

Cinelerra: Quick Start

<http://www.assistcg.com/>

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1. INTRODUCTION

Currently Cinelerra is the most powerful non-linear editor for materials editing and compositing in OS Linux. There exist two versions of this program. The first one is from <http://www.heroinewarrior.com/>, the second one is from <http://www.cinelerra.org/>. These versions significantly differ from each other. That's why we suggest to download both versions and choose the one you liked most of all. You can read the installation instructions on our site: <http://www.assistcg.com/index.php/component/content/article/66.html> .

The possibilities of this editor are pretty high and they let quite easily edit film with sound, make color correction, add VFX effects, and this puts Cinelerra on the same line with more well-known commercial packages such as Adobe Premiere Pro, Vegas, Final Cut, Avid and others. You can get a more detailed review of Cinelerra possibilities and a manual "Secrets of Cinelerra" following this link <http://www.heroinewarrior.com/cinelerra/cinelerra.html> as far as this PDF file comprises descriptions of the most basic functions of Cinelerra, its peculiarities and consistency of its applying.

Strictly, the process of making a film involves such things: getting video and audio materials; review and making a storyboard of the chosen material; cutting and preparing video and audio materials for editing; making a rough copy of the project (using materials-copies with reduced size in real-time mode); final film editing. All elements for preparation, processing and assembly of video and audio materials can be performed in Cinelerra. For extension of possibilities of this editor it is possible to apply such raster editors as the GIMP and CinePaint (works with 32 bit-per-channel color depth support) and 3d editor Blender, which, in turn, has its own advanced features for video post-production.

2. INTERFACE

Cinelerra has a flexible and convenient interface, which consists of four basic separated windows by default (Viewer, Program (TimeLine), Compositor, Resources), any of which can be closed (opened) and resized. That is, the interface is very easy to adapt for a specific task by removing unnecessary windows or by adding the necessary ones. The interface is friendly and intuitive. That's why we won't describe in detail the work of some buttons, as far as most of the time it is easier to click on the button and see the results, rather than read documentation, but if problems occur you can read this documentation "Secrets of Cinelerra" <http://heroinewarrior.com/cinelerra/cinelerra.html> or you can download this PDF manual http://cinelerra.org/docs/cinelerra_cv_manual_en.pdf .

Nevertheless, there exist some peculiarities, features that can be critical in examining the work of application. We'll focus on such peculiarities.

Viewer Window

In this window you can view and cut into clips the chosen material that you'll put eventually on the timeline. The length of your clip (plan) is determined by the following two basic requirements. First, you need to set rhythm for showing ready material (pay attention to how masters edit advertising or music videos, for instance). Secondly, it is determined by the amount of RAM installed on your computer. The more memory, the greater number of filters you can apply for the processing of a clip, or you can reduce the length of a clip, thus releasing more memory for applying filters. To make work easier in Cinelerra we can advise to open two Cinelerra applications in different desktops of OS. The first one is for editing separate images and clips, the second one is for assembly of prepared material. Thus, we use a very useful Cinelerra feature that lets copy materials from one project to another. In most editors there is no such possibility.

Program Window (Timeline)

This window comprises video and audio tracks where clips and frames for editing are located and where you add filters (effects) to tracks. The amount of video and audio tracks is not limited. The tracks can be moved vertically. Each track has modes that present different kinds of overlapping between tracks. The tracks also have curves of keyframes for adjusting the behavior of modes, adjusting projector and camera parameters. Video and audio materials can be located on a new track, inserted into any place, saved as a clip, moved to the left and to the right, deleted. Also autokeys can be assigned to filters (effects). Any selection can be copied, cut, pasted in any place indicated by cursor, deleted and made as a clip.

Note:

- dynamic settings (in time) of filters work only with automatic keys.
- important peculiarity of the Program (Timeline) window - from here you can copy the parts of the project or copy the whole project into another one project opened in the second copy of Cinelerra. This feature allows you to assemble a final project out of any number of intermediate projects quite quickly.

Compositor Window

This window shows results of editing you make on the Timeline. Besides, it is possible to cut results of editing into clips (as well as in the Viewer window), make pixel by pixel camera and projector adjustment, create masks, use color picker ("Get Color") for choosing color values.

