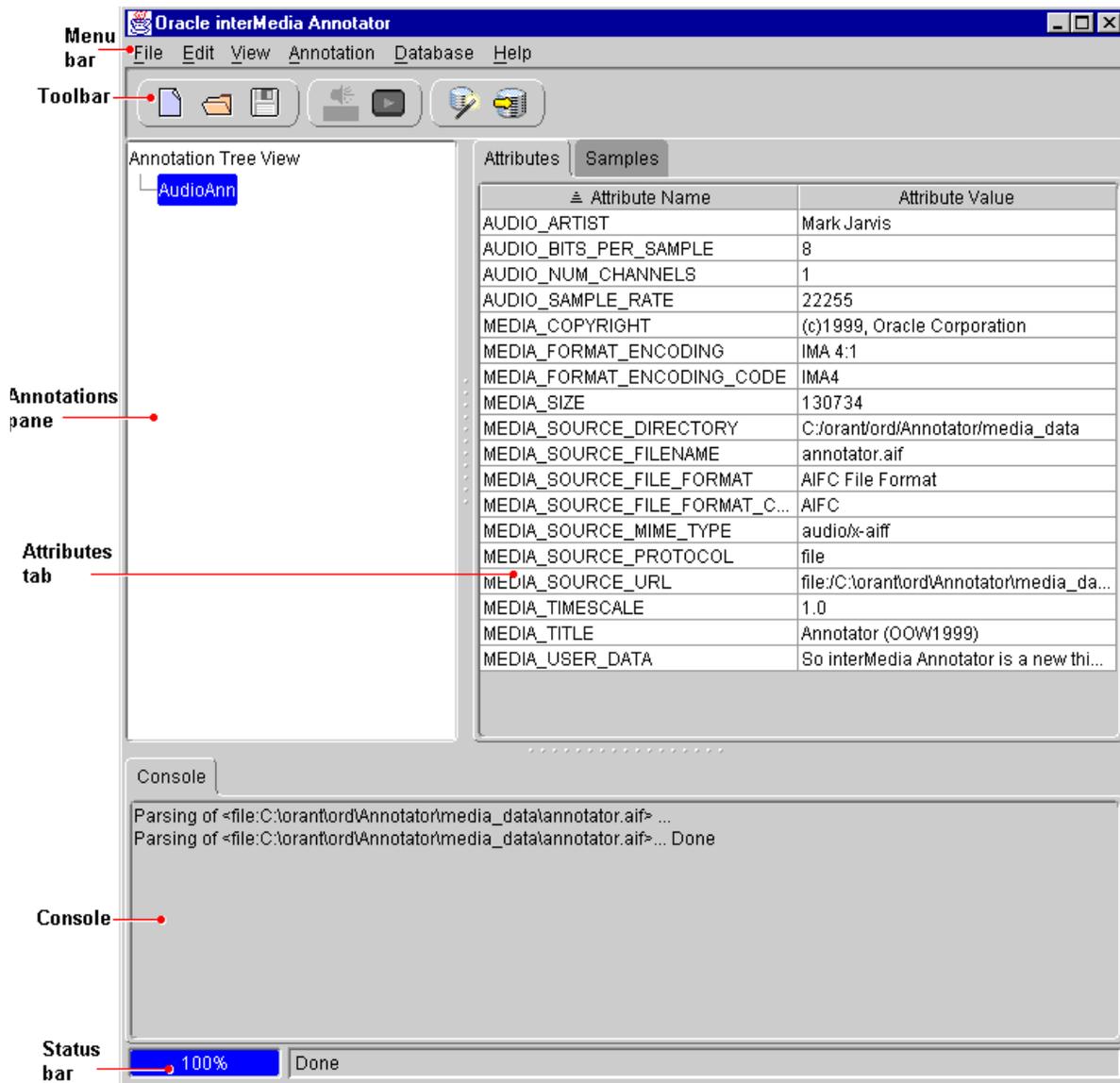
Once you have completed these steps, you will be able to query the information in the annotation in order to use information about the media source that cannot be directly extracted. You can also build indexes on the information in the annotation using *interMedia* Text.

1.3 GUI Overview

After you install and configure *interMedia* Annotator (see Chapter 2 for more information), run *interMedia* Annotator by opening either `Annotator.bat` (on

Windows NT systems) or Annotator (on Macintosh). The **Oracle *interMedia* Annotator** window appears (Figure 1-2).

Figure 1-2 Oracle *interMedia* Annotator Window



The main features of the Oracle *interMedia* Annotator window are the following:

- **Menu bar:** The menu bar contains six menus: **File**, **Edit**, **View**, **Annotation**, **Database**, and **Help**.

The **File** menu contains commands to create a new annotation, open an annotation, close an annotation, save an annotation, save the **Console**, and quit *interMedia* Annotator.

For more information on saving annotations, see Section 3.6.

The **Edit** menu contains a command to open the **Preferences** window.

For more information on the *interMedia* Annotator **Preferences** window, see Section 2.3.1 and Section 3.5.3.

The **View** menu contains check boxes that let you choose whether or not to view the three toolbars or the **Console**.

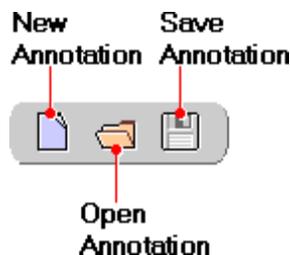
The **Annotation** menu contains commands to extract samples from the media source, play the media source in the appropriate media player, insert or delete an attribute, and insert or delete an annotation. For more information on extracting samples, see Section 3.5. For more information on playing media files and samples, see Section 3.8. For more information on defining helper applications, see Section 2.3.5.

The **Database** menu contains commands to create and run PL/SQL Upload Templates. See Chapter 5 for more information.

The **Help** menu contains a command to show more information about *interMedia* Annotator.

- **Toolbar:** The toolbar consists of three smaller toolbars, the **Standard** toolbar (Figure 1-3), the **Annotation** toolbar (Figure 1-4), and the **Oracle** toolbar (Figure 1-5).

Figure 1-3 Standard Toolbar



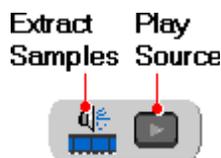
The **Standard** toolbar contains three buttons: **New Annotation**, **Open Annotation**, and **Save Annotation**.

Clicking the **New Annotation** button opens a dialog box in which you choose the media source to parse. *interMedia* Annotator then parses the media source and creates a new annotation. See Section 3.1 for more information.

Clicking the **Open Annotation** button opens a previously extracted annotation.

Clicking the **Save Annotation** button saves your annotation as an XML file.

Figure 1–4 Annotation Toolbar

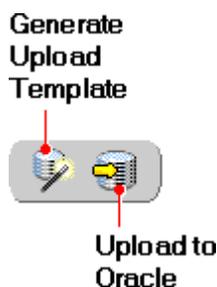


The **Annotation** toolbar contains two buttons: **Extract Samples** and **Play Source**.

The **Extract Samples** button extracts samples from the media source. See Section 3.5 for more information.

The **Play Source** button plays the media source in the appropriate media player. For more information on playing media files and samples, see Section 3.8. For more information on defining helper applications, see Section 2.3.5.

Figure 1–5 Oracle Toolbar



The **Oracle** toolbar contains two buttons: **Generate Template** and **Upload to Oracle**.

The **Generate Template** button starts the PL/SQL Template Wizard, which takes you through a step-by-step process to define a PL/SQL Upload Template.

The **Upload to Oracle** button opens a dialog box in which you select a PL/SQL Upload Template, which uploads your media source and annotation to a selected Oracle8i database.

See Chapter 5 for more information.

- **Annotations pane:** The **Annotations** pane contains an expandable list containing the hierarchy of annotations and sub-annotations. The types of the annotations and sub-annotations are shown in the **Annotations** pane.

For more information, see Section 3.1.

- **Attributes tab:** The **Attributes** tab shows the annotation attributes and their values. You can use the **Attributes** tab to change attribute values.

View the **Attributes** tab by clicking the gray **Attributes** box when the **Samples** tab is visible.

For more information on the **Attributes** tab, see Section 3.2 and Section 3.3.

- **Samples tab:** The **Samples** tab shows the contents of an extracted sample. It shows either the text of a text sample laid out on a timeline or images extracted from a QuickTime movie file. It appears in the same panel of the **Oracle interMedia Annotator** window as the **Attributes** tab.

View the **Samples** tab by clicking the gray **Samples** box when the **Attributes** tab is visible.

The **Samples** tab is not shown in Figure 1-2. See Figure 3-8 for a graphic of the **Samples** tab.

- **Console:** The **Console** displays messages pertaining to the status of *interMedia* Annotator operations. If an error occurs, notification is printed to the **Console**, along with notification of any action that is taken by *interMedia* Annotator.
- **Status bar:** The status bar shows how much of an operation is completed, from 0% to 100%.

Installation and Configuration

This chapter provides instructions on the installation and configuration of *interMedia* Annotator and additional helper applications.

2.1 Prerequisites

interMedia Annotator is supported on Windows NT 4.0 and MacOS 8.6. Depending on your platform, you must have the following components installed:

- Windows NT 4.0:
 - Oracle JDBC Driver for Oracle 8.1.5 or later. The OCI driver is recommended, though the Thin driver will work as well.
 - Apple QuickTime for Java (included with QuickTime 4.0), if you plan on parsing QuickTime files.
- MacOS 8.6:
 - Macintosh Runtime for Java (MRJ) 2.1.4
 - Apple QuickTime for Java (included with QuickTime 4.0), if you plan on parsing QuickTime files

You must also have access (either local or remote) to Oracle8i with Oracle8i *interMedia* Option.

If you do not have these installed on your computer, install them according to the instructions included with each product.

If you have any previous versions of Annotator, you should remove them from your machine.

2.2 Installation

The following sections provide instructions on installing *interMedia* Annotator on Windows NT and Macintosh.

2.2.1 Windows NT Installation

To install *interMedia* Annotator on your local Windows NT machine, perform the following steps:

1. With your preferred World Wide Web browser, go to the following location:
`http://technet.oracle.com/software/products/intermedia/software_index.htm`
2. Save the Zip file containing *interMedia* Annotator to your local machine.
3. Extract the Zip file on your local machine.
4. Run `setup.bat`.
interMedia Annotator will be installed at `<ORACLE_HOME>\ord\Annotator`, where `<ORACLE_HOME>` is your Oracle home directory.
5. Run `Annotator.bat`.

If the installation was successful, the **Oracle *interMedia* Annotator** window will appear (Figure 1-2).

2.2.2 MacOS Installation

To install *interMedia* Annotator on your local Macintosh, perform the following steps:

1. With your preferred World Wide Web browser, go to the following location:
`http://technet.oracle.com/software/products/intermedia/software_index.htm`
2. Save the Stuffit file containing *interMedia* Annotator to your local machine.
3. Extract the Stuffit file on your local machine.
4. Run `Annotator`.

If the installation was successful, the **Oracle *interMedia* Annotator** window will appear (Figure 1-2).

2.3 Configuration

To configure *interMedia* Annotator to best use its features, perform the steps listed in Sections 2.3.1 through 2.3.5.

2.3.1 Set Connection to the Database

One of the most useful and powerful features of *interMedia* Annotator is the ability to upload media sources and annotations to an Oracle8i database. To connect to an Oracle8i database, you must correctly specify the database connection parameters by performing the following operations:

1. From the **Edit** menu, select **Preferences** and click the **Database** tab. The **Database** tab of the **Preferences** window appears (Figure 2-1).

Figure 2–1 Database Tab of the Preferences Window

The screenshot shows the 'Preferences' dialog box with the 'Database' tab selected. The 'Log-in' section has 'User name' set to 'system' and an empty 'Password' field. The 'Database Connection' section has 'Service' set to 'chance' and 'JDBC Driver' set to 'JDBC OCI Driver'. A 'Test Connection' button is located to the right of the 'JDBC Driver' dropdown. The 'Default PL/SQL Template' section has 'Default PL/SQL Template' set to 'insertDVDInventoryItem.ofm' and a 'Browse...' button to its right. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

2. Enter the necessary information to ensure that you will connect to the correct database:
 - If you are using the JDBC Thin driver, your service name must follow the syntax <machine-name>:<port-name>:<oracle-sid>.
 - If you are using the JDBC OCI driver, your service name must follow the syntax used by Net8. See *Net8 Administrator's Guide* for more information.

Note: All changes that you make in the **Preferences** window will be saved from session to session except the database password. For security reasons, you must re-enter the password every session.

