

IMF–TOOL

A TOOL FOR BROWSING AND EDITING OF IMF PACKAGES

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Contact

Prof. Dr. Wolfgang Ruppel
Hochschule RheinMain
Unter den Eichen 5
65195 Wiesbaden
imftool@t-online.de

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Abstract

IMF-Tool is a Qt GUI application for browsing and editing of IMF App #2 and App #2E packages: Users can preview video and subtitles, browse metadata, edit CPLs, delete tracks, add audio and subtitle tracks.

The modified IMP can be written back to disk as either full package (Complete IMP) or supplemental package (Partial IMP).

IMF-Tool features a timeline visualization of CPLs, a resource browser, metadata editors TTML preview, image decoding and video playback.

IMF-Tool is written in C++ / Qt and builds under Linux, Mac OS X and Windows using CMake build configuration.

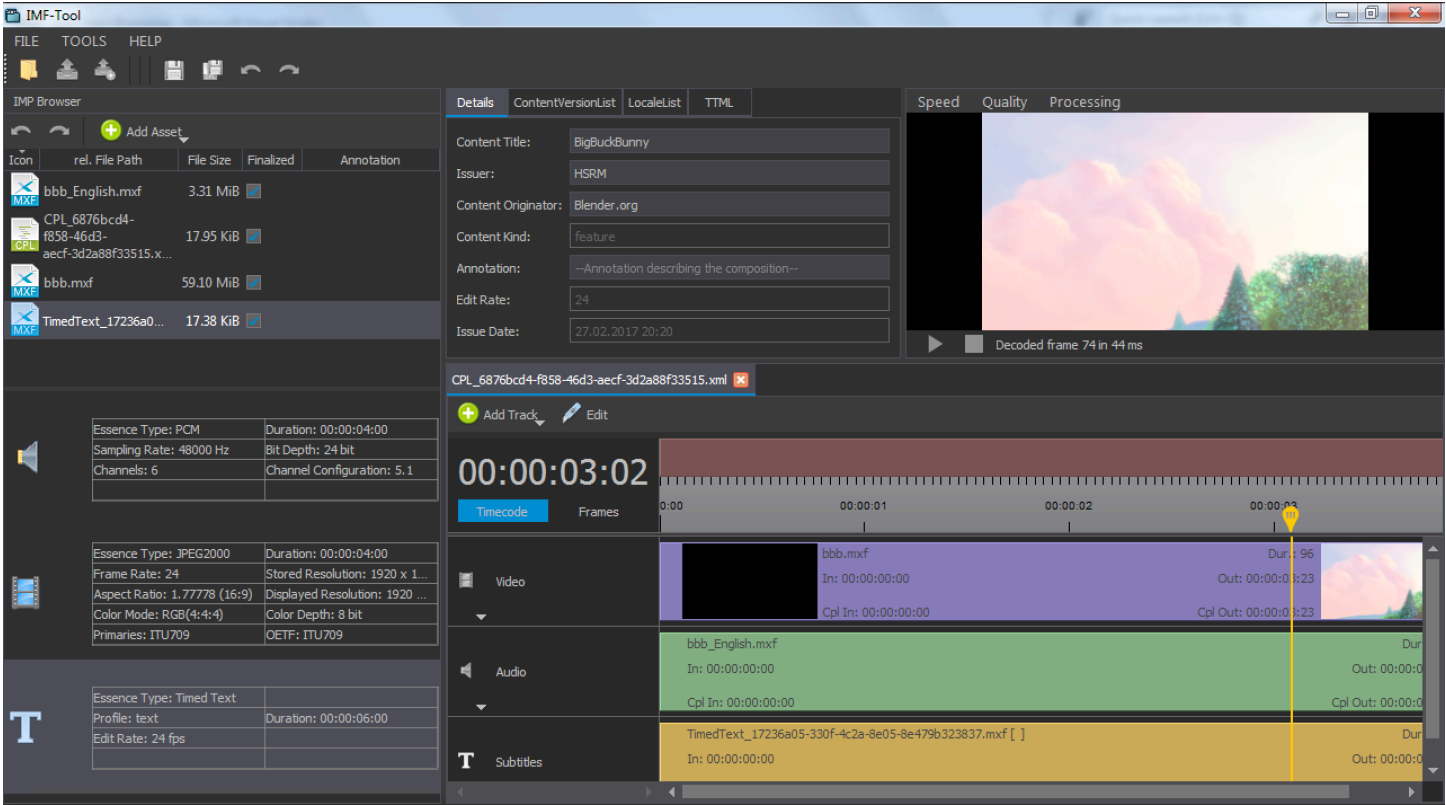
IMF-Tool is available under GPLv3 (GNU Public License Version 3) at <http://www.github.com/IMFTool>.