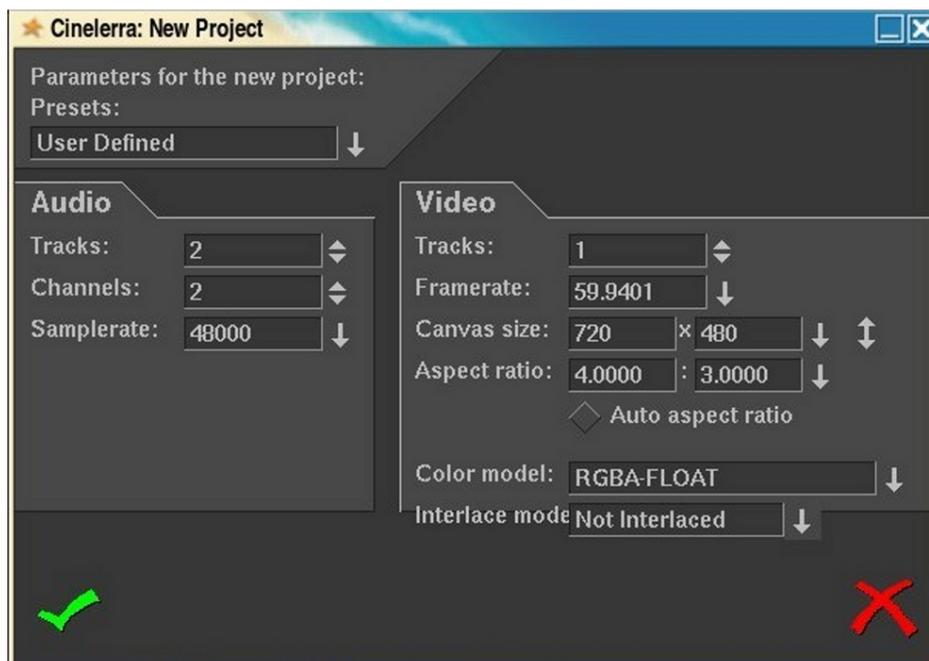
Resources Window

In this window there are folders arranged by categories: Audio Effects, Video Effects, Audio Transitions, Video Transitions, Labels, Clips and Media. It is considered that this window is a weak place in Cinelerra because there's no possibility of creating new folders for imported resources. But it isn't quite so. It is necessary to take into account the possibilities of OS Linux and its Gnome

desktop, where Cinelerra works, as well as the possibility of creating a large number of intermediate projects (sessions) that greatly enhances the possibilities of system as a whole. In this window all imported data are available. You can bring up the "Info" window by means of the right mouse button where all information about resource is displayed. Moreover, here you can change frame rate, set up interlacing and so on.

3. CREATING AND SAVING PROJECT

Cinelerra launches with an empty project and settings that were created before the last closing. These settings are stored in the .bcast folder of the home directory. If, for some reasons, you need to come back to the project settings "by default" - delete the .bcast folder and restart Cinelerra.



It should be noted that the project size (Canvas size) must be set up before starting any work with video material and pictures, as far as this material will be automatically cropped to the size (format) of the project. For example, if you are going to animate panorama, then the size of the project need to take into account the camera displacement along panorama image and the size of panorama itself.

Or, in case you want to retouch a photo, the project size should correspond to the size of a photo, otherwise your photo will be cropped to the size of your project. Nevertheless, do not be afraid to damage available material. Cinelerra projects are stored in .xml files, thus, it works only with links to resources.

The entire project is better to create in a separate directory.

New Project Settings

Fire up Cinelerra. In the Program (Timeline) window find the menu File >> New and open a window for project settings.

The first box at the top left is UserDefined. Here you can select the ready project size with all necessary presets (PAL, NTSC, Internet and so on). Lower is the Audio panel, as a rule you can leave all the settings as is here, unless you want to work with sound seriously. The last is the Video panel. That's where changes take place quite often. Parameters of this panel (Canvas Size) should correspond to materials you are going to use. At the same time, taking into account the possibilities of the application, some parameters can be left inflated, that will not worsen the quality of work. For example, it is better to use RGBA-FLOAT color model (32 bit-per-channel color depth support), set up the interlace mode as "Not Interlaced" (progressive mode - full frames sequences). If for some reason you'll need to change these settings in the future (color model and interlace mode) you can change them right before rendering ready project.