3. Click **OK** to confirm and save the changes.

2.3.2 Create Tables

Before you can upload annotations and media files, your database must contain tables that can be used for the storage of audio and video data. If it does not, you will need to create these tables.

The following SQL statements will create two sample tables, one for the storage of the video data and one for the storage of the audio data. These statements will create the tables that are used in the example in Chapter 5:

```
CREATE TYPE VideoType AS OBJECT (ID NUMBER,
                                title VARCHAR2(256),
                                vsrc ORDSYS.ORDVIDEO);
CREATE TABLE VideoStorage OF VideoType (ID PRIMARY KEY)
LOB(vsrc.source.localdata) STORE AS (NOCACHE NOLOGGING);

CREATE TYPE AudioType AS OBJECT (ID NUMBER,
                                title VARCHAR2(256),
                                asrc ORDSYS.ORDAUDIO);
CREATE TABLE AudioStorage OF AudioType (ID PRIMARY KEY)
LOB(asrc.source.localdata) STORE AS (NOCACHE NOLOGGING);
```

Although object types and object tables are used in the examples, any relational tables with *interMedia* Audio or Video types can be used for the storage of audio or video data.

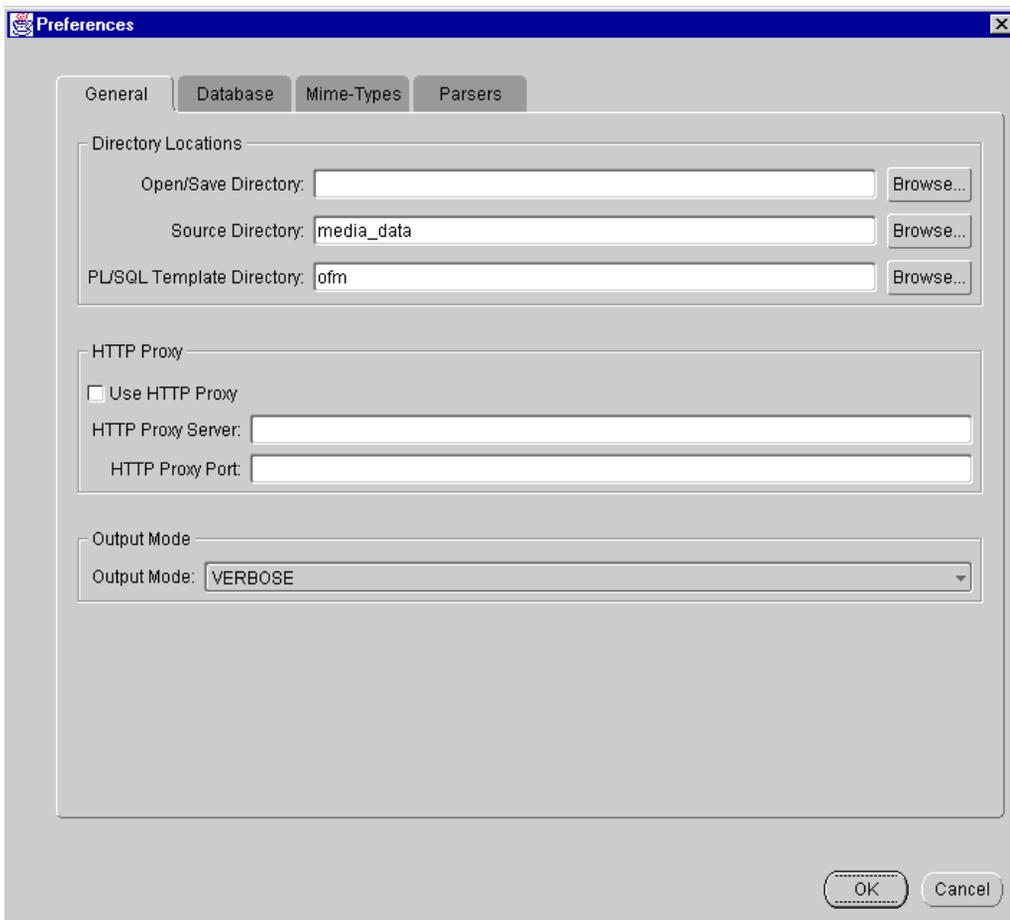
2.3.3 Check the Proxy Settings

interMedia Annotator can annotate media sources that are available remotely over the Internet through the HTTP protocol.

If you are running in a secure environment, you will need to configure *interMedia* Annotator to use your proxy server before you can access the Internet. Configure the proxy server by performing the following operations:

1. From the **Edit** menu, select **Preferences** and click the **General** tab. The **General** tab of the **Preferences** window appears (Figure 2-2).

Figure 2-2 *General Tab of the Preferences Window*



2. Enter your proxy server settings in the "HTTP Proxy Server: " and "HTTP Proxy Port: " text fields.
3. Click **OK**.

2.3.4 Connect to a CDDB

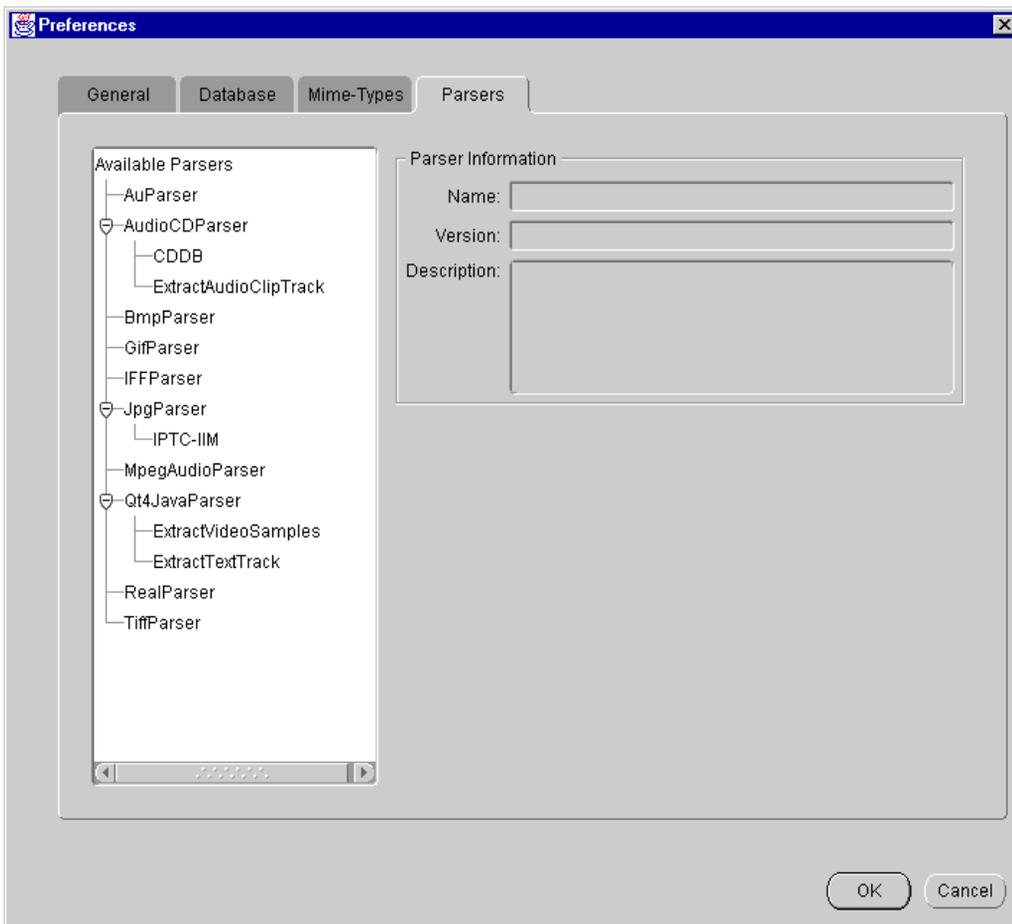
interMedia Annotator can connect to a CDDB to add information to audio CD annotations. However, you must contact the administrators of the CDDB in order to obtain a license before using CDDB functions; contact them for a license at:

<http://www.cddb.com/developers.html>

To change the CDDB URL that Annotator queries for information, perform the following operations:

1. From the **Edit** menu, select **Preferences** and click the **Parsers** tab.

The **Parsers** tab of the **Preferences** window appears (Figure 2-3).

Figure 2–3 *Parsers Tab of the Preferences Window*

2. If "CDDB" is not visible under "AudioCDParser", click the plus sign (+) next to "AudioCDParser" to expose it.
3. Enter the port number and host name in the "CDDB Server Port: " and "CDDB Server Host: " text fields.

Note: You must obtain a license from the CDDDB server before you can use its functions.

4. Click **OK** to confirm and save the changes.

2.3.5 Install Helper Applications

interMedia Annotator is capable of playing media sources and extracted media samples. However, in order to play them, you may need to install some additional helper applications.

Recommended Windows NT applications are:

- Microsoft Windows Media Player
- QuickTime Player
- RealPlayer
- WinAmp

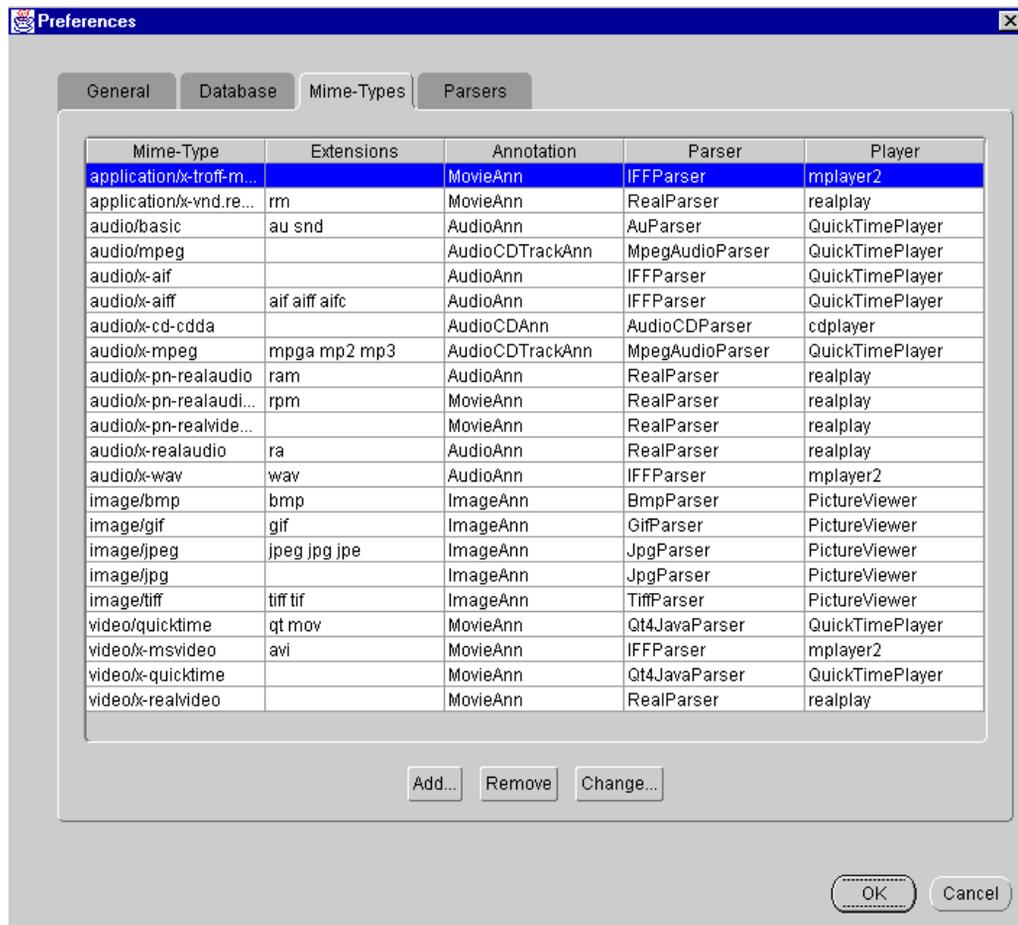
Recommended Macintosh applications are:

- QuickTime 4.0 Player
- RealPlayer

Make sure that each MIME type is paired up with the correct file extension and player by performing the following operations:

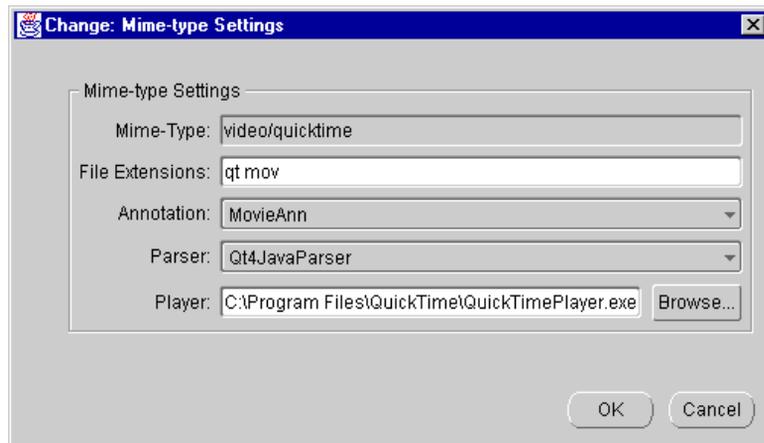
1. From the **Edit** menu, select **Preferences** and select the **Mime-Types** tab.
The **Mime-Types** tab of the **Preferences** window appears (Figure 2-4).