Supported workflows

- Opening an IMP, opening one or more CPLs, timeline visualization, video preview and subtitle rendering
- Adding PCM or Timed Text (IMSC1) resources to an IMP
- Duplicating an existing CPL and modifying it by
 - Adding one or more audio track
 - Adding one or more subtitles track
 - Adding a marker track
- Adding resources to a track by
 - Dragging & dropping assets from the IMP browser
- Modifying tracks
 - Visually editing EntryPoint and Duration on the timeline
 - Creating edit points (cuts)

Overview of the GUI

Picture 1 shows the GUI with an IMP opened and a CPL on the timeline. The individual elements of the GUI will be explained below.



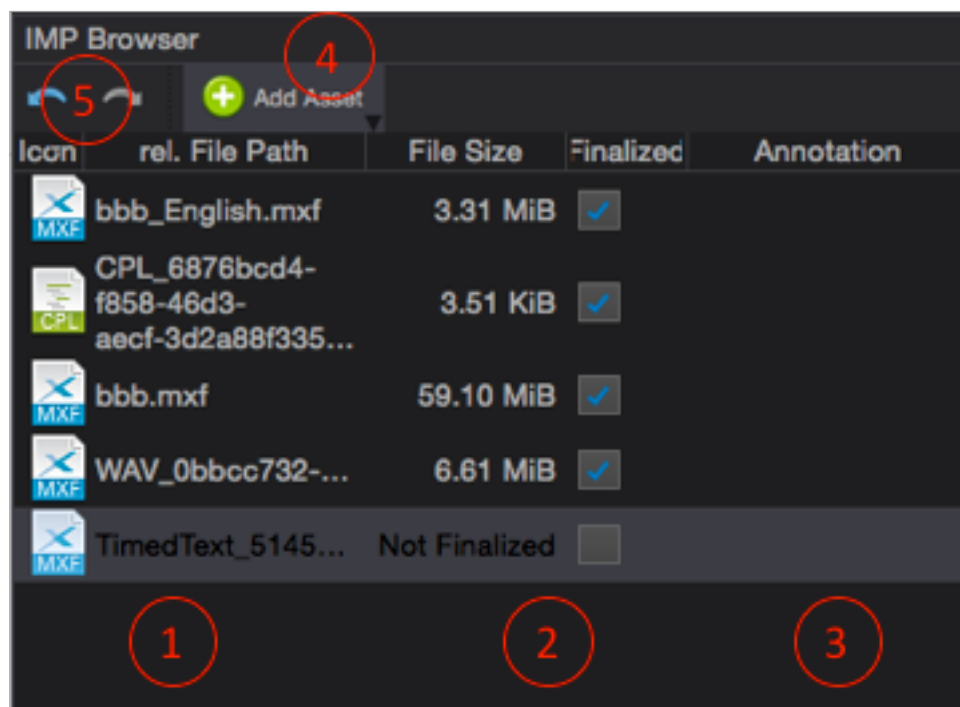
Picture 1: IMF-Tool GUI

Toolbar



Element #	Function	More details
1	Open IMF package	Opens a file browser to select a folder with an IMP.
2	Write IMF package	Writes the modified package to the original location. Attention: ASSETMAP.xml will always be overwritten! A new PKL will be created and the former PKL will be kept (but not be referenced any more)
3	Write Partial IMF package	All files created in addition to an Original IMP will be written to a new folder.
4	Save CPL	Saves the CPL <u>currently visible in the timeline</u> . Users will be alerted if an existing CPL is about to be overwritten. Button is only available when a CPL has been modified.
5	Save as new CPL	Save the CPL <u>currently visible in the timeline</u> with a new UUID under a new file name. The formerly edited CPL will still be present in the timeline.
6	Undo	Undo last CPL editing operation. "Save CPL" and "Save as new CPL" cannot be undone!
7	Redo	Redo last CPL editing operation

IMP Browser



Element #	Function	More details
1	File names of assets	To edit the timeline of a CPL, double-click on the CPL asset or right-click and select "Edit CPL".
2	File size of assets	"Not finalized" indicates that a freshly added asset has not been written to disk yet. It can be written selecting "Write IMF package" from the control panel.
3	AnnotationText from Packing List	Only if AnnotationText element is present in Packing List
4	Add Asset	Allows to select a "PCM resource" or "Timed Text Resource". In addition, an empty IMSC1 resource can be created which may be used for filling gaps on the timeline. Selected essence files will appear as MXF assets in the IMP browser,
5	Undo / Redo	Undo / redo last operation in the IMP browser.

CPL metadata editor

Details	ContentVersionList	LocaleList	TTML
Content Title:	BigBuckBunny		
Issuer:	HSRM		
Content Originator:	Blender.org		
Content Kind:	feature		
Annotation:	--Annotation describing the composition--		
Edit Rate:	24		
Issue Date:	27.02.17 20:23		

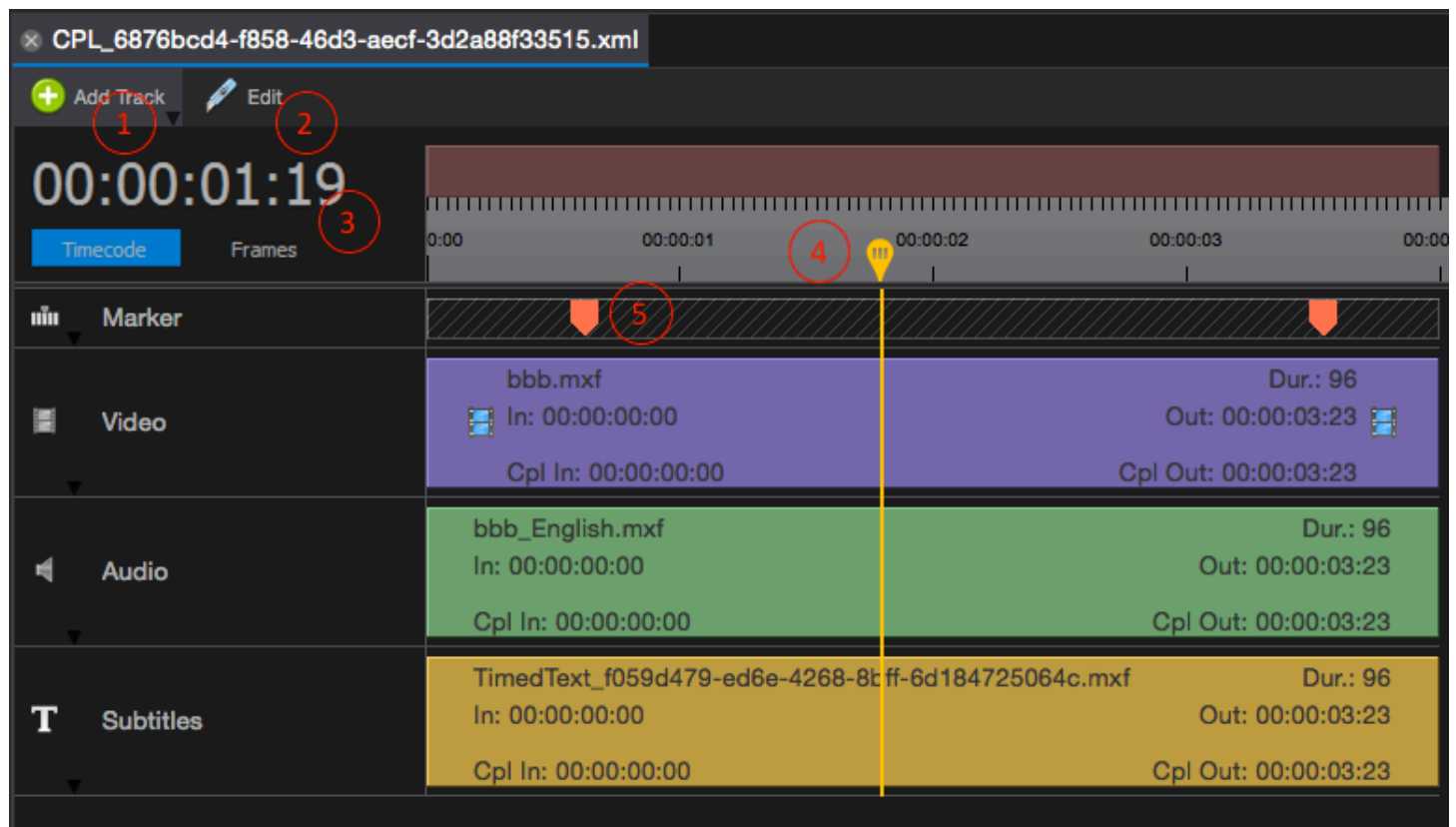
Edit the metadata of the CPL currently visible on the timeline. Content Kind, Edit Rate and Issue Date cannot be edited.

Content Version List Editor

Details	ContentVersionList	LocaleList	TTML
Id:	urn:eidr:10.5240:0CEC-3E15-7A54-6893-A8D9-6	Delete	
LabelText:	EIDR Title (Level 1)		
Id:	urn:eidr:10.5240:ECA3-005E-C21B-B02D-34C0-Z	Delete	
LabelText:	DEU SUB		
		Add New	

Edit the Content Version List. Items can be deleted and added to the Content Version List.

CPL Editor: Overview



Element #	Function	More details
1	Add an additional track	Multiple audio tracks and multiple subtitle tracks can be added. If not already present, a single marker track can be added.
2	1 st click: Create a cut for the currently selected resource 2 nd click: Create a cut for all other resources	The resource currently selected will be cut at the current timeline position, i.e. it will be divided into two resources, both referencing the same track file with adapted EntryPoint and Duration. Can be undone using the “Undo” button on the control pane. Clicking “Edit” twice will also cut all other resources at the very same timeline position
3	Media time code	Toggle between timecode HH:MM:SS:FF and frame counter representation. Note: For CPLs with fractional frame rates, non-drop frame NTSC time code will be shown!
4	Timeline cursor	
5	Marker editing	Right-click to add or remove markers on an (optional) marker track. (Add marker track first → 1, if not present.)

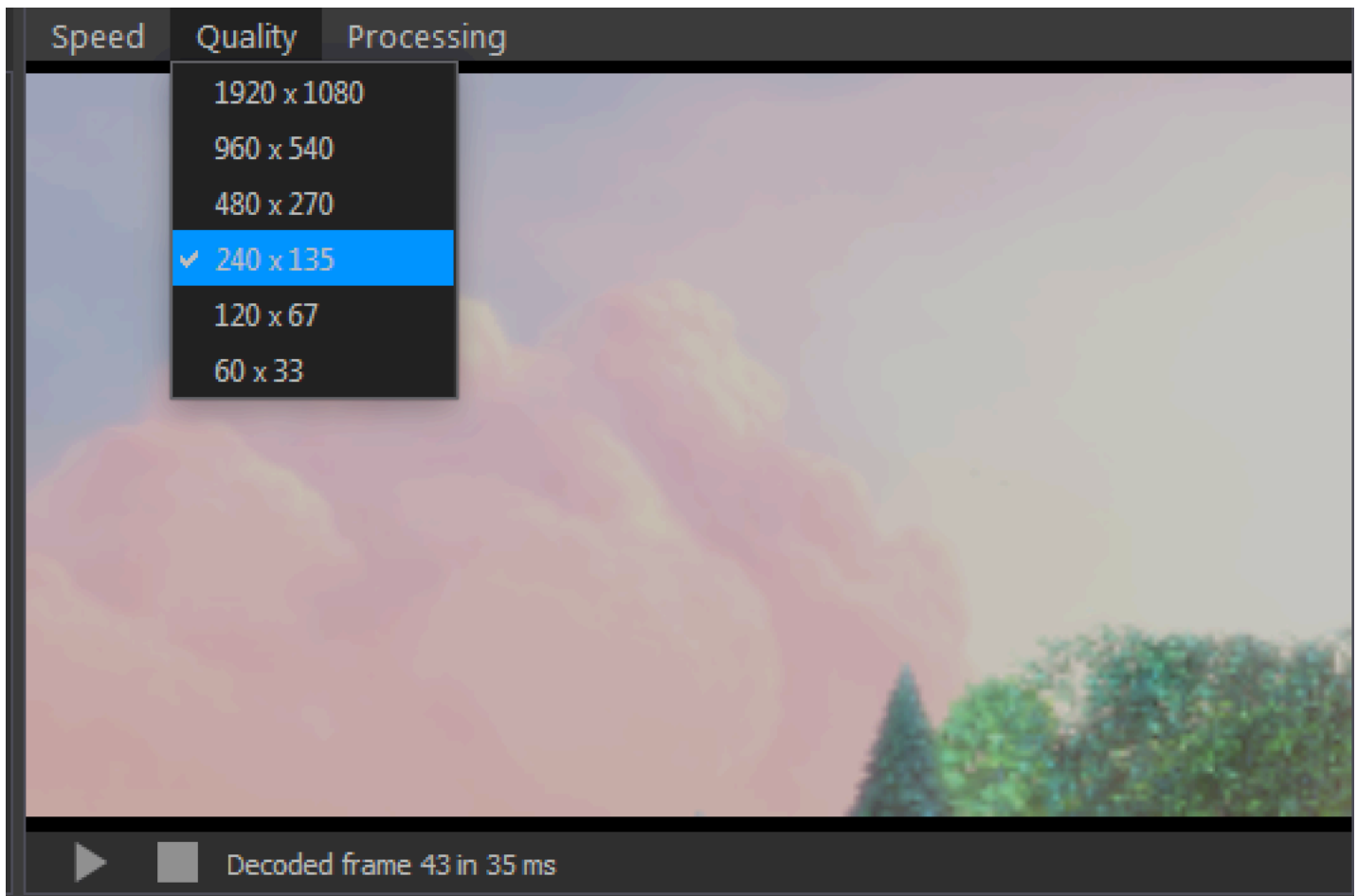
CPL Editor: Editing EntryPoint and Duration of a resource

EntryPoint and Duration can be edited by dragging and moving the IN or OUT point of a resource, respectively:

TimedText_34e21a29-ad27-4622-a085-9c54f30655c3.mxf	Dur.: 87
In: 00:00:00:00	Out: 00:00:03:14
Cpl In: 00:00:00:00	Cpl Out: 00:00:03:14

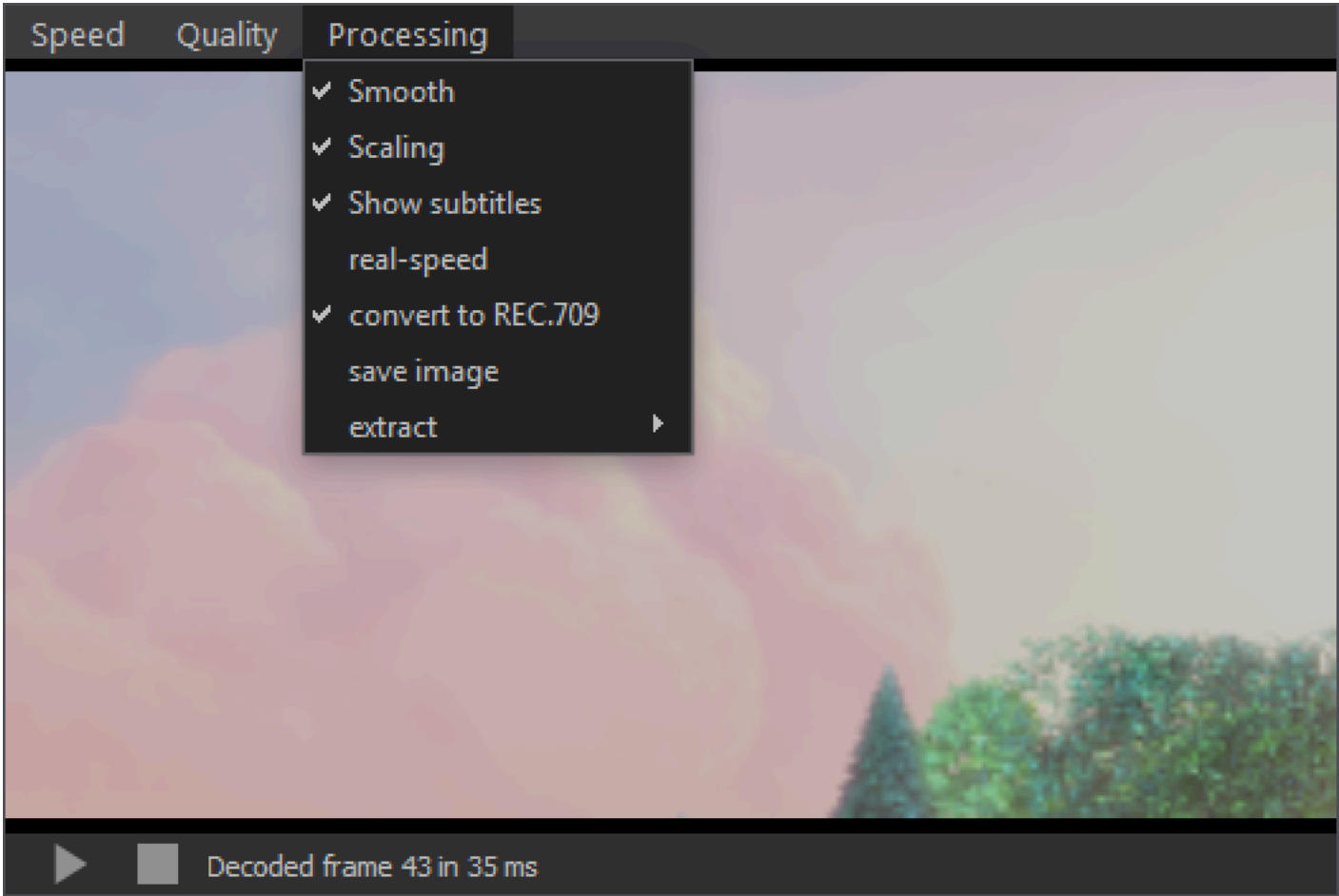
In this example, the duration of the timed text resource has been reduced to 87 frames by moving the OUT point.

Image Preview: Quality Options



Choosing a lower resolution reduces the decoding time and improves playback speed.

Image Preview: Processing Options



The following options are available:

Option	More details
Smooth	Apply a smoothing filter to reduce artifacts for low-res images.
Scaling	Scale image to the size of the preview widget
Show subtitles	Overlay subtitles for IMSC1 resources conforming to the image profile. Note: Overlay of text-based subtitles is not supported!
Real speed	Playback at the nominal CPL Edit Rate. Frames will be dropped in order to maintain playback speed.
Convert to REC.709	Images in color spaces other than BT.709 (E.g. BT.2020 or P3D65) will be converted to Rec.709. Note: No tone mapping is applied, just simple clipping.
Save image	Allows for saving the image currently display to disk. Format will be BMP and the bit depth will be 8 bit only.
Extract	Display only a part of the image (sub-options available)