Changing Settings of Current Project

While working on the project there might arise the necessity to change the settings without opening a new project. Quite often such a necessity arises when you need to edit separate clips and photos. You need to remember that in this case all resources that were imported into the project will be automatically changed (cropped to the size of the project). For changing settings of the current project you need to find menu "Setting" >> "Format" in the PROGRAM window ... and open the "Set Format" panel that is absolutely identical with the "New Project" panel we were talking about above. As a rule, there are no difficulties with studying on this stage. If you are satisfied with project settings, save the project: PROGRAM >> File >> Save as During work on the project you might use the "Save" button (hot key "S") in order to save the achieved results.

Opening Saved Project

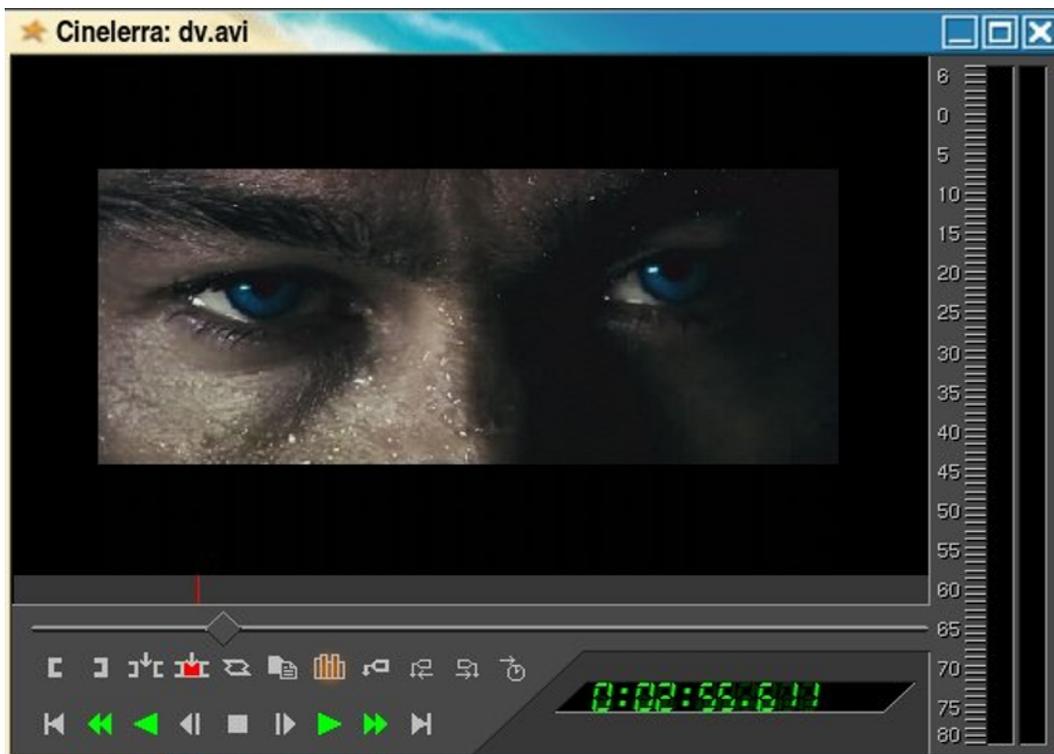
There exist two ways to open a saved project. The first one is to carry out this action: PROGRAM >> File >> LoadFiles Or you can click on the project name that will be displayed in the lower part of the menu PROGRAM >> File. The last feature allows comfortably move between saved projects.