Figure 2-4 Mime-Types Tab of the Preferences Window



2. Double-click on the row of the MIME type that you want to edit.
The **Change: Mime-type Settings** window appears (Figure 2-5).

Figure 2–5 *Change: Mime-type Settings Window*



3. Edit the contents of the window and click **OK**.
The **Change: Mime-type Settings** window closes.
4. Click **OK** to confirm and save the changes.

Generating and Manipulating Annotations

interMedia Annotator is packaged along with several sample multimedia files. They are included in the *ANNOTATOR_HOME*\media_data directory. You can use *interMedia* Annotator on these files (or on files of your own choosing) to perform several operations. These operations include:

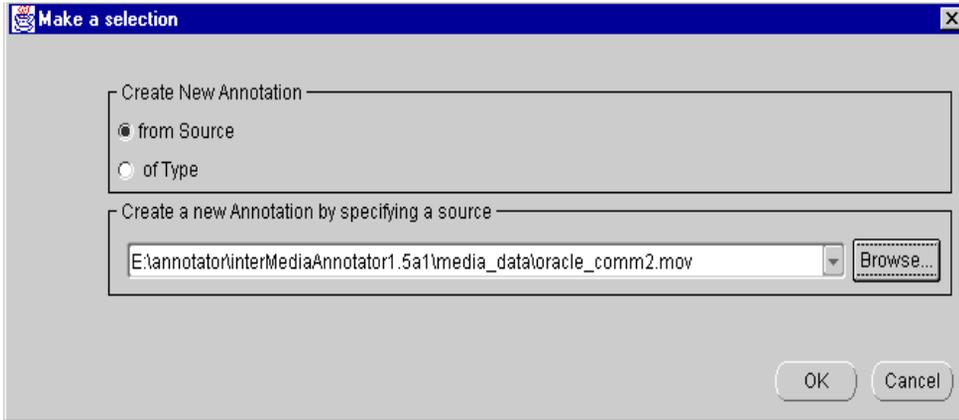
- Creating an annotation
- Editing attributes
- Adding and deleting attributes to the annotation
- Adding and deleting annotations
- Extracting samples
- Saving an annotation
- Opening an annotation
- Playing media sources or samples

3.1 Creating an Annotation

To create an annotation, perform the following operations:

1. Either select **New** from the **File** menu or click the **New Annotation** button. The **Make a Selection** window appears (Figure 3-1).

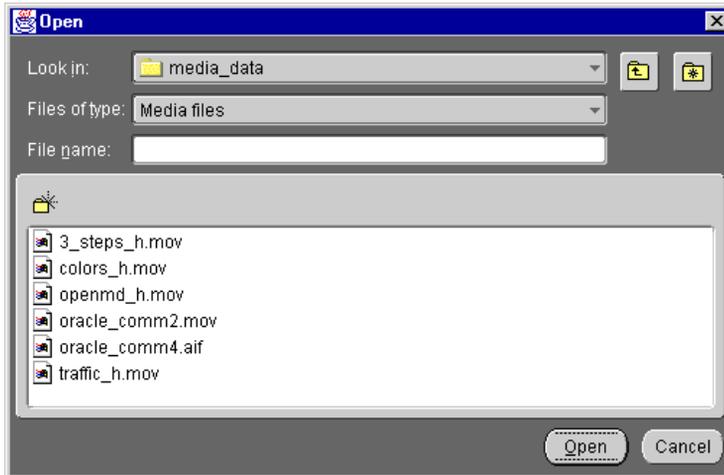
Figure 3–1 Make a Selection Window



2. To create an annotation populated with metadata from a media file, click the **from Source** button and select a media file from the pull-down menu.

If the media file does not appear in the pull-down menu, click the **Browse** button and select a media file in the **Open** window (Figure 3–2).

Figure 3–2 Open Window



3. To create an empty annotation, click the **of Type** button and select an annotation type from the pull-down menu. (This option will be used most often in conjunction with a user-defined annotation type. See Chapter 4 for more information on creating your own annotation types.)
4. Click **OK**.

See Figure 1-1 for more information on how *interMedia* Annotator builds an annotation.

interMedia Annotator can parse media sources accessible through the URL protocols shown in Table 3-1.

Table 3-1 Available URL Protocols

URL Protocol	Description
file	Access all the files on local or remotely mounted disks in your computer.
http	Access media available through an Internet Web server.
cd	Access audio compact discs in your local CDROM drive.

Note: The URL used to extract annotations from a compact disc is not a standard URL. The URL is defined as follows:

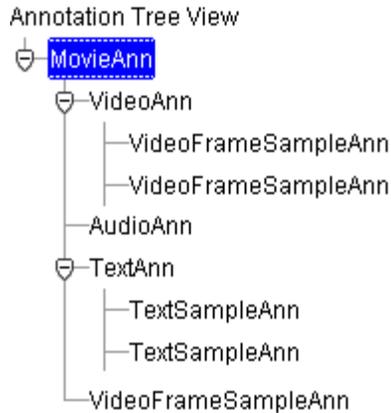
- Windows NT: `cd:<your Windows CD-ROM drive>#cdda`
 - Macintosh: `cd:#cdda`
-
-

If you are parsing a local file or a file available over the Internet through the `http` protocol, *interMedia* Annotator extracts the time-independent attributes from the media file and inserts them into a logical annotation.

If you are parsing an audio CD, *interMedia* Annotator can connect to a CDDb, find the entry corresponding to your CD, and create a logical annotation.

If you are parsing a media source with multiple tracks, such as a video source or audio CD, an annotation is created for each track.

When the parsing is complete, the annotation type appears in the Annotation Tree View of the **Annotations** pane. The attribute names and values for the currently selected annotation are displayed in the **Attributes** tab of the *interMedia* Annotator window (Figure 1-2). The **Annotations** pane contains an expandable list, which shows the hierarchy of annotations and sub-annotations (Figure 3-3).

Figure 3–3 Annotations Pane with Expanded List

In order to display the attributes of another annotation, select it in the Annotation Tree View.

Some JPEG files contain additional metadata in the Information Interchange Model (IIM) format. This metadata can optionally be extracted into an IpctIimAnn sub-annotation, which appears as a sub-annotation of your main annotation. In order to create an IpctIimAnn sub-annotation, perform the following operations:

1. From the **Edit** menu, select **Preferences** and click the **Parsers** tab.
The **Parsers** tab of the **Preferences** window appears (Figure 2–3).
2. Select **JpgParser** and select to create the IpctIimAnn sub-annotation.
3. Click **OK** to confirm and save the changes.

3.2 Editing Attribute Values

You can edit the value that appears for each attribute by performing the following operations:

1. Double-click the text in the right-hand column of the attribute.
A solid outline will appear around the table cell and an I-beam cursor will appear.
2. Edit the text.

Note: *interMedia* Annotator cannot change the attribute values in the media itself; it can only change the attribute values in the extracted annotation. If you parse the media file again, your annotation will be overwritten and any attributes that you have edited will revert back to their original values.

You can save your changes to the annotation. See Section 3.6 for more information.

3.3 Adding and Deleting Attributes to the Annotation

interMedia Annotator defines a given number of attributes (see Appendix B for a complete list of attributes). However, not all media sources will provide values for every attribute. You can use *interMedia* Annotator to add a value to your annotation for any attribute that does not have a value.

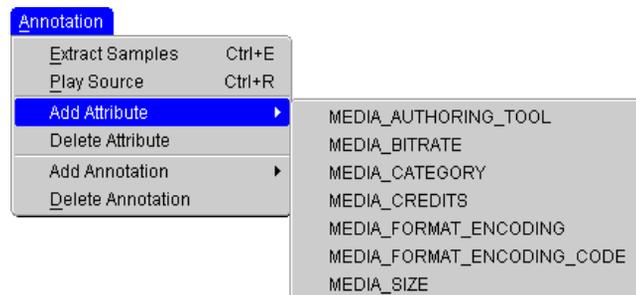
interMedia Annotator cannot write any new attribute values back to the media sources. The current annotation will contain the value, but any annotations created later by *interMedia* Annotator will not contain the new value.

To add a value for an attribute that has not been automatically set, perform the following operations:

1. From the **Annotation** menu, select **Add Attribute**.

The **Add Attribute** submenu appears (Figure 3–4).

Figure 3–4 Add Attribute Submenu



2. Select an attribute from the **Add Attribute** submenu.

The new attribute appears in the **Attributes** tab with no value in the right-hand column.

3. Enter a value in the right-hand column.

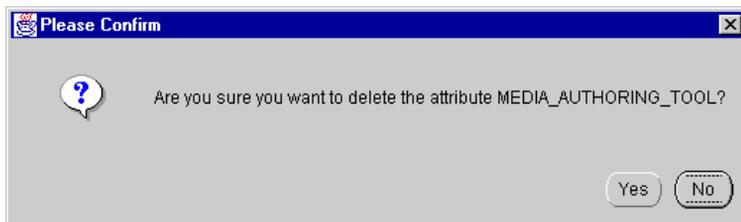
Validation of type is done at this time.

To delete an attribute from your annotation, perform the following operations:

1. Select the attribute to delete.
2. From the **Annotation** menu, select **Delete Attribute**.

The **Please Confirm** window appears (Figure 3–5).

Figure 3–5 *Please Confirm Window for Deleting Attributes*



3. Click **Yes**.

The attribute and its value are deleted from the annotation.

3.4 Adding and Deleting Annotations

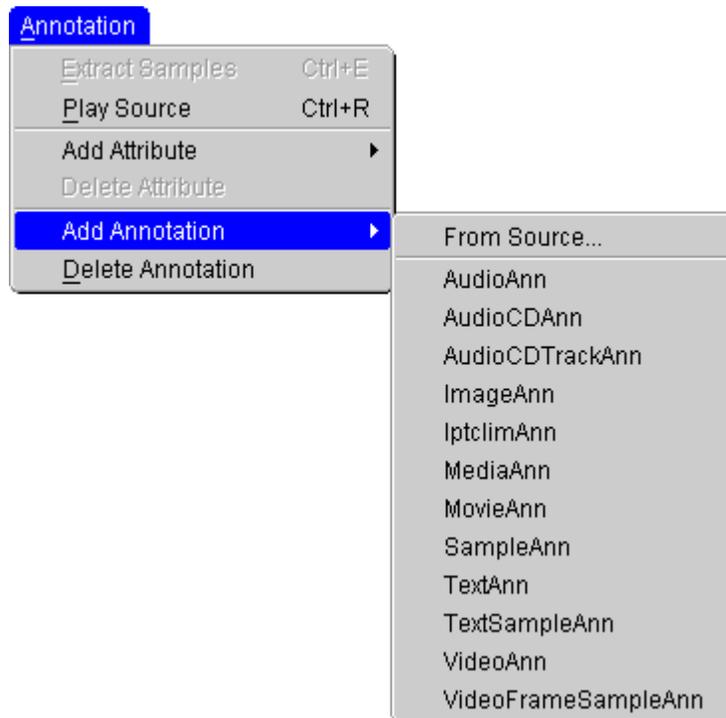
An annotation will usually contain one or more sub-annotations, which contain the metadata associated with a portion of the media source, such as a text track or an audio track. In addition to these populated sub-annotations, you can create your own sub-annotations by adding an empty annotation and then populating it with your own values.

To create an empty annotation, perform the following operations:

1. Select the annotation under which you will add a sub-annotation.
2. From the **Attribute** menu, select **Add Annotation**.

The **Add Annotation** submenu appears (Figure 3–6).

Figure 3–6 Add Annotation Submenu



3. Select the type of annotation to create.

Your new annotation appears in the Annotation Tree View.

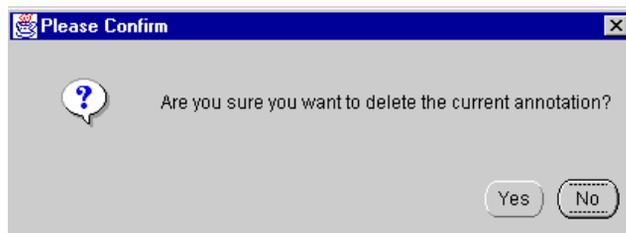
You can populate an empty annotation with attribute values in the same way you would add attribute values to a populated annotation. See Section 3.3 for more information.

You can also delete sub-annotations from an annotation. You can delete sub-annotations that you have created and sub-annotations that were created automatically in the parsing process. To delete an annotation, perform the following operations:

1. Select the annotation to be deleted.
2. From the **Attribute** menu, select **Delete Annotation**.

The **Please Confirm** window opens (Figure 3–7).

Figure 3–7 Please Confirm Window for Deleting Annotations



3. Click **Yes**.

The selected sub-annotation is removed from the Annotation Tree View.

3.5 Extracting a Sample

You can use *interMedia* Annotator to extract three types of samples: text selections (or **tracks**) from a QuickTime movie file, images from a QuickTime movie file, audio tracks from a compact disc.

3.5.1 Text Tracks from QuickTime Movies

To extract a text track from a QuickTime movie, perform the following operations:

1. Annotate a QuickTime movie that contains a text track, such as `oracle_comm2.mov` (included with *interMedia* Annotator). See Section 3.1 for more information on creating an annotation.
2. Select **TextAnn** in the left-hand window pane.
3. Either select **Extract Samples** from the **Annotation** menu or click the **Extract Samples** button on the toolbar.

View the extracted text information by clicking the **Samples** tab when the text annotation is selected (Figure 3–8).

Figure 3–8 Samples Tab with Audio Samples

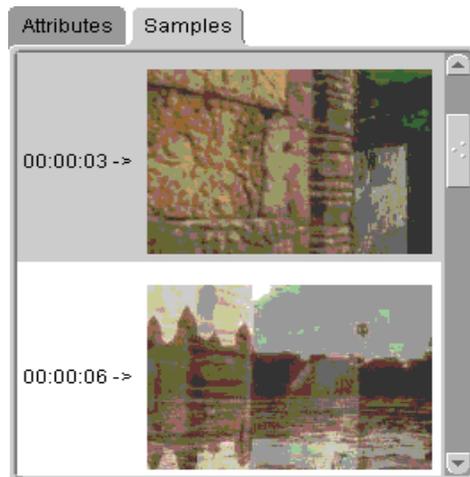


3.5.2 Video Tracks from a QuickTime Movie

To extract a video track from a QuickTime movie, perform the following operations:

1. Annotate a QuickTime movie. See Section 3.1 for more information on creating an annotation.
2. Select VideoAnn in the left-hand window pane.
3. Set the amount of video data to be extracted by performing the following steps:
 - a. From the **Edit** menu, select **Preferences** and click the **Parsers** tab.
The **Parsers** tab of the **Preferences** window appears (Figure 2–3).
 - b. Click the plus sign (+) next to the QT4JavaParser option.
 - c. In the list that appears, select ExtractVideoSamples.
 - d. If you want to specify the time interval to pass between frame extractions, then enter "true" in the "Extraction by Time Interval" field and enter the interval (in seconds) in the "Extraction Parameter" field.
 - e. If you want to specify the number of frames to be extracted, then enter "false" in the "Extraction by Time Interval" field and enter the number of frames to be extracted in the "Extraction Parameter" field.
 - f. Click **OK** to confirm and save the changes.
4. Either select **Extract Samples** from the **Annotation** menu or click the **Extract Samples** button on the toolbar.

View the extracted video information by clicking the **Samples** tab when the video annotation is selected (Figure 3–9).

Figure 3–9 Samples Tab with Video Samples

3.5.3 Audio Tracks from a CD

interMedia Annotator can extract audio data from a CD track. You can specify the start and end points of your extracted sample.

To extract samples from a CD, perform the following operations:

1. Annotate an audio CD. See Section 3.1 for more information on creating an annotation.
2. Select an audio CD track annotation in the Annotations pane.
3. Set the amount of audio data to be extracted by performing the following steps:
 - a. From the **Edit** menu, select **Preferences** and click the **Parsers** tab.
The **Parsers** tab of the **Preferences** window appears (Figure 2–3).
 - b. Click the plus sign (+) next to the Audio CD Parser option.
 - c. In the list that appears, select **ExtractAudioClipTrack**.
 - d. In the "Audio Sample Start Time" field, enter the time in seconds from which you want to start extracting.
 - e. In the "Audio Sample Length" field, enter the duration of the sample to be extracted, in seconds.
 - f. Click **OK** to confirm and save the changes.

4. Click the **Extract Media Samples** button on the toolbar.

The audio sample is extracted and stored in the Sun AU sound file format.

After extraction, media source attributes will be modified in order to refer to the extracted sample. These attributes include file format, MIME type, file name, directory, and URL, among others.

See Section 3.8 for more information on playing back the extracted sample.

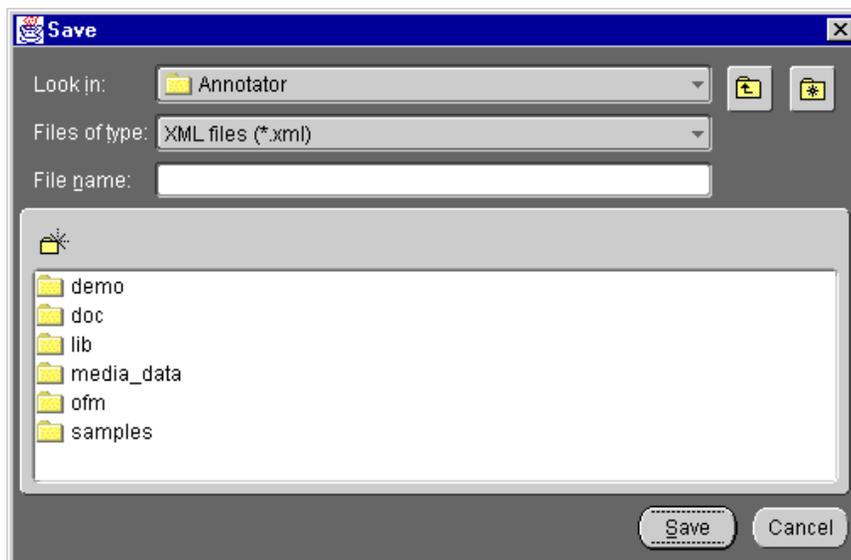
3.6 Saving Annotations

Once you have parsed a media source, you can save the annotation as an XML document by performing the following operations:

1. From the **File** menu, select **Save**.

The **Save** window appears (Figure 3-10).

Figure 3-10 Save Window



2. Enter a file name in the "File name: " field and click **Save**.

Note: *interMedia* Annotator does not automatically append the suffix *.xml* to the provided file name. You must manually enter the suffix.

The XML document can be viewed through any text editor or through *interMedia* Annotator. See Section 3.7 for more information.

The default folder where *interMedia* Annotator will save annotations is set in the **General** tab of the **Preferences** window. To change the default folder, perform the following operations:

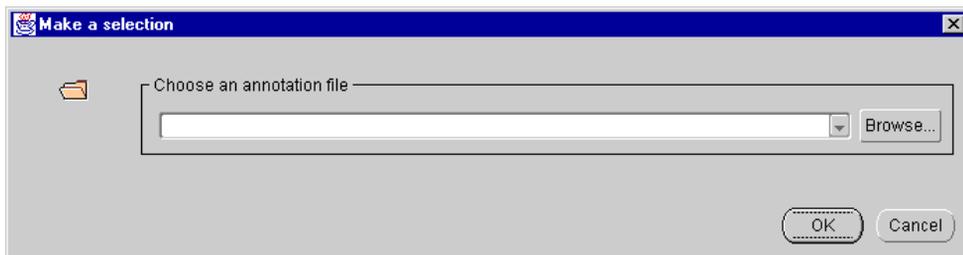
1. From the **Edit** menu, select **Preferences** and click the **General** tab. The **General** tab of the **Preferences** window appears (Figure 2–2).
2. Enter the name of the new default folder in the "Open/Save Directory: " text field.
3. Click **OK** to confirm and save the changes.

3.7 Opening a Saved Annotation

If you have a saved annotation, you can open it in *interMedia* Annotator by performing the following operations:

1. Either click the **Open** button on the toolbar or select **Open** from the **File** menu.
The **Make a Selection** window appears (Figure 3–11).

Figure 3–11 *Make a Selection Window*



2. Click the **Browse** button.
The **Open** window appears (Figure 3–2).

3. Select an annotation file and click **Open**.

The annotation and its sub-annotations appear in the Annotation Tree View.

3.8 Playing Media Sources or Viewing Extracted Samples

You can use *interMedia* Annotator to play your media source and any text or video sample that you have extracted.

Before playing a media source or sample, check the **Mime-Types** tab of the **Preferences** window to ensure that each MIME type is paired with the correct path to the appropriate helper application. See Section 2.3.5 for more information.

3.8.1 Media Source

Play a media source or an extracted sample by performing the following operations:

1. Select the annotation at the root of the Annotation Tree View.
2. Either click the **Play Source** button on the **Annotation** toolbar or select **Play Source** from the **Annotation** menu.

The appropriate media player opens and plays the media source.

3.8.2 Media Sample

Play an extracted media sample by performing the following operations:

1. Extract a media sample. See Section 3.5 for more information.
2. Select the sub-annotation associated with the sample you want to play.
3. Either click the **Play Source** button on the **Annotation** toolbar or select **Play Source** from the **Annotation** menu.

The appropriate media player opens and plays the media source.

3.8.3 Text Sample

You can view a text sample without opening a separate viewer.

After extracting the text sample, click the **Samples** tab in the right-hand window pane. The text sample appears, along with a timeline indicating roughly where each piece of text appears in the video or song.

Creating New Annotation Types

In addition to the supplied annotation types, you can use *interMedia* Annotator to create your own annotation types in order to better meet the needs of your applications. For example, the owner of an online sales database can define annotations containing inventory and price information alongside the media data and the extracted metadata.

For a complete example of a user-defined annotation type, see *ANNOTATOR_HOME\demo\examples\SampleInventoryAnn.xml*.

4.1 Writing a New Annotation Type

You define a new annotation type in an XML file. The XML file must follow the AnnotationDescriptor DTD, found at *ANNOTATOR_HOME\lib\descriptors\annotation\AnnotationDescriptor.dtd*.

When you finish writing the XML file, you should save it to *ANNOTATOR_HOME\lib\descriptors\annotations*.

The DTD describes the AnnotationDescriptor DTD, which contains two elements: AnnotationProperties and AttributeDescriptors.

4.1.1 AnnotationProperties Element

The AnnotationProperties element contains elements that provide information about the annotation as a whole. The elements contained are Name, Version, Description, Extends, Contains, ClassName, and IconFileName.

Name and Version are required elements. They contain the name of the new annotation type and the version number, respectively.

Description is an optional element that contains a brief description of the annotation as a whole.

Extends is an optional element. It contains the name of another annotation type, which your new annotation type will extend; that is, your new annotation type will include all the attribute definitions from the given annotation type, as well as any additional attributes that you define. However, you cannot overwrite the attributes that are inherited from the existing annotation type; you can only create new attributes. If you want to create an annotation type that is not related to another annotation type, do not include the Extends element.

Contains, ClassName, and IconFileName are reserved elements; do not assign values to these elements.

4.1.2 AttributeDescriptors Element

The AttributeDescriptors element contains one or more AttributeDescriptor elements. An AttributeDescriptor element contains one AttributeProperties element.

An AttributeProperties element contains elements that provide information about the specific attributes of your new annotation type. The elements contained are AttributeName, AttributeType, AttributeTypePattern, AttributeAlias, AttributeDescription, and AttributeDefaultValue.

AttributeName is a required element that contains the name of your new attribute.

AttributeType is a required element that contains the Java object type of the attribute value. AttributeType must be a Java object type; Java primitives are not allowed in your XML document. For example, if you want to use an integer, do not use "int", but rather "java.lang.Integer".

Almost any Java object type can be used as the AttributeType, as long as the Java object type defines two valid methods: public String toString() and public static *Object* valueOf(String), where *Object* is the Java object type. These methods return the contents of the object as a valid String and returns the contents of a given String as a valid object of type *Object*, respectively.

The class java.util.Date is a special case; it does not use the previous methods to provide a String representation of the contents of the object. Instead, use the AttributeTypePattern element. This element (which should be used only if the AttributeType is java.lang.Date) specifies the String pattern that should be used when displaying the date. The pattern follows the syntax in java.text.SimpleDateFormat. AttributeTypePattern is an optional element.

AttributeAlias, AttributeDescription, and AttributeDefaultValue are optional elements that define a shorter attribute name for display purposes, a short description of the attribute, and the default value of the attribute to be inserted in the annotation, respectively.

4.1.3 Element Hierarchy

In general, the structure of your XML document should be similar to the following:

```
<?xml version="1.0">
<!DOCTYPE AnnotationDescriptor SYSTEM "AnnotationDescriptor.dtd"
<AnnotationDescriptor>
  <AnnotationProperties>
    <Name>...</Name>
    <Version>...</Version>
    <Description>...</Description>
    <Extends>...</Extends>
  </AnnotationProperties>
  <AttributeDescriptors>
    <AttributeDescriptor>
      <AttributeProperties>
        <AttributeName>...</AttributeName>
        <AttributeType>...</AttributeType>
        <AttributeTypePattern>...</AttributeTypePattern>
        <AttributeAlias>...</AttributeAlias>
        <AttributeDescription>...</AttributeDescription>
        <AttributeDefaultValue>...</AttributeDefaultValue>
      </AttributeProperties>
    </AttributeDescriptor>
    <AttributeDescriptor>
      .
      .
      .
    </AttributeDescriptor>
  </AttributeDescriptors>
</AnnotationDescriptor>
```

4.2 Using a New Annotation Type

Once you have written your new XML file and included it in the *ANNOTATOR_HOME*\lib\descriptors\annotations directory, you will be able to use your new annotation type in the same way that you use the predefined annotation types. See Section 3.1 and Section 3.4 for more information on creating new annotations.

Note: An XML file is space-sensitive; "java.lang.Double" is valid, while "java.lang.Double " is invalid. Be careful that your XML file does not contain extraneous spaces because it could lead to errors.

Uploading Structured Annotations into a Database

interMedia Annotator can upload media data and an associated annotation into an Oracle8i database where Oracle8i *interMedia* has been installed. It does so through an Oracle PL/SQL Upload Template, which contains both PL/SQL calls and Annotator-specific keywords.

You create your own PL/SQL Upload Templates. Advanced users with PL/SQL experience can write PL/SQL Upload Templates in a text editor. See Section 5.1 for more information. Novice users can use the PL/SQL Template Wizard, which is a graphical user interface that progresses through each step of PL/SQL Upload Template creation. See Section 5.2 for more information.

Before proceeding, please read Steps 1 and 2 of Section 2.3.1 in order to configure the preferences for your database connection.

5.1 Creating Upload Templates Manually

Experienced *interMedia* Annotator users with experience in PL/SQL and JDBC may want to create their own PL/SQL Upload Templates instead of using the PL/SQL Template Wizard. You can create a PL/SQL Upload Template using any text editor.

5.1.1 Structure of Upload Templates

The PL/SQL Upload Template begins with a list of DML and DDL statements. This list is optional, depending on your needs.

Following this list is one anonymous PL/SQL block. You cannot have more than one anonymous PL/SQL block, and nothing should appear in the PL/SQL Upload Template after you end the block.

The anonymous PL/SQL block contains both standard PL/SQL code and *interMedia* Annotator-specific keywords. For more information on the keywords, see Section 5.1.2. For more information on writing PL/SQL code, see *PL/SQL User's Guide and Reference*.

Depending on the platform of the database server, there is a limit on the maximum size of the anonymous PL/SQL block. If you encounter this problem, you can work around it by packaging some of your statements into PL/SQL procedures in order to reduce the size of your PL/SQL block.

5.1.2 Annotator-Specific Keywords

In addition to standard PL/SQL calls, the PL/SQL Upload Templates contain Annotator-specific keywords. The keywords are delimited by *\$*{ and }*.* These keywords are interpreted by the Annotator preprocessor, which interprets the keywords and generates the appropriate PL/SQL code.

Note: An Annotator-specific keyword must appear on its own line in the PL/SQL Upload Template. You cannot have multiple keywords on the same line.

The following sections provide more information on the keywords.

5.1.2.1 Attribute Values

Instead of hard-coding values for specific attributes in your PL/SQL Upload Template, you provide the name of the attribute, enclosed with the *\$*{ and }*.* characters. This tells the preprocessor to get the actual value of the attribute from the current annotation and use that value to replace the keyword in the PL/SQL Upload Template. This simple replacement allows you to use the same PL/SQL Upload Template for multiple annotations.

Example 5–1 shows keywords that will later be replaced with attribute values.

Example 5–1 Attribute Values as Keywords

```
audioObj.setMimeType('${MEDIA_SOURCE_MIME_TYPE}');  
INSERT INTO SongsTable VALUES('${AUDIO_CD_TRACK_CDID}');
```

5.1.2.2 `#{MANN_BEGIN_ITERATE}` and `#{MANN_END_ITERATE}`

The `#{MANN_BEGIN_ITERATE}` and `#{MANN_END_ITERATE}` keywords indicate that the code enclosed by the keywords should be repeated for each sub-annotation of the given type. The name of the annotation type follows the `#{MANN_BEGIN_ITERATE}` keyword.

Example 5–2 shows a block of code that will be run for each `AudioCDTrackAnn` that exists as a sub-annotation of the current annotation.

Example 5–2 `#{MANN_BEGIN_ITERATE}` and `#{MANN_END_ITERATE}`

```
#{MANN_BEGIN_ITERATE} AudioCDTrackAnn
INSERT INTO SongsTable VALUES('#{AUDIO_CD_TRACK_CDID}',
                               '#{AUDIO_CD_TRACK_ID}');
#{MANN_END_ITERATE}
```

5.1.2.3 `#{MANN_BEGIN_TRACK}` and `#{MANN_END_TRACK}`

The `#{MANN_BEGIN_TRACK}` and `#{MANN_END_TRACK}` keywords indicate that the code enclosed by the keywords should be run on the first instance of a sub-annotation of the given class. The name of the annotation type follows the `#{MANN_BEGIN_TRACK}` keyword.

Example 5–3 shows a block of code that will be run upon the first `AudioCDTrackAnn` that exists as a sub-annotation of the current annotation.

Example 5–3 `#{MANN_BEGIN_TRACK}` and `#{MANN_END_TRACK}`

```
#{MANN_BEGIN_TRACK} AudioCDTrackAnn
INSERT INTO SongsTable VALUES('#{AUDIO_CD_TRACK_CDID}',
                               '#{AUDIO_CD_TRACK_ID}');
#{MANN_END_TRACK}
```

5.1.2.4 `#{MANN_BEGIN_IFDEF}` and `#{MANN_END_IFDEF}`

The `#{MANN_BEGIN_IFDEF}` and `#{MANN_END_IFDEF}` keywords indicate that the code enclosed by the keywords should be run only if the current annotation has a defined value for a given attribute. The name of the attribute follows the `#{MANN_BEGIN_IFDEF}` keyword.

Example 5–4 shows a block of code that will be run only if the `MEDIA_SOURCE_MIME_TYPE` attribute is defined in the current annotation.

Example 5–4 `#{MANN_BEGIN_IFDEF}` and `#{MANN_END_IFDEF}`

```
#{MANN_BEGIN_IFDEF} MEDIA_SOURCE_MIME_TYPE
audioObj.setMimeType('#{MEDIA_SOURCE_MIME_TYPE}');
#{MANN_END_IFDEF}
```

5.1.2.5 `#{MANN_BEGIN_IFEQUALS}` and `#{MANN_END_IFEQUALS}`

The `#{MANN_BEGIN_IFEQUALS}` and `#{MANN_END_IFEQUALS}` keywords indicate that the code enclosed by the keywords should be run only if the current annotation contains a given attribute of a given value. The name of the attribute and the value follow the `#{MANN_BEGIN_IFEQUALS}` keyword. The string comparison is case-sensitive.

Example 5–5 shows a block of code that will be run only if the `MEDIA_SOURCE_MIME_TYPE` attribute is defined as *audio/basic* in the current annotation.

Example 5–5 `#{MANN_BEGIN_IFEQUALS}` and `#{MANN_END_IFEQUALS}`

```
#{MANN_BEGIN_IFEQUALS} MEDIA_SOURCE_MIME_TYPE audio/basic
audioObj.setMimeType('#{MEDIA_SOURCE_MIME_TYPE}');
#{MANN_END_IFEQUALS}
```

5.1.2.6 `#{MANN_UPLOAD_SRC}`

The `#{MANN_UPLOAD_SRC}` keyword indicates that the media source data associated with the current annotation should be uploaded to the current Oracle8i database table using JDBC; the file is loaded into Annotator, and Annotator loads the file into the database. The name of the server-side object and attribute (of the BLOB type) follows the `#{MANN_UPLOAD_SRC}` keyword.

Upload performance with the `#{MANN_UPLOAD_SRC}` keyword may be slow if you are using the JDBC Thin driver to upload a large media source, or if you have a slow network connection. You may get better results by using the *interMedia* `import()` method. See Section 5.2.1 for more information on the differences between the two upload options. See *Oracle8i interMedia Audio, Image, and Video User's Guide and Reference* for more information on the `import()` method.

Example 5–6 shows a block of code that will upload the current media source data to the `source.localData` attribute of the server-side *interMedia* object `videoObj`.

Example 5–6 `#{MANN_UPLOAD_SRC}`

```
#{MANN_UPLOAD_SRC} videoObj.source.localData
```

5.1.2.7 `#{MANN_UPLOAD_XML}`

The `#{MANN_UPLOAD_XML}` keyword indicates that the current annotation should be uploaded to the current Oracle8i database table. The annotation should be uploaded to a CLOB in an Oracle8i *interMedia* object. The name of the server-side object and CLOB attribute follows the `#{MANN_UPLOAD_XML}` keyword.

Example 5–7 shows a block of code that will upload the current annotation to the comments attribute of the server-side *interMedia* object `videoObj`.

Example 5–7 `#{MANN_UPLOAD_XML}`

```
#{MANN_UPLOAD_XML} videoObj.comments
```

For more information on Oracle8i *interMedia* APIs, see *Oracle8i interMedia Audio, Image, and Video User's Guide and Reference*

5.1.3 Saved Files

Once you have written your PL/SQL Upload Template, save it with the suffix `.ofm`. The default folder that Annotator uses for PL/SQL Upload Templates is `ANNOTATOR_HOME\ofm`. To change the default folder, see Section 5.2.6.

See Section 5.4 for information on how to run a PL/SQL Upload Template.

5.1.4 Complete PL/SQL Upload Template Example

Example 5–8 contains a sample PL/SQL Upload Template. It will upload a video object and its associated annotation to an Oracle8i table named `MediaTable`. The sample contains one anonymous PL/SQL block containing a mix of PL/SQL calls and Annotator-specific keywords.

Example 5–8 PL/SQL Upload Template Sample

```
DECLARE
  videoObj          ORDSYS.ORDVIDEO;
  ctx               RAW(4000) := NULL;
BEGIN
  INSERT INTO MediaTable VALUES (
    1,
    ORDSYS.ORDVIDEO(
      '#{MEDIA_TITLE}',
      ORDSYS.ORDSource(EMPTY_BLOB(),
        NULL,
```

```
        '${MEDIA_SOURCE_DIRECTORY}',
        '${MEDIA_SOURCE_FILENAME}',
        NULL,NULL),
        '${MEDIA_SOURCE_FILE_FORMAT}',
        '${MEDIA_SOURCE_MIME_TYPE}',
        EMPTY_CLOB(), NULL, NULL, NULL, NULL, NULL, NULL, '',
        NULL, NULL)
);

SELECT M.mediaSource INTO videoObj
FROM   MediaTable M
WHERE  M.MediaId = 1
FOR UPDATE;

${MANN_UPLOAD_SRC} videoObj.source.localData
${MANN_UPLOAD_XML} videoObj.comments

UPDATE MediaTable M SET M.mediaSource = videoObj
WHERE  M.mediaId = 1;

END;
```

5.2 Using the PL/SQL Template Wizard to Generate Upload Templates

Users with limited PL/SQL experience should use the PL/SQL Template Wizard to generate a PL/SQL Upload Template. The PL/SQL Template Wizard takes you through a step-by-step process to create a PL/SQL Upload Template through a graphical user interface; you do not need to understand the Annotator-specific keywords involved.

To start the PL/SQL Template Wizard, perform one of the following operations:

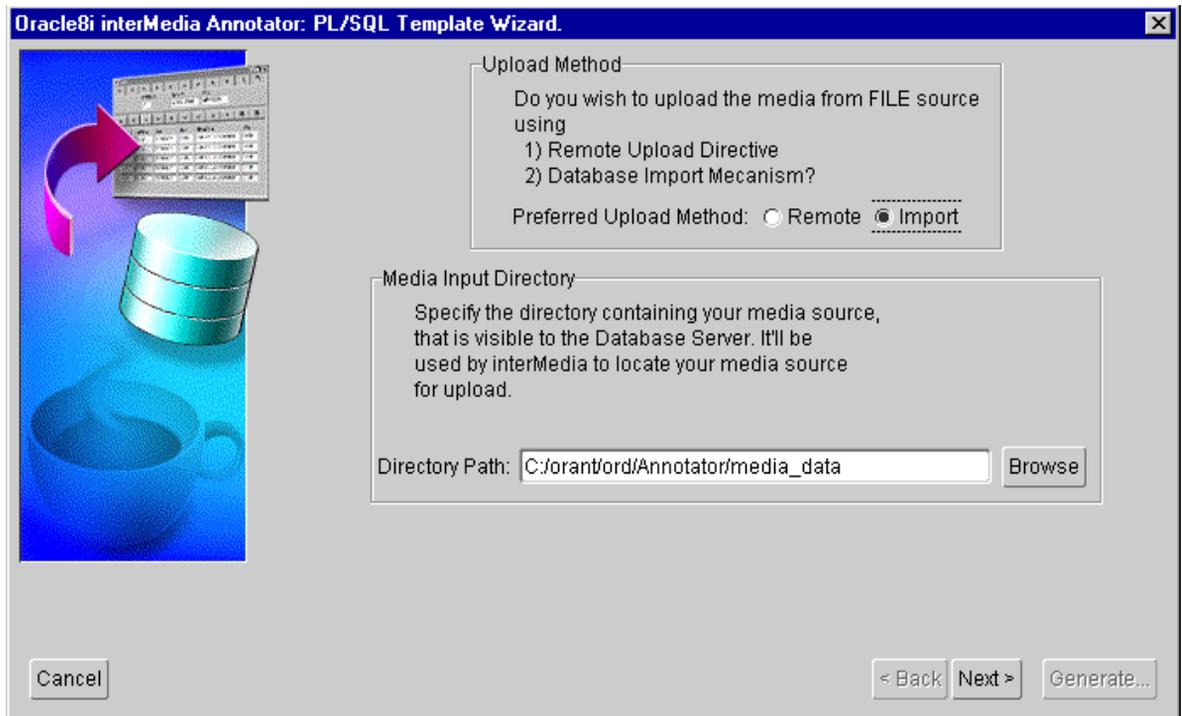
- Click the **Generate Template** button on the Oracle toolbar (Figure 1-5).
- From the **Database** menu, select **PL/SQL Template Wizard**.

The following sections go through each screen of the PL/SQL Template Wizard.

5.2.1 Upload Method

The **Upload Method** window (Figure 5-1) asks you to specify a method to upload the media source.

Figure 5-1 PL/SQL Template Wizard Upload Method Window



There are two different methods that Annotator can use to upload the media source and annotation to your database: import and remote. In an import upload, the media source must be visible to the database server (either in a file system or through an HTTP stream), and the media source will be loaded directly from the file system to the database. In a remote upload, the media source does not have to be visible to the database; the file is loaded into Annotator, and Annotator loads the file into the database through JDBC calls.

An import upload uses the Oracle *interMedia* `import()` method, while the remote upload uses the `${MANN_UPLOAD_SRC}` Annotator-specific keyword.

If you select Import and the media source is in a file system, you must specify the path to the directory where the media file resides. The directory path should be specified from the point of view of the Oracle8i database server to which you are uploading. For example, if you are running *interMedia* Annotator on Windows NT and you want to upload data to an Oracle8i database that is running on a UNIX platform, the media data must reside in a directory that can be accessed by both

machines. You can do this by mounting a UNIX directory on the server into a Windows NT network drive. *Prior* to entering the PL/SQL Template Wizard, you would refer to the media file using the mapped Windows drive/directory name. In the PL/SQL Template Wizard, however, you must specify the directory using the UNIX directory name that Oracle8i will use to access the media.

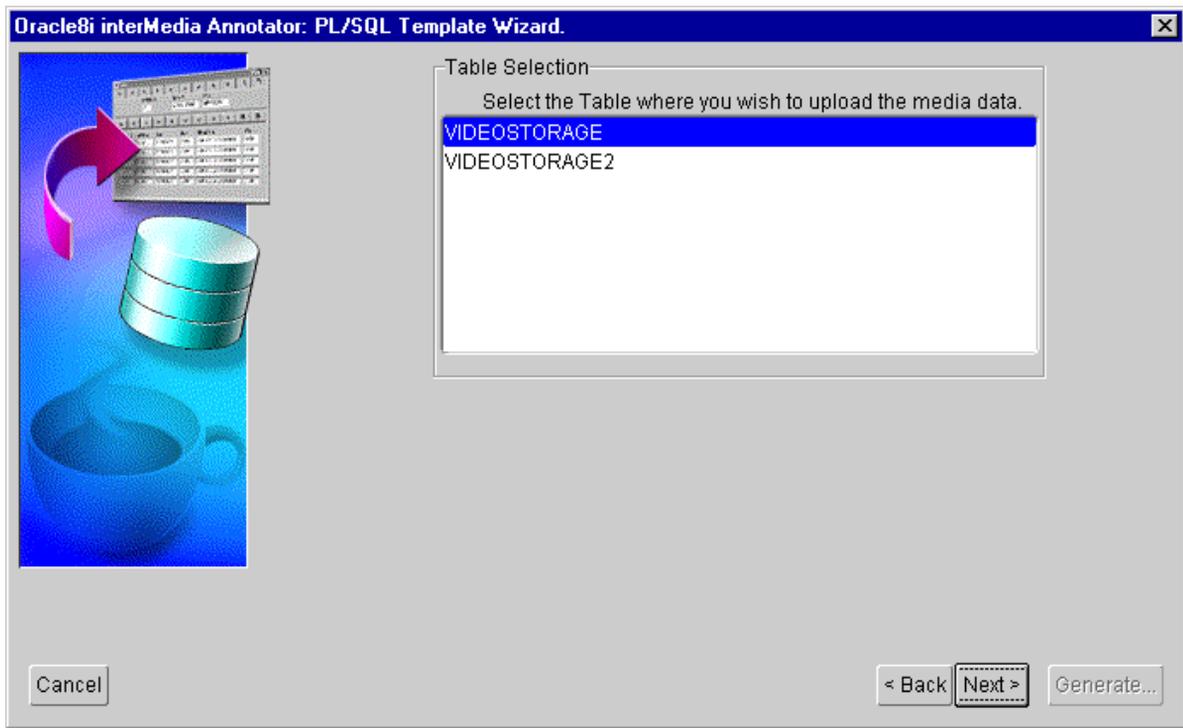
If you select Import and the media source is an HTTP stream, you can choose to either import the media data into the database or store the URL in the database.

If you select Remote and you are using the JDBC Thin driver, your upload performance may be poor, especially if you are uploading large files.

5.2.2 Table Selection

The **Table Selection** window (Figure 5-2) asks you to choose the table into which the *interMedia* object will be uploaded.

Figure 5-2 PL/SQL Template Wizard Table Selection Window

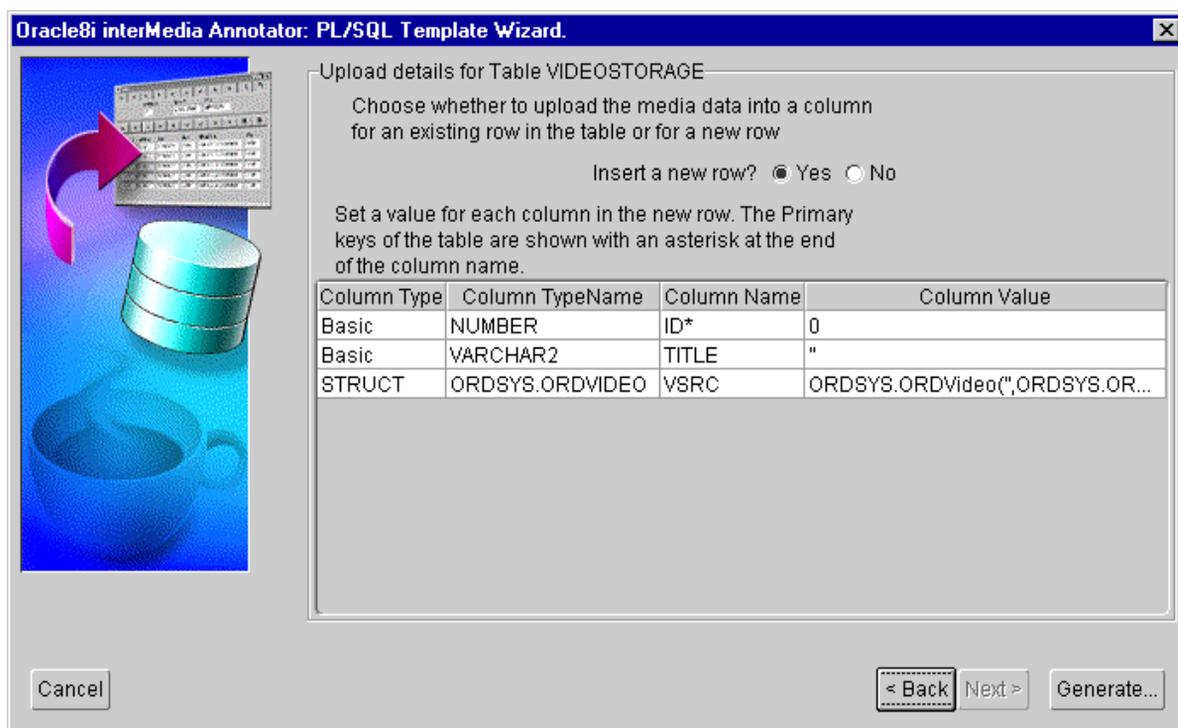


This table must have at least one column of the appropriate *interMedia* object type (ORDSYS.ORDAudio for annotations for audio files or songs from a CD, ORDSYS.ORDImage for annotations for image files, or ORDSYS.ORDVideo for annotations for video files) in order to proceed. The PL/SQL Template Wizard will check for this condition and notify you if it is not met.

5.2.3 Upload Details

The **Upload Details** window (Figure 5–3) asks if you want to upload the object into an existing row of the table or into a new row.

Figure 5–3 PL/SQL Template Wizard Upload Details Window



If you choose **No**, you will be taken to the **Row Selection** window. See Section 5.2.5 for more information.

If you choose **Yes**, you have to specify a value for each table column. This is necessary for the primary keys, which will be marked with an asterisk. For the remaining columns, you are given several possible input methods:

- Use the default values provided by *interMedia* Annotator.
- Manually fill in the values, observing the usual SQL syntax according to the column type.
- From the pull-down menu, choose an attribute of the annotation that you are inserting. *interMedia* Annotator will insert the value of this attribute into the new row. This option is recommended if you want to build an index on a specific column representing an annotation attribute.

Figure 5–3 shows the ID column (primary key) having its value manually typed in, the VSRC column (ORDSYS.ORDVideo) using the default value provided by *interMedia* Annotator, and the TITLE column being mapped to the annotation's MEDIA_TITLE attribute.

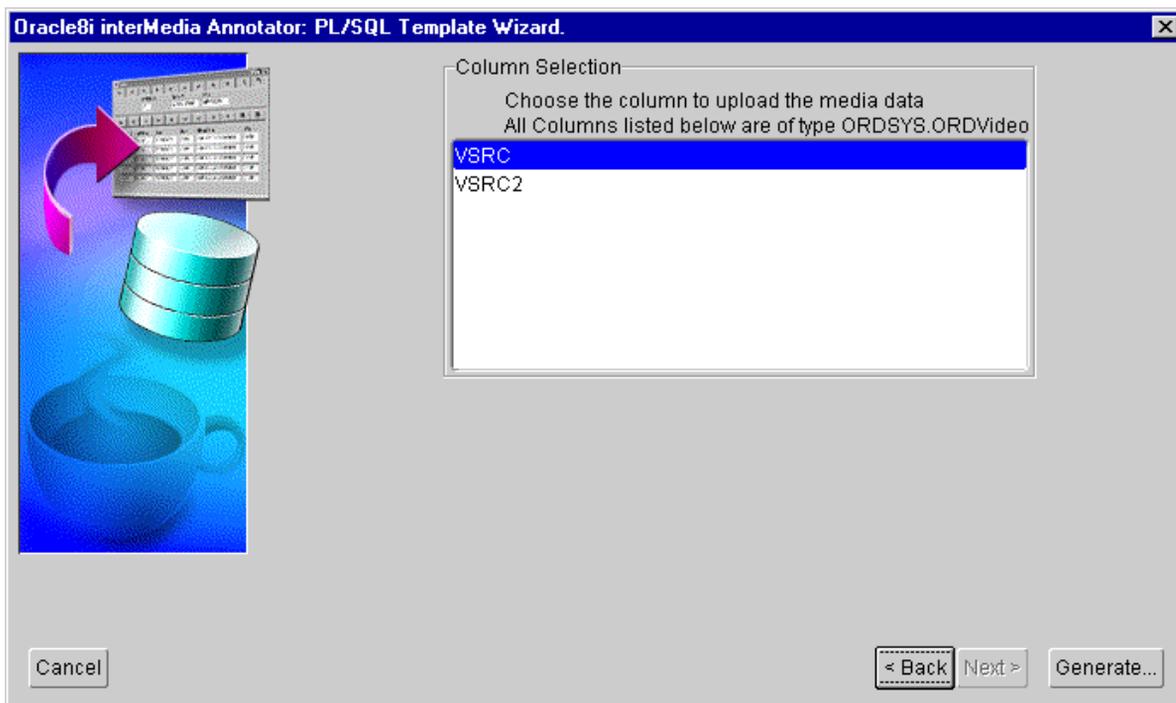
If your table has multiple columns containing *interMedia* objects, clicking the **Next** button will take you to the **Column Selection** window. See Section 5.2.4 for more information.

If you are uploading to an existing row, clicking the **Next** button will take you to the **Row Selection** window. See Section 5.2.5 for more information.

If your table has only one column of *interMedia* objects and you are uploading to a new row, the **Generate** button will be enabled. See Section 5.2.6 for more information.

5.2.4 Column Selection

The media data and the annotation in XML form will be uploaded only to a table that contains an *interMedia* object whose type can be mapped to the annotation. If your table contains two or more such columns, the **Column Selection** window (Figure 5–4) will prompt you to select the column into which the *interMedia* object will be uploaded.

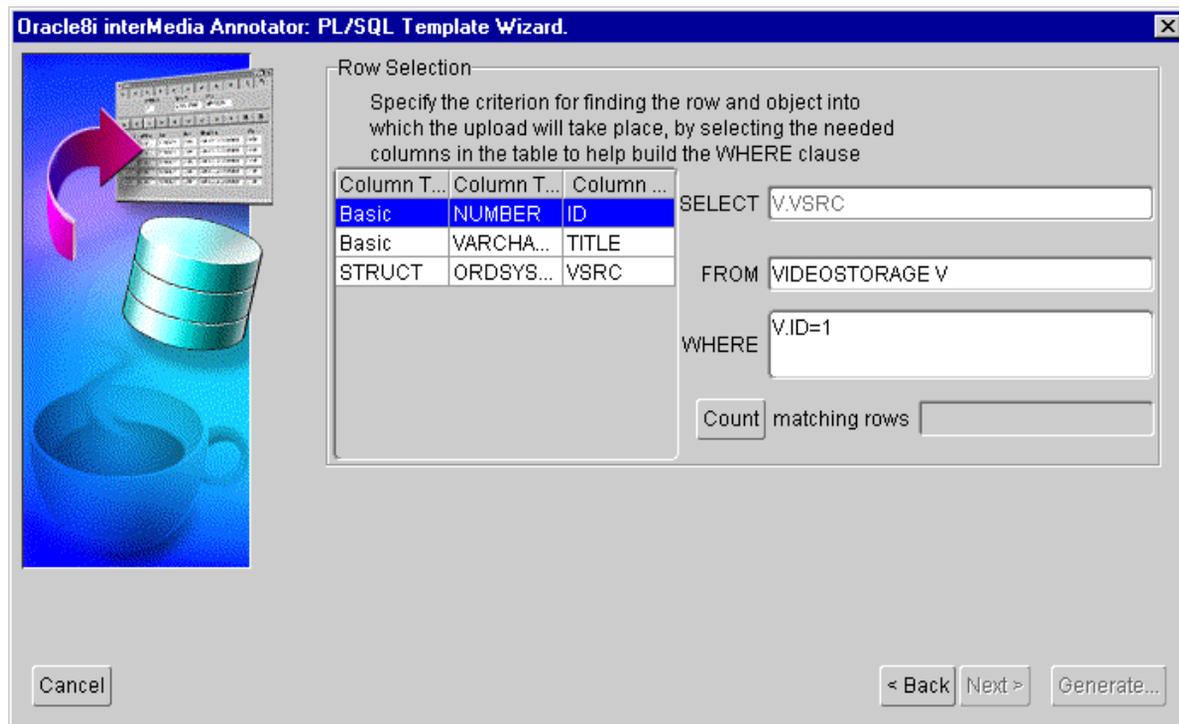
Figure 5–4 PL/SQL Template Wizard Column Selection Window

If you previously chose to insert a *new* row, the **Generate** button is enabled after you select a column. See Section 5.2.6 for more information.

If you previously chose to upload to an existing row, the **Next** button will take you to the **Row Selection** window. See Section 5.2.5 for more information.

5.2.5 Row Selection

The **Row Selection** window (Figure 5–5) asks you to enter the criteria to be used for querying a row that contains the column into which the *interMedia* object will be uploaded.

Figure 5–5 PL/SQL Template Wizard Row Selection Window

The table name was specified earlier, so you need to specify the WHERE clause of a SQL SELECT statement that will return the *interMedia* destination object. You can use the **Count** button to ensure that only one row is returned.

Once you complete this step, the **Generate** button is enabled. See Section 5.2.6 for more information.

5.2.6 Generate

When you have entered all the necessary information, the **Generate** button will become active. Click the **Generate** button to close the PL/SQL Template Wizard and generate your PL/SQL Upload Template. Possible SQL errors will be reported through the **Console**.

Your PL/SQL Upload Template will be saved to a default directory that is defined in the **Preferences** window. Initially, the directory is set to `ANNOTATOR_HOME\ofm`. To change this folder, perform the following operations:

1. From the **Edit** menu, select **Preferences** and click the **General** tab. The **General** tab of the **Preferences** window appears (Figure 2–2).
2. Perform *one* of the following operations:
 - Enter the path to the new folder in the "PL/SQL Template Folder" field.
 - Click the **Browse** button next to the "PL/SQL Template Folder" and select the new folder in the dialog box.
3. Click **OK** to apply and save the changes.

See Section 5.4 for information on how to run a PL/SQL Upload Template.

5.3 Editing Existing PL/SQL Upload Templates

Whether you use the PL/SQL Template Wizard or you write your own PL/SQL Upload Templates from scratch, you can edit your PL/SQL Upload Templates in a text editor.

You cannot use the PL/SQL Template Wizard to edit an existing PL/SQL Upload Template; it can create only new PL/SQL Upload Templates.

5.4 Using Upload Templates to Upload to the Database

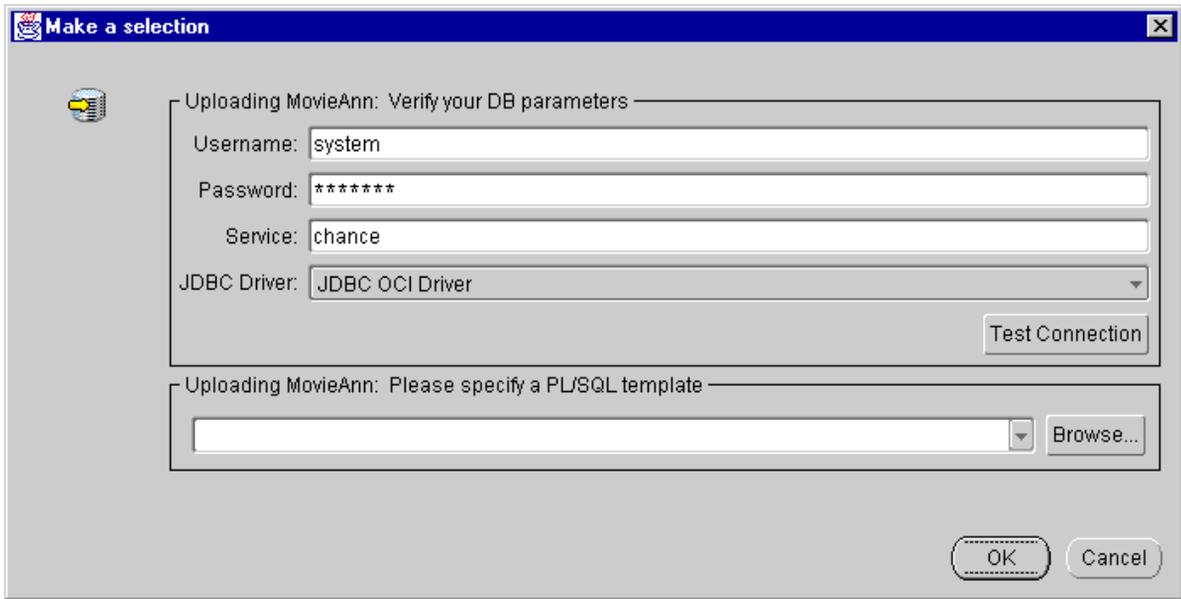
If you use the PL/SQL Template Wizard or a text editor to create a new PL/SQL Upload Template, or if you use one of the files provided with *interMedia* Annotator, you have to run the PL/SQL Upload Template from within *interMedia* Annotator in order to actually upload your media source and annotation to your database.

To run a PL/SQL Upload Template, perform the following operations:

1. Perform *one* of the following operations:
 - Click the **Upload to Oracle** button on the Oracle toolbar (Figure 1–5).
 - From the **Database** menu, select **Upload**.

The **Upload Annotation** window appears (Figure 5–6).

Figure 5–6 Upload Annotation Window



2. Perform *one* of the following operations:
 - Enter the path to the new folder in the "PL/SQL Template Folder" field.
 - Click the **Browse** button, select the new folder in the dialog box, and click **Open**.
3. Click **OK** to run the PL/SQL Upload Template.

Errors encountered during the upload process will appear in the **Console**.

Querying Stored Annotations

After the media data and the annotation are uploaded into an Oracle8i database, you can use *interMedia* Text to perform a query on the annotation (which is saved in the database in XML form).

The following PL/SQL code excerpt is an example of how to build an *interMedia* Text index on the VideoStorage table. This code excerpt generates an *interMedia* Text index on the comments field of the vsrc column of the VideoStorage table, with the defined list preference, as well as the XML tags, defined in the section group:

```
-- create a preference
execute ctx_ddl.create_preference('ANNOT_WORDLIST', 'BASIC_WORDLIST');
execute ctx_ddl.set_attribute('ANNOT_WORDLIST', 'stemmer', 'ENGLISH');
execute ctx_ddl.set_attribute('ANNOT_WORDLIST', 'fuzzy_match', 'ENGLISH');
...

-- section group
execute ctx_ddl.create_section_group('MOVIEANN_TAGS',
                                   'xml_section_group');
execute ctx_ddl.add_zone_section('MOVIEANN_TAGS', 'MOVIECASTTAG',
                                'MOVIE_CAST');
execute ctx_ddl.add_zone_section('MOVIEANN_TAGS',
                                'MEDIACOPYRIGHTTAG',
                                'MEDIA_COPYRIGHT');
execute ctx_ddl.add_zone_section('MOVIEANN_TAGS',
                                'MEDIASOURCEFILEFORMATTAG',
                                'MEDIA_SOURCE_FILE_FORMAT');
...
CREATE INDEX videoIdx ON VideoStorage(vsrc.comments) INDEXTYPE IS
  CTXSYS.CONTEXT PARAMETERS('stoplist CTXSYS.EMPTY_STOPLIST wordlist
  ANN_WORDLIST filter CTXSYS.NULL_FILTER section group MOVIEANN_TAGS');
```

See Section 2.3.2 for more information on creating the VideoStorage table.

The following PL/SQL code excerpt is an example of how to query the VideoStorage table:

```
-- Perform a query
select id, score(99)
from VideoStorage V
where
    CONTAINS(V.vsrc.comments, '(John Doe) WITHIN MOVIECASTTAG',
    99) > 0;
```

The preceding query returns the clip identification number and the relevancy score (generated by *interMedia* Text) of the video clips that contain "John Doe" in the MOVIE_CAST attribute of the associated annotation.

A copy of the preceding PL/SQL statements is available in: *ANNOTATOR_HOME*\demo\examples\SampleCode.sql

For more information, see *Oracle8i interMedia Text Reference*.

Supported Formats

interMedia Annotator supports the following file formats:

- Apple QuickTime 4.0
- Microsoft AVI
- AIFF/AIFC
- AU
- WAV
- Audio MPEG I/II, all layers
- RealMedia
- Audio compact disc
- JPEG/JFIF
- GIF87a/GIF89a
- BMP
- TIFF

Table A-1 shows the media source formats that have built-in support from *interMedia* Annotator and what, if any, extraction capabilities are offered by the corresponding built-in parser.

Table A-1 Built-in Parsers

File Format	MIME type	Extraction
Apple QuickTime 4.0	video/quicktime	Text track Video frame

Table A-1 Built-in Parsers(Cont.)

File Format	MIME type	Extraction
RIFF	video/x-msvideo application/x-troff-msvideo audio/x-wav	None
AIFF	audio/x-aiff audio/x-aif	None
RealMedia	video/x-realvideo video/x-realaudio	None
Sun Audio	audio/basic	None
MPEG I/II Audio	audio/x-mpeg	None
Audio CD	audio/x-cd-cdda	Audio sample
JPEG/JFIF	image/jpeg image/jpg	None
GIF	image/gif	None
BMP	image/bmp	None
TIFF	image/tiff	None

Defined Annotation Attributes

The tables in this appendix show the defined annotation attributes that are included with *interMedia* Annotator.

Table B-1 *MediaAnn Codes*

Attribute	Description
MEDIA_TITLE	Title of the media
MEDIA_DESCRIPTION	Description of the media
MEDIA_INFORMATION	Information on the media
MEDIA_COPYRIGHT	Copyright information of the media
MEDIA_PRODUCER	Producer of the media
MEDIA_DURATION	Duration of the media, in the form hour:minute:second:mantissa, where mantissa is the fraction of a second in the units defined in MEDIA_TIMESCALE
MEDIA_TRACK_ID	Track identifier for the annotation
MEDIA_TIMESCALE	Number of units in a second
MEDIA_CONTENT_DATE	Creation date of the media content
MEDIA_MODIFICATION_TIME	Modification time of type java.util.Date
MEDIA_CREDITS	Credits for content providers
MEDIA_SIZE	Size of the media source, in bytes
MEDIA_FORMAT_ENCODING_CODE	Short form (four characters) of the media encoding
MEDIA_FORMAT_ENCODING	Format of the media encoding

Table B-1 MediaAnn Codes(Cont.)

Attribute	Description
MEDIA_USER_DATA	String containing miscellaneous user data
MEDIA_LANGUAGE	Language of the media
MEDIA_BITRATE	Bit rate of the media (in bits/second)
MEDIA_CATEGORY	Media category or genre
MEDIA_AUTHORING_TOOL	Authoring tool used to create the media
MEDIA_SOURCE_URL	Location or URL of the parsed media source
MEDIA_SOURCE_PROTOCOL	URL protocol of the media source
MEDIA_SOURCE_MIME_TYPE	MIME type of the media and its samples
MEDIA_SOURCE_DIRECTORY	Directory where the source is stored
MEDIA_SOURCE_FILENAME	File name of the source
MEDIA_SOURCE_FILE_FORMAT	Media file format
MEDIA_SOURCE_FILE_FORMAT_CODE	Short form (four characters) of media file format
MEDIA_SOURCE_STREAMABLE	The streaming server that the media is optimized for, if any

Table B-2 AudioAnn Codes (extends MediaAnn)

Attribute	Description
AUDIO_BITS_PER_SAMPLE	Number of bits per sound sample
AUDIO_SAMPLE_RATE	Audio sampling rate (in samples/second)
AUDIO_NUM_CHANNELS	Number of audio channels
AUDIO_ARTIST	Main artist for the audio clip

Table B-3 VideoAnn Codes (extends MediaAnn)

Attribute	Description
VIDEO_FRAME_RATE	Video frame rate (in frames/second)
VIDEO_FRAME_SIZE	Video frame size (in bytes)
VIDEO_SRC_HEIGHT	Video height (in pixels)

Table B-3 VideoAnn Codes (extends MediaAnn)(Cont.)

Attribute	Description
VIDEO_SRC_WIDTH	Video width (in pixels)
VIDEO_HORIZONTAL_RES	Horizontal resolution (in pixels/inch)
VIDEO_VERTICAL_RES	Vertical resolution (in pixels/inch)
VIDEO_IS_GRAYSCALE	Whether or not the video has colors
VIDEO_DEPTH	Number of bits for the color depth

Table B-4 TextAnn Codes (extends MediaAnn)

Attribute	Description
TEXT_FONTSIZE	Point size of the text track
TEXT_FONTFACE	Font styles used (such as italics or boldface)
TEXT_FONTNAME	Name of the font used
TEXT_BG_COLOR	Background color (for example, 0x00RRGGBB)
TEXT_FG_COLOR	Foreground color (for example, 0x00RRGGBB)
TEXT_ALIGN	Left, center, right, or justified
TEXT_DEF_BOX	Default text box size, consisting of four instances of the Java primitive type <i>short</i>

Table B-5 MovieAnn Codes (extends MediaAnn)

Attribute	Description
MOVIE_DIRECTOR	Director of the movie
MOVIE_CAST	Names of the performers in the movie
MOVIE_EDIT_INFORMATION	Information about the editing
MOVIE_WARNING	Movie rating and warning information

Table B-6 AudioCDAnn Codes (extends MediaAnn)

Attribute	Description
AUDIO_CD_ID	CD identifier, recognized by CDDB
AUDIO_CD_NUM_OF_TRACKS	Number of tracks on the CD
AUDIO_CD_ARTIST	Main artist of the CD

Table B-7 AudioCDTrackAnn Codes (extends AudioAnn)

Attribute	Description
AUDIO_CD_TRACK_MINUTE	Starting minute of the track
AUDIO_CD_TRACK_SECOND	Starting second of the track
AUDIO_CD_TRACK_FRAME	Starting frame of the track
AUDIO_CD_TRACK_LBA	Logical block address associated with the track
AUDIO_CD_TRACK_CDID	CD identifier, recognized by CDDB
AUDIO_CD_TRACK_ALBUM	Audio CD title
AUDIO_CD_TRACK_DURATION	Duration of the track

Table B-8 ImageAnn Codes (extends MediaAnn)

Attribute	Description
IMAGE_HEIGHT	Height of the image
IMAGE_WIDTH	Width of the image
IMAGE_COUNT	Number of images stored in the file
IMAGE_PIXEL_FORMAT	The color space of the image, including the resolution
IMAGE_BITS_PER_PIXEL	Number of bits per image pixel
IMAGE_HORIZONTAL_RES	Horizontal resolution (in pixels/inch)
IMAGE_VERTICAL_RES	Vertical resolution (in pixels/inch)

Table B-9 IptclimAnn Codes

Attribute	Description
IIM_RECORD_VERSION	Version of the record
IIM_OBJECT_NAME	Object name
IIM_SPECIAL_INSTRUCTION	Special instructions
IIM_ACTION ADVISED	Action to be taken: either 01, 02, or 03
IIM_CREATION_DATE	Creation date, consisting of the Date Created and Time Created record sets
IIM_DIGITAL_CREATION_DATE	Date of creation of the digitized version, consisting of the Digital Creation Date and Digital Creation Time record sets
IIM_ORIGINATING_PROG	Originating program
IIM_PROGRAM_VERSION	Version of the originating program
IIM_OBJECT_CYCLE	Either am (a), pm (p), or both (b)
IIM_BYLINE	Creator of the image
IIM_BYLINE_TITLE	Title of the creator of the image
IIM_CITY	ID of the city of creation
IIM_SUB_LOCATION	ID of the location within the city of creation
IIM_PROVINCE_STATE	ID of the province or state of creation
IIM_COUNTRY_CODE	ID of the country of creation
IIM_LOCATION_NAME	Name of the location of creation
IIM_TRANSMISSION_REF	Transmission reference
IIM_HEADLINE	Headline associated with image
IIM_CREDIT	Provider of the object
IIM_SOURCE	Owner of the object
IIM_COPYRIGHT	Copyright notice
IIM_CONTACT	Contact for further information
IIM_CAPTION	Caption or abstract
IIM_WRITER	Writer or editor
IIM_IMAGE_TYPE	Image type

Table B–9 *IptclimAnn Codes(Cont.)*

Attribute	Description
IIM_LANGUAGE	Language ID
IIM_KEYWORDS	Keywords associated with the image (supported with version 2 of IIM)

Table B–10 *SampleAnn Codes (extends MediaAnn)*

Attribute	Description
SAMPLE_TIMESTAMP	Time stamp of the specified sample, in the form hour:minute:second:mantissa, where mantissa is the fraction of a second in the units defined in MEDIA_TIMESCALE

Table B–11 *TextSampleAnn Codes (extends SampleAnn)*

Attribute	Description
TEXTSAMPLE_VALUE	String value of the text sample

Table B–12 *VideoFrameSampleAnn Codes (extends SampleAnn)*

Attribute	Description
VIDEO_FRAME_SAMPLE_HEIGHT	Height of the frame extracted from the video track
VIDEO_FRAME_SAMPLE_WIDTH	Width of the video frame extracted from the video track

Frequently Asked Questions

How do I find out which attributes go with an annotation?

ANNOTATOR_HOME\lib\descriptors\annotations contains the XML files that define attributes for each annotation type.

Why won't my media file load into the database?

- The directory specified in the PL/SQL Upload Template is not accessible to the database server. This means that the directory does not exist or read access is not granted for that directory. See Section 5.2.1 for more details.
- For the file being uploaded, there is no read access granted to the database server.
- The INSERT statement in the PL/SQL Upload Template is incorrect. Refer to the reported SQL error in the **Console** for an indication of the problem. See Section 5.2.3 for more details.
- If the media source is imported through an HTTP stream, an error may occur depending on your proxy settings. Make sure that the UTL_HTTP package in your Oracle8i database is correctly configured.
- Either the specified WHERE clause returns no results or it returns more than one resulting row. See Section 5.2.5 for more details.

How do I build an index on an attribute value?

See Section 5.2.3.

How do I change the mapping between a file extension and its MIME type?

See Section 2.3.5.

When I am parsing a media source using the HTTP protocol, I encounter the following error: *Unsupported Annotation for Content Type text/html*

Check the path of the URL pointing to the resource. It is possible that the URL is invalid.

In the Insert New Row window of the PL/SQL Template Wizard, why can't I edit the values of the columns with *interMedia* Audio, Image, or Video type?

interMedia Annotator replaces the values of those columns with the media data and the annotation. Therefore, users are not expected to edit those columns, as their values will be overwritten automatically.

How can I change my startup settings?

If you are familiar with DOS batch files or UNIX shell scripts, you can modify the environment variables at the beginning of the startup script.

When I run *Annotator.bat* on my Windows NT system, why do I see the following error: "Could not load runtime library: d:\JRE\bin\javai.dll"?

The error appears because the NT registry is not consistent with the JDK that is being used. The error can be corrected by reinstalling the JDK. Also, check the directory names in *Annotator.bat*.

Where can I find the latest information on *interMedia* Annotator?

The latest information, known problems, and FAQ are available at:
http://technet.oracle.com/software/products/intermedia/software_index.htm

On the Macintosh platform, where is the Oracle JDBC driver located?

A copy of the Oracle JDBC Thin driver version 8.1.5 is included with the Macintosh version of Annotator. It is located at *ANNOTATOR_HOME*\lib\classes111.zip.

Does QuickTime support include sprite track and flash track?

Sprite track and flash track are not supported.

How do I submit feedback on *interMedia* Annotator?

Please send email feedback to imesup@us.oracle.com.

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