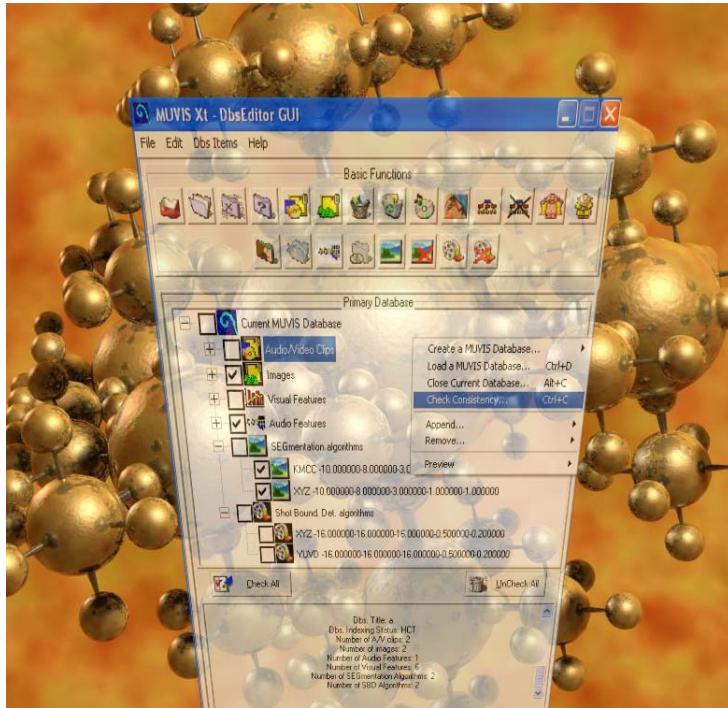


# DbEditor v1.8 (Database Editor) QUICK REFERENCE

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This application is a dialog-based program, which is designed to perform several off-line tasks of the MUVIS multimedia databases. *DbEditor* is the primary MUVIS database creator, editor and indexing application.

## **Installation:**

Simply run “Setup DbEditor v1.8.exe” file. Once installed, you can run the same file to uninstall the program.

*DBSEditor* supports three types of MUVIS databases:

- Video Databases (vdbs): Containing only audio/video clips and database features.
- Image Databases (idbs): Containing only images and associated features.
- Hybrid Databases (hdbs): Containing both audio/video clips and images, and database features.

Any kind of operation can be performed on any type of database. General information of a database is stored in associated database file, which is an ordinary text file. The name of a database file is formatted as follows:

*[Name given by creator application].[Four characters specifying the dbs. type]*, i.e. “*MyDatabase.hdbs*”.

### **GUI Properties:**

*DbEditor* supports “triple redundancy” for the basic operations. The user can use the main menu, the shortcut buttons or the pop-up menu to perform any of the basic operations that *DbEditor* can perform. The shortcut buttons have tool-tips to show their functions.

### **Main functionalities of DbEditor:**

- Extracting and storing new feature subsets for a MUVIS database.
- Removing stored features from a MUVIS database.
- Creating dummy image or audio/video MUVIS databases.
- Appending any type of audio/video clip(s) into a MUVIS database.
- Appending several types of image(s) into a MUVIS database.
- Removing audio/video clip(s) and image(s) from a MUVIS database.
- Checking consistency of a MUVIS database.
- Multimedia files (audio/video clips) and image conversions (in external mode or during appending MM items into MUVIS databases).
- External audio/video clips conversion (optional).
- (HCT) Indexing (and Removal) of a MUVIS database.
- SEGmentation and Shot Boundary Detection (SBD) Framework.

### **Initial Operation: Creating a dummy MUVIS database.**

When MUVIS applications are installed, the first operation should be to create dummy MUVIS databases to perform any of the database related operations.

## **Basic Database Operations**

### **1. Load Database:**

A database can be loaded by selecting *File* → *Load a Muvis Database* menu item from the *Database* Menu or pressing *Load Database* buttons. After a database is loaded successfully, the items of the database will be displayed in a tree structure in the main *DbEditor* GUI.

### **2. Close Database:**

A database can be closed by selecting *File* → *Close Current Database* menu item or pressing **Close Database** buttons.

### **3. Checking Consistency of Database:**

Consistency checking can be performed by selecting *Check Consistency* menu item from the *File* Menu or pressing one of the **Check Consistency** button. If a consistency problem is found, a message is given to the user. If the user approves to fix the problem, *DbEditor* tries to fix the consistency problem.

### **4. Extracting Visual Feature(s):**

When *DbEditor* is run, it first checks for the feature extraction modules, and attempts to load them. Feature subsets of the feature types can be extracted if the extraction module

of that feature type is loaded successfully. Features are extracted within a MUVIS database and therefore, before extracting any visual features a MUVIS database should be loaded.

To extract new visual features, *Append* → *New Visual Features* menu item from the main or pop-up menu can be selected OR the shortcut button with the same name can be pressed. When pressed, a new window is displayed, which is “Visual FeX Parameters Dialog”. It includes one tree and two lists. The bottom list box displays the existing visual features in the primary (current) database. The upper list box displays the feature subsets chosen and set by the user. Those features are to be extracted when **OK** button is pressed. The tree shows the present FeX modules with the default feature parameters. So the user can set/change the parameters of any feature by first choosing them and then editing (changing) the parameters in the edit box below. Once the parameters are set, the user can add the visual sub-feature to the feature list by pressing **Add** button. When all the desired feature subsets are added to the list, by pressing **OK** button, those feature subsets will be extracted and appended to the current database.

### **5. Extracting Audio Features:**

Extraction of the audio features are similar to the visual feature extraction. To extract new audio features, *Append* → *New Audio Features* menu item from the menu can be selected OR the shortcut button with the same name can be pressed. Once pressed, a new window is displayed, which is “Audio FeX Parameters Dialog”. Its structure is similar to the “Visual FeX Parameters Dialog”. The only difference is an extra parameter, which is valid only for audio features: Audio Frame Duration in msec. Once this and the other parameters are set the user can add the aural sub-feature to the feature list by pressing **Add** button. When all the desired feature subsets are added to the list, by pressing **OK** button, those audio features will be extracted and appended to the current database.

**Warning:** The audio features cannot be extracted within an image database (idbs).

### **6. Removing Visual/Aural Feature(s):**

To remove a feature subset, first the features (to be deleted) should be selected from the tree structure. Then there are three ways of removal of a sub-feature:

- **Remove Selected Visual/Aural Feature** shortcut button can be pressed,
- *Remove Visual Features* or *Remove Audio Features* menu item from the main menu can be selected,
- Via right clicking on the main window, and then *Remove* → *Selected Visual/Audio Features* menu item from the popup menu can be selected.

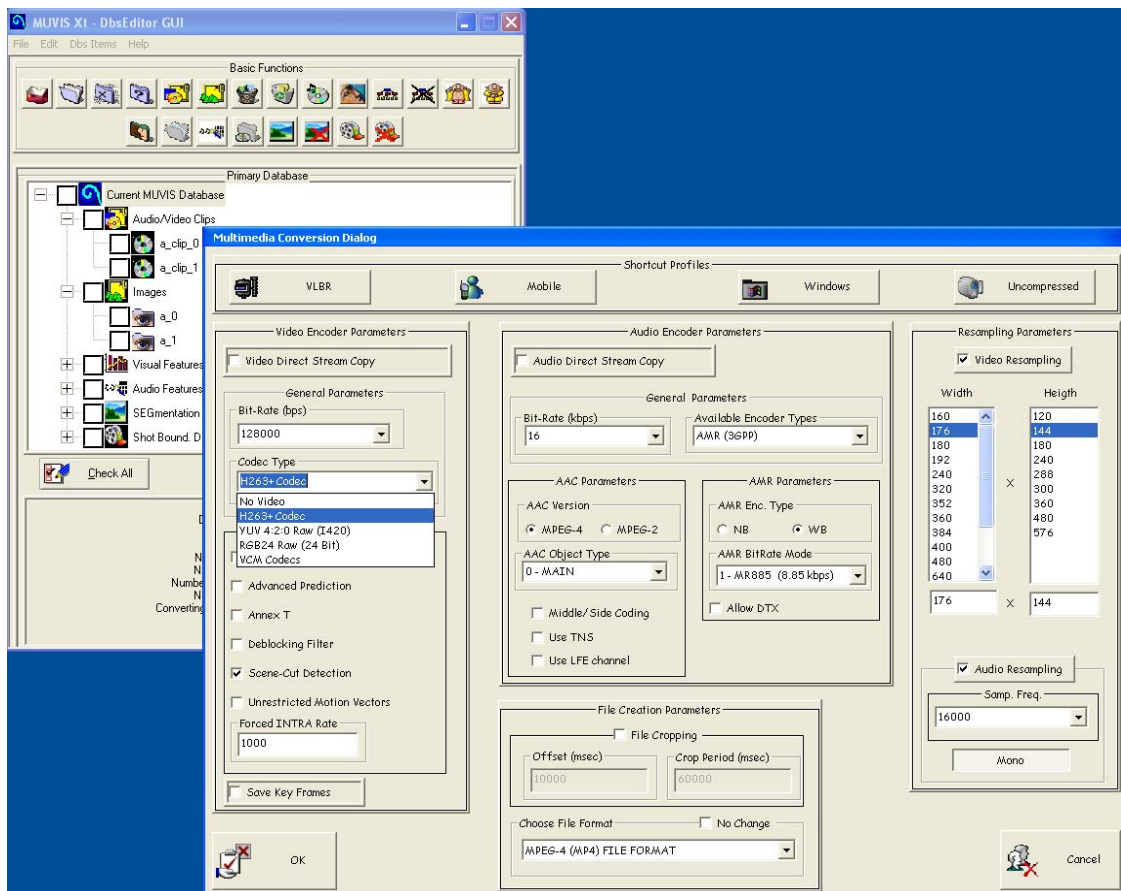
### **7. Appending Audio/Video Clip(s) into Database:**

External audio/video clip(s) can be appended to any MUVIS database by selecting *DBS Item* → *Append* → *New MM Clips* OR *Alien MM Clips* menu item from the main and popup menu OR pressing the “Append New MM Clips” button. 2 different audio/video files can be appended: MM files supported by MUVIS or Alien (mpg and mpeg) formats. Table 1 shows the entire MUVIS MM family. After one or more MM files are selected then the Multimedia Append Settings Dialog will appear as shown in Figure 1. If the files are within MUVIS MM family, then the user has the option not to convert them by choosing “Direct Stream Copy” for audio, video and “No Change” for

the file format. Note that these are only valid options for MM files in MUVIS family. Otherwise the files will be converted into specified audio and video encoding scheme and file format. If *No Audio* or *No Video* is selected as the encoder type then they will not be streamed into the destination file. If the appended clips are in alien formats (i.e. mpg, mpeg, wmv, asf, etc.), then MM conversion is mandatory for appending them to a MUVIS database. User should enter appropriate encoder types, parameters and file formats for these audio/video clips in order to initiate MM conversion process.

**Table 1: MUVIS MM Family.**

MUVIS Audio				MUVIS Video			
Codecs	Sampling Freq.	Channel No	File Formats	Codecs	Frame Rate	Frame Size	File Formats
MP3	8,11.025, 12, 16, 22.050,	Mono	MP3	H263+	1..25 fps	CIF, QCIF	AVI
AAC	24, 32, 44.1 KHz	Stereo	AAC	MPEG-4		Any	MP4
G721	Any		AVI	YUV 4:2:0			
G723			MP4				
PCM			AMR	RGB 24			
AMR	8 KHz-16KHz only						



**Figure 1: DbsEditor MM Conversion Dialog.**

In order to use MPEG-4 SP encoder, choose VCM Codecs as the Codec Type and then choose XviD or DivX codec with an appropriate bit-rate setting. Note that H.263+ encoding the video size should be QCIF or CIF. Other frame sizes are not yet supported by H.263+ encoder. Bit-Rate and the other fields in the “General Video Encoder Parameters” are valid only for H.263+ encoder, both DivX and XviD has their own configuration windows activated once the user close the MM Conversion Dialog.

### **External Operations: MM Clip(s) Conversion:**

Currently this is the only external (ex-database) operation in DbsEditor. Without appending into any database MM clips (Alien or Native Formats) can be converted into MUVIS Native MM Formats. The converted files will have the extension with respect to the file format chosen in MM Conversion Dialog shown in Figure 1. Therefore, the converted file will have named as: *[Source FileName]\_0.[ext]*.

### **File Cropping**

This is a new feature available for any conversion operation (External or Appending, MUVIS or Alien, etc.). If enabled, the user can specify the offset value where the conversion will be started after the offset time within source file to the destination file. Also the crop period allows user to crop the source file into several destination file(s) with a fixed duration (crop period). If the external MM conversion is initiated (not appending into a MUVIS database) the naming convention for the destination files is to append crop index after the title of the source file. For example let “MyFile.mpeg” is the source file with 126 seconds long. Let crop offset = 3 sec, and crop period = 20 sec. Then the destination files will have the following filenames:

*[Source FileName]\_0.[ext]. → 3 sec – 23 sec*  
*[Source FileName]\_1.[ext]. → 23 sec – 43 sec*  
*[Source FileName]\_2.[ext]. → 43 sec – 63 sec*  
*[Source FileName]\_3.[ext]. → 63 sec – 83 sec*  
*[Source FileName]\_4.[ext]. → 83 sec – 103 sec*  
*[Source FileName]\_5.[ext]. → 103 sec – 126 sec*

Note that the last file will have the duration 23 seconds instead of 20 sec. This is because the minimum file duration is 10 seconds during a conversion with cropping operation.

**Important Note:** There is one special case of file cropping: If Direct Stream Copy is enabled for Video, the beginning time of the cropping will be “at or preceding” INTRA frame in the video stream. Therefore, the destination files might be little bit longer than the specified crop period.

### **8. Removing Audio/Video Clip(s):**

To remove clip(s) from the primary database, first they should be selected from the tree structure by checking the check-boxes of the desired MM items. Then as usual there are three ways of doing Removal operation:

- **Remove Selected MM clip(s)** button in the main UI window can be pressed,

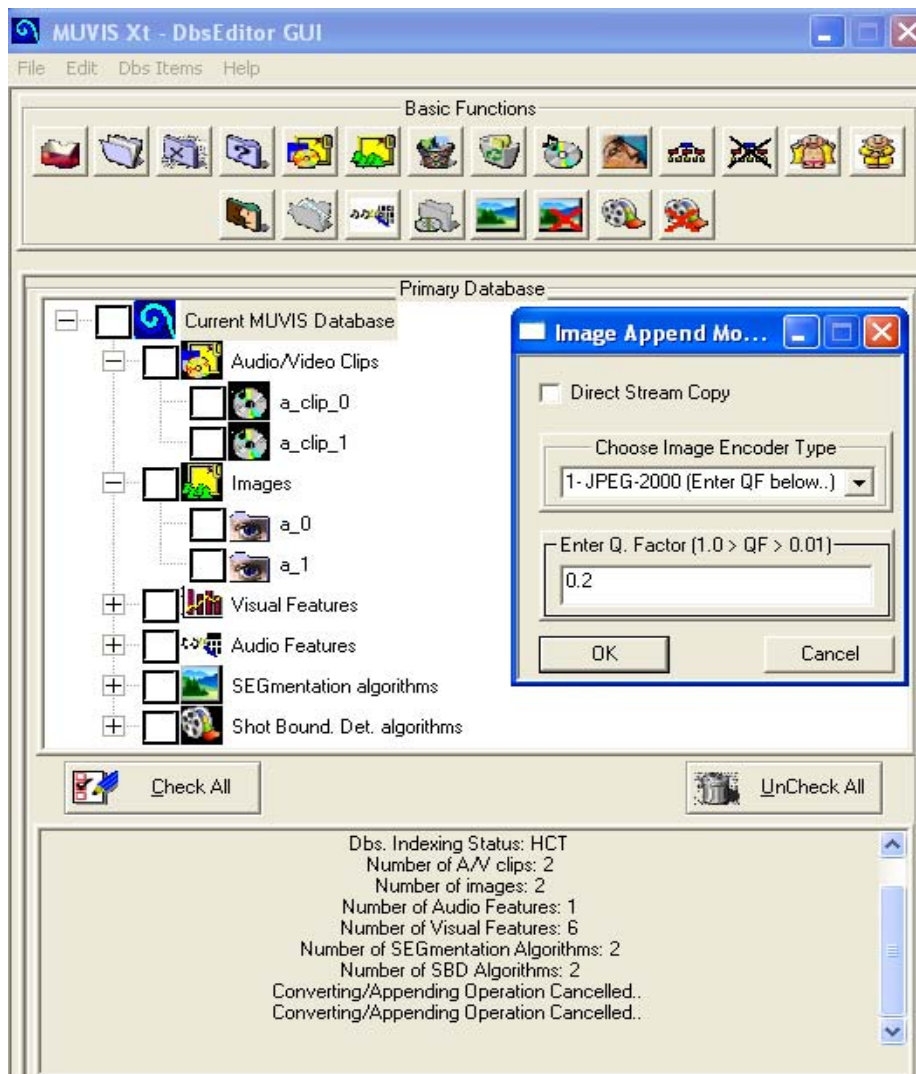
- *Dbz Items* → *Remove* → *Selected MM Clips* menu item from the menu can be selected,
- *Remove* → *Selected MM Clips...* menu item from the popup menu can be selected.

### 9. Appending Image(s):

There are several image types supported by MUVIS as given in Table 2.

**Table 2: MUVIS Image Family**

MUVIS Image Types							
Convertible Formats							
JPEG	JPEG 2K	BMP	TIFF	PNG			
Non-convertible Formats							
PCX	GIF	PCT	TGA	PCX	EPS	WMF	PGM



**Figure 2: Image Append Mode Dialog.**

External image(s) can be appended to any MUVIS database by selecting *DBS Items* → *Append* → *New Images* menu item from the main and popup menu OR pressing the **Append New Images** shortcut button. After one or more image files are selected from the file dialog that is popped-up then the 'Image Append Mode Dialog' will appear as shown in Figure 2. The image append mode can be "Direct Stream Copy" which means they will be appended without changing their formats (simply copying) OR they can be converted into one of the Convertible Formats as given in Table 2 and then appended into the primary database. JPEG and JPEG 2000 are the only formats, which requires a compression (Quality) factor that can be given into the edit box below.

#### **10. Removing Image(s):**

To remove image(s) from the primary database, first they should be selected from the tree structure by checking the check-boxes of the desired image items. Then as usual there are three ways of doing Removal operation:

- **Remove Selected Image(s)** button in the main UI window can be pressed,
- *DBS Items* → *Remove* → *Selected Image(s)* menu item from the menu can be selected,
- *Remove* → *Selected Image(s)...* menu item from the popup menu can be selected.

#### **12. Preview Functions (Image or MM clip Preview):**

To preview image(s) or MM clip(s), first they should be selected from the tree structure by checking the check-boxes of the desired items. And then appropriate *Preview* menu item should be selected from the main window OR popup menu. Also preview shortcut button can be used to preview. Once pressed, the selected images OR MM clips are displayed within their own popup windows.

#### **13. Properties Popup Window:**

In order to get instantaneous information from any of the MM clip or an image, it is sufficient to choose it with left click. A popup window will appear giving the properties of that item as shown in Figure 3.

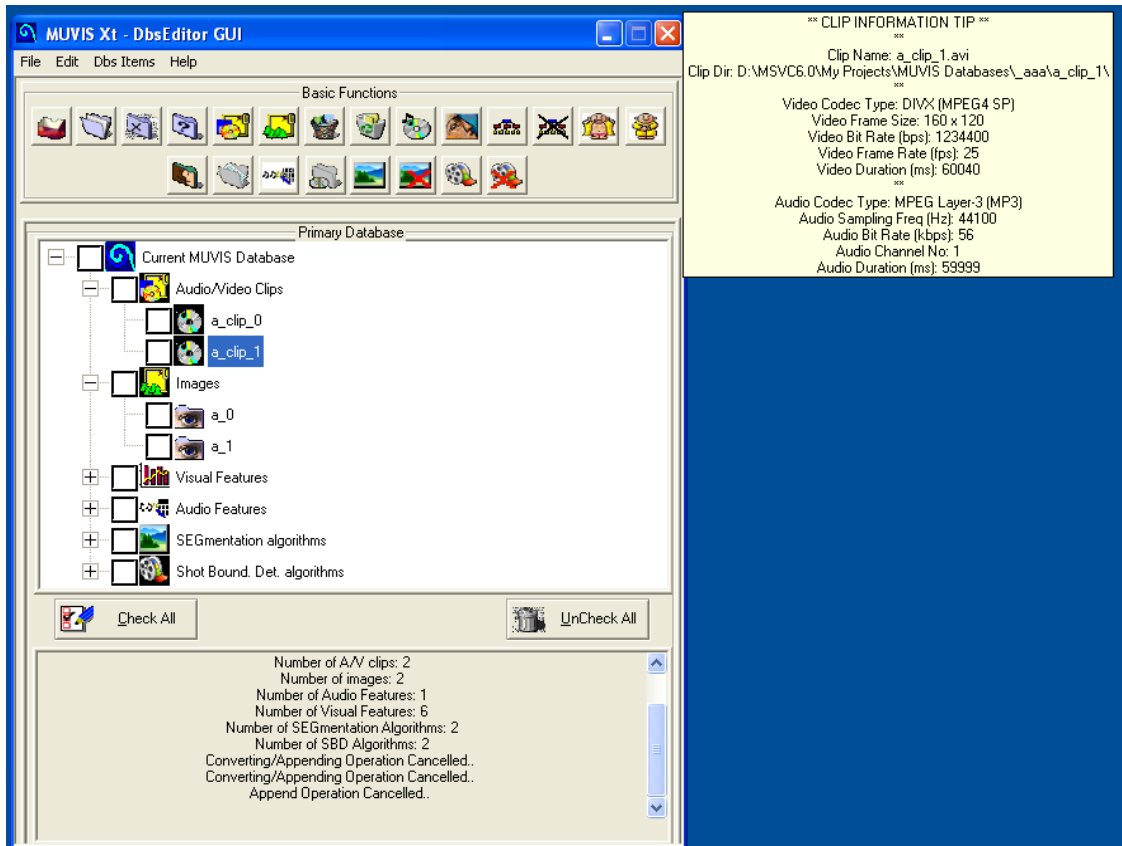


Figure 3: DbsEditor Properties PopUp Window.

#### 14. Indexing (HCT) a MUVIS Database

Hierarchical Cellular Tree (HCT) is the main and only indexing operation that is optimized for MUVIS v1.8. It is a parameter-free indexing structure which can be performed on the databases containing at least one feature. Depending on the features present, a database can be visually and aurally indexed. Image databases can only be indexed visually and video and hybrid databases can be indexed both visually and aurally as long as a visual/aural feature exists. If a database contains the HCT indexing structure, it will be automatically updated when a new item is appended or removed to/from the database. However if a feature operation (append or remove) is performed, the whole indexing structure should be re-formed. Therefore, it is strongly recommended to finalize the feature extraction within a database first and then perform the indexing operation.

HCT indexing can be (re-) formed to any MUVIS database by selecting

*Edit* → *Indexing* → *Re-Form HCT* menu item from the main and popup menus OR pressing the **Perform HCT Indexing** shortcut button. In such case if there is an indexing structure present in the database, it is completely replaced with the new indexing formation.



### **15. Removing Any Indexing from MUVIS Database**

If a MUVIS database is already indexed, the indexing structure(s) can be totally removed by selecting *Edit → Indexing → Remove All* menu item from the main and popup menus OR pressing the **Remove All Indexing** shortcut button.

### **16. Extracting SEGmentation Masks (New!):**

When DbsEditor is run, it first checks for the SEGmentation modules, and attempts to load them. SEG subsets of the SEG types can be extracted if the extraction module of that SEG type is loaded successfully. SEGmentation Masks (SMs) are extracted and embedded into active MUVIS database and therefore, before extracting some set of SMs a MUVIS database should be loaded.

To extract new SMs, *Append → New SEGmentation Masks* menu item from the main or pop-up menu can be selected OR the shortcut button with the same name can be pressed. When pressed, a new window is displayed, which is “SEGmentation Parameters Dialog”. It includes one tree and two lists. The bottom list box displays the existing sub-SEG sets in the primary (current) database. The upper list box displays the SEG subsets chosen and set by the user. Those sub-SEGs are to be extracted when **OK** button is pressed. The tree shows the present SEG modules with the default SEG parameters. So the user can set/change the parameters of any sub-SEG by first choosing them and then editing (changing) the parameters in the edit box below. Once the parameters are set, the user can add sub-SEGs to the sub-SEG list by pressing **Add** button. When all the desired SEG subsets are added to the list, by pressing **OK** button, those SEG subsets will be extracted and appended to the current database.

### **17. Extracting Shot Boundary Detection files (New!):**

When DbsEditor is run, it first checks for the Shot Boundary Detection (SBD) modules, and attempts to load them. SBD subsets of the SBD types can be extracted if the extraction module of that SBD type is loaded successfully. SBD files are extracted and embedded into active MUVIS database and therefore, before extracting them a MUVIS database should be loaded.

To extract new SBD files, *Append → New SBD Files* menu item from the main or pop-up menu can be selected OR the shortcut button with the same name can be pressed. When pressed, a new window is displayed, which is “SBD Parameters Dialog”. It includes one tree and two lists. The bottom list box displays the existing sub- SBD sets in the primary (current) database. The upper list box displays the SBD subsets chosen and set by the user. Those sub- SBDs are to be extracted when **OK** button is pressed. The tree shows the present SBD modules with the default SBD parameters. So the user can set/change the parameters of any sub- SBD by first choosing them and then editing (changing) the parameters in the edit box below. Once the parameters are set, the user can add sub- SBD s to the sub- SBD list by pressing **Add** button. When all the desired SBD subsets are added to the list, by pressing **OK** button, those SBD subsets will be extracted and appended to the current database.