4. PREPARATION AND CUTTING VIDEO MATERIAL

You need to create a new project or open the current one in order to start working with video and audio material. Then follow PROGRAM >> File >> Load Files, in a popped up window choose the necessary file you are going to work with and open it with any preset option (we recommend to open files with the "Create new resources only" option). If you choose this option the selected file will be displayed in the "Media" folder of the RESOURCES window. Then you can drag the file into any window, in this case into the "Viewer" window. Now you can look through your video and start splitting it into clips (plans). In small projects materials are just placed into a directory specially created for project. All folders and files should have sensible name and correspond to creative plan and conception. If a project is big, you need to write actions you plan to carry out. There are lot's of literature concerning this matter, for example "Make Your Own Hollywood Movie" by Ed Gaskell.

After organizing all video material used in project you need to prepare a reduced in size draft copy and cut materials into clips (plans). This action is needed for easy manipulation of video fragments and in order to facilitate the process of subsequent processing by filters. If the power of your PC is quite sufficient and sizes of originals are not big, for example, for the Internet, then a draft editing can be done on copies fully corresponding to originals. It needs to be noted that with the increasing of PCs power, the need for creating reduced copies for draft editing is steadily decreasing.

Before starting to work, look attentively at buttons located in the "Viewer" window. Cutting video into clips can be made by selecting the necessary fragment by means of the buttons with brackets. When the necessary fragment is selected click the "To Clip" button and in a popped



up window rename clip into something more sensible, type comment about it (this action isn't necessary, but useful). Thus, a clip will be created and automatically located in the "Clips" folder of the RESOURCES window. Pay attention that a clip is a whole named collection of selected data (all selected video and audio tracks). Clips can be created not only in the "Viewer" window, but also in the "Compositor" and "Program" windows where there is the same tool. Besides, in the "Program" window, a clip can be made of selection and, therefore, only necessary track can be included into a clip. A clip copied into another project ceases to be a "clip" that's why that's better to paste it the way so that it would be easy to make a clip out of it again, for example in the end of the project.

Important: Clip is a full-fledged object for editing. It can be located on the TimeLine, deleted from TimeLine, edited. At the same time clip as a collection of editable data is always available in the "Resources" window (until you won't remove it from project by clicking on it with the right mouse button in the "Resources" >> "Clips").

As a disadvantage in the work of application it should be noted that Cinelerra is not capable to join tracks (for example, in Blender Sequence Editor the analogical problem is solved by means of merging all necessary tracks into Meta Strip and this is undoubtedly very convenient). At the

same time, let's be fair, resource of any computer is not limitless and when you work with different kind of meta strips the limit of system technical capabilities occurs very quickly. The need of frequent technical renderings for merging tracks stays as is. That is why that's better to make a render of edited clip into .mov with video compression Photo Jpeg or PNG with Alpha. If you need a high quality work to be completed, then that's better to work with image sequences, for example TGA or Open EXR.

If you decided to use image sequences in your works, then probably you'll have to index them (so that all images located on one track). When you render video tracks into image sequences Cinelerra itself creates index files (it is just obligatory to assign any name to a sequence), but in case if image sequences are made in third-party programs you can use third-party utilities. The utility for indexing EXR file sequences can be downloaded from assistcg.com: <http://www.assistcg.com/index.php/component/content/article/62.html>

There exist other utilities for indexing image sequences .jpg, .png, .tga. You can have a look at them here: <http://cinelerra.org/user-tips.php>.

In the process of preparing video and audio material all materials need to have the same parameters. That is, for clean montage there should be used the same amount of tracks, the same formats, the same framerate and so on.

5. VIDEO AND AUDIO EDITING

In Cinelerra editing is carried out in the PROGRAM window (Timeline). Necessary materials for editing should be located in the RESOURCES window, in the "Media" and "Clips" folders. Files and clips can be located on the tracks by simple dragging from the RESOURCES window on Timeline, or directly from "File" >> "LoadFiles" if the corresponding option is set in the "Load Files" window (option "Append in new tracks").



During editing you can create any amount of tracks, change their mode, apply curves to any track (for changing behaviour of effects in time), move them vertically and delete. Any fragments of video and audio material can be moved in all directions and can be located in any place of tracks.

Any selection can be cut, copied, pasted and deleted. To undo selection press "Ctrl+Z" or click left mouse button, thus, indicating new start point for selection.

The easiest way of video editing is a simple side by side combination of prepared beforehand video materials on one track and matching display duration of this track to the duration of sounding of prepared audio fragment by means of cutting video fragments. You can put transitions between video fragments. A tutorial on how to make it can be downloaded here: <http://www.assistcg.com/index.php/component/content/article/63>

Another popular method is an "overlapped" montage. In this case clips are made longer for making overlapping subsequently and are located on different tracks, partially overlapping each other. Such method lets fit video to audio much faster as this method lets easily move clips on tracks.

At this stage, it makes sense to study the interface of the PROGRAM window more carefully and it's advisably to refer to the "[Secrets of Cinelerra](#)" manual. We may note that the most frequent options are buttons for controlling work of tracks (left panel). The track you are going to work with need to be activated (the "Arm track" button) and the other tracks need to be disactivated (if you won't do this, the results of editing will be applied to all activated tracks at once).

Also very useful two buttons in the upper part of the window: "arrow" (Drag and Drop Editing Mode) and "vertical line" (Cut and Paste Editing mode). If you select "Drag and Drop Editing Mode" you'll be able to drag video material on activated tracks. In case you select "Cut and Paste Editing Mode" you'll be able to move cursor indicating points for insertion and selection. For making selection activate the "Cut and Paste Editing Mode". Place cursor where you would like to start the selection. Press left mouse button and drag cursor to the necessary location. Release the button. Selection is created. Then go to the "Edit" menu and choose the necessary option (cut, copy, paste).

Also there is button for generating keyframes (autokeys) in the upper part of the window. In Cinelerra filters are controlled by means of autokeys. The way how it can be made will be described in a separate section.

Button for switching off render is a small imperceptible "X" in the right lower corner of the window.

6. ADJUSTING FILTERS (CREATING KEYFRAMES - AUTOKEYS)

In Cinelerra all processing of video and audio materials is made by filters (analogue to "nodes" in other programs). For controlling filter parameters in time autokeys are used. If such keys are not assigned, then parameters stay the same for the whole track. Results of work with filters are displayed in the "Compositor" window. Any quantity of filters can be applied to any video or audio material (limit - power of your PC and presence of RAM).

To assign a filter, you need to drag it on a material located on a track. You can limit the duration of work of the filter inserting it into a selected region or indicating insertion points for it (the same as for clips).

After assigning filter on a material that you edit, pay attention to the two buttons located to

the right of the filter. The one is for activating and deactivating the work of filter; another one is for changing filter options.



Example of applying the "Rotate" filter is shown on the fig.. In this case the filter is applied without autokeys, that's why the image will be just rotated on a specified angle during the interval the filter was applied. If you want to make the effect of rotation (to make animation), you need to make autokeys. Before you begin, make sure that autokeys are activated. For this, go to PROGRAM >> View >> Plugin Autos (7). "Plugin Autos" should be switched on. Further everything is quite easy. Set the cursor to the point of beginning of the animation and adjust your filter settings, specify the location for insertion of the next keyframe and change settings on the filter panel again and so on. As you have noticed, autokeys are created only after changing filter settings. The order of creating autokeys doesn't matter. Now you can look at the animation you created (video started to rotate). Principle of work of all other filters is the same. Now, when you understand how it works, it's advisably to examine how other filters work or, at least, to get acquainted with its names, as far as the more detailed studying of its work can be performed in the process by referring to the "[Secrets of Cinelerra](#)" manual.

7. CHANGING SIZE OF THE PROJECT. SCALING

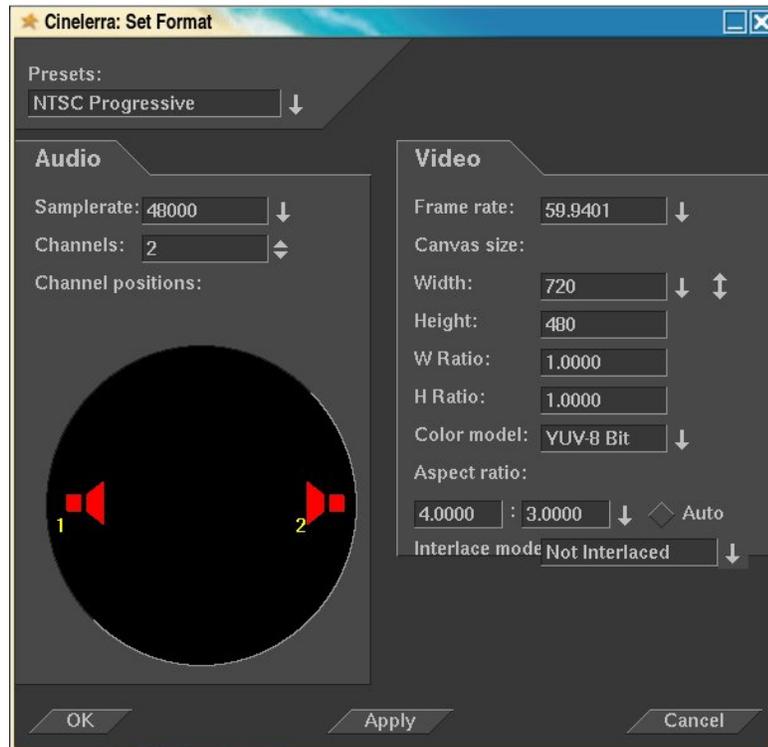
In the process of editing video, photo material and creating any effects of animation, quite often there arises the necessity of changing sizes of objects and formats (canvas size). For beginners, such works can be quite complex. At the same time everything is quite easy.

In Cinelerra format (canvas size) is changed by means of changing project format. The frame of a canvas is displayed in the "Compositor" window with activated "Show Safe Regions" button (lower button to the left). Everything that goes beyond this frame will be automatically cropped and that may lead to serious problems during creating video effects or processing photos. That is why project format need to be set by taking into account this peculiarity and at the end everything need to be led to the necessary standard look. It can be done from the panel PROGRAM >> Setting >> Format Now, when we know how format settings work (they change the size of the image canvas but not scale it) let's try to learn how to scale images.

There are three ways to scale images:

- by adding to the image the "Scale" filter (the most convenient method);

- by changing projector settings along Z axis;
- by changing camera settings along Z axis.



Camera or projector settings panel becomes available after choosing the camera and projector buttons and, additionally, the button with question mark (Show Tool Info) in the "Compositor" window.

For making these works easier (especially the first time) we can recommend to make templates. White frames several pixels in width on a transparent background corresponding with output formats (PAL, NTSC, HD, ...).

It's more convenient to crop images in another one opened Cinelerra or any other editor. Such cropping can be made by means of mask as well. Mask is activated in the "Compositor" window (left panel). Press the button with question mark to see mask settings. Only 8 masks can be applied to one track.

8. ADJUSTING PROJECTOR AND CAMERA

Projector affects the whole image on any concrete track: moving image up and down, to the left and to the right on the screen and changing scale (by moving image along Z axis). All these movings are displayed in the "Format" window (Canvas size). For controlling projector location you can use the "Projector" panel in the "Compositor" window (activate the "Projector" and "Show Tool Info" buttons). In this case projector location can be set up very precisely. The more convenient way to control projector is using curves. For this it is necessary to select projector curve in the PROGRAM >> View. There are three such curves, for X, Y, Z axes respectively. The chosen curve will be displayed in the "Timeline" window (PROGRAM). By moving a curve up, down (by means of cursor) you change location and scale of an image in the "Format" window (Canvas Size). For applying these modifications through time it is essential to assign keys. Keys are created directly on the project curves by simple clicking on a curve. You can change location of a key by dragging it

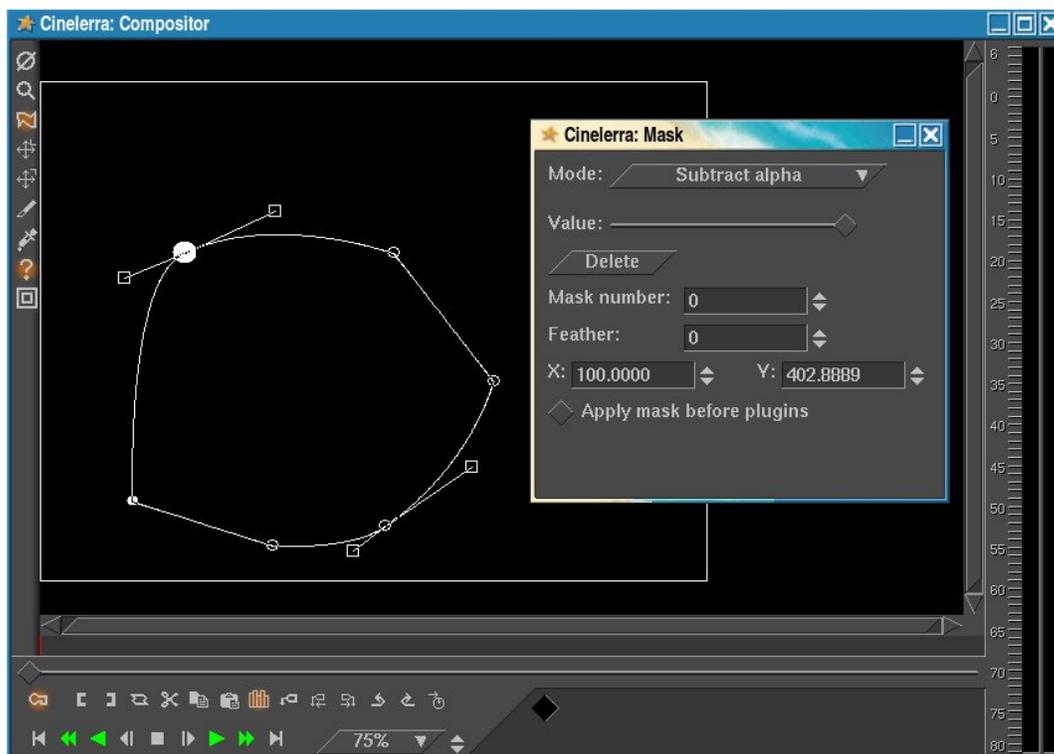
to any side.

The influence of camera on an image is basically analogical to the influence of projector. The main difference is as following: if you move image by means of projector, image is displayed in the boundaries of set Format (Canvas Size), and if you move image by means of camera it'll be displayed in the visible boundaries of projector.

Thus, the work of projector and camera can be presented as three changeable and customizable window templates put one into another. The upper window (template) can be represented by the "Format" window, the middle one by camera and the lower template can be represented by projector. All these three tools can successively affect the same image, that is not always understandable when you just start learning Cinelerra. As soon as you get used to Cinelerra, these features can be successfully used both for animation and for scaling and cropping images.

9. MASKS

In Cinelerra editor, the user has the possibility to "cut" any fragment of an image by means of the "Edit Mask" tool. This tool is located in the "Compositor" window in the left panel. Property Panel of this tool can be opened by means of the button with question mark. The tool consists of a closed contour. You can add any amount of nodes for editing by clicking on the contour with left



mouse button. Hold the LMB to drag nodes. To delete a node, select a node (click on it with a mouse), then press the "Delete" button that is located on the panel for editing masks. Shift + LBM allows you to create handles for editing contours. Alt+Ctrl+LBM allows to move the entire mask at once. There can be created 8 masks for each track.

All mask properties, such as: contour featheriness, transparency value, transparency location (inside or outside the contour) and so on, are set in the Mask property panel.

Any mask can be animated. Just activate autokeys (button with a key). With activated autokeys any change of mask location and its nodes will be automatically saved and smoothly extrapolated between frames where those changes took place.

Mask is displayed on the Timeline in the PROGRAM >> View >> Mask.

Note: If you use masks in your work, other editors might not support this feature of Cinelerra, for example Blender. In order to achieve correct display of results made by means of Cinelerra masks, it is necessary to add yet another one track and put a transparent image on it (ordinary image with a transparent layer made, for example, in Gimp). The size of such an image should correspond to the format that has been set. Now effect of the use of masks will be available for viewing in any program.

10. SPEED CONTROL

The impact on the speed of playback of video material can be performed by several ways in Cinelerra.

The first and the easiest way is change of speed in the "Info" window. For this right click on the necessary resource in the "Resources" >> "Media". Then in the "Asset Info" panel change speed "Frame Rate". To reduce speed it is necessary to reduce the "Frame Rate" value (comparatively with the original), to increase speed - increase value. In the first case, additional frames will be added (existing frames will be duplicated), in the second case, the amount of existing frames will be reduced. In any case, length of video fragment located on a track need to be led with accordance to achieved results manually. The lack of this method is that you change speed of the entire resource used in the project.

The second method is using filter of video effects "Resources" >> "Video Effects" >> "ReframeRT". If the "Stretch" option is chosen, then you need to use values less than 1.0 to reduce speed, and values more than 1.0 to increase speed. As a whole. work of this filter is analogical to the first method. The difference is that it'll be impossible to make length of video fragment located on a track fit the image (just try to play with it and you'll see). Positive features - the ability of applying autokeys; the filter can be applied to any part of video fragment. When you select the "Downsample" option the speed of video fragment doesn't change. The display method changes. For example, when you set value 0,2 each fifth frame will be shown and missing frames will be duplicated.

The third method is using the "Reframe" filter. This filter is available through "Program" >> "Video" >> "RenderEffect" >> "Reframe". It can't be applied on a track and settings become available in the process of preparation to applying. The settings are the same as in the "ReframeRT" filter. If value is less than 1,00 - the speed decreases; more than 1,00 - the speed increases. The fundamental difference of applying this filter is rendering of a new resource with changed parameters. Render can be applied either to the whole video resource or to its fragment specified, for example, by selection.

Changing video speed doesn't change sound speed. That's why that's better to make your image fit the sound. If still there is a necessity to change sound speed, then that's better to make it in special programs, for example Audacity, though you can try Cinelerra too, applying, for instance, the "Time Stretch" filter.

11. DELETING BACKGROUND ("CHROMA KEY" FILTER)

Suppose, we have any video fragment, which will be used in the capacity of a scene and personages (objects), which can move through this scene. Such a task is the daily work on television. To accomplish this task it is necessary to remove background from video with personages (to place them on a transparent background). If video with personages was recorded on a solid background with color different from those of personages, there won't be any problems (usually it can be green or blue color, but any other colors can be used as well. The main thing is that the chosen color shouldn't intersect with colors, which should be left on an image). There are two filters for such purposes in Cinelerra. The first one is "Chroma Key". It's easy to use and works with any images. The second one is "Chroma Key (HSV)" is more complicated. It has lot's of settings and the main its difference from the first filter is that it works only with images that maintain RGBA-8, RGBA Float, YUVA-8 color models (image should have alpha channel).

Both tools are quite powerful and can be applied not only for removing one-color backgrounds, but for more complex work as well. To do this, you can apply several filters simultaneously (each of them for removing any specific hue of a background).

To get color values use the "Get Color" tool in the "Compositor" window and then press the "Use Color Picker" button in the Properties Panel.

For detailed information on how to work with filters go to the ["Secrets of Cinelerra"](#) manual. It needs to be noted that applying of these filters requires quite big experience in photo retouching. Such method allows to make the process of background removal much faster (with appropriate experience) while maintaining a sufficiently high image quality (it suits for photo processing as well).

12. RENDER

It might sound strange, but rendering of finished work into necessary format may turn into a real nightmare for novice editors. Though, as always, everything is quite easy. Render can be accomplished in two ways. The first method is rendering directly into file. To do this, go to PROGRAM >> File >> Render and choose necessary options in the panel that appeared (about what options to choose you'll read a bit below) and press OK. That's all, render is activated. The result of work can be seen at the bottom of the PROGRAM window. To abort rendering press "X" in the lower right corner of the PROGRAM window. Another method implies that you have a computer network and you are going to use cluster from several computers for render. There is built-in feature in Cinelerra for doing such things - "Render Farm". It is located in PROGRAM >> Settings >> Preferences >> Performance >> Render Farm. You can read how to make render by means of "Render Farm" at

assistcg.com: <http://www.assistcg.com/index.php/component/content/article/67.html>

Now, when you know where options are located, let's try to find out what can be done with them. Cinelerra supports only three full-fledged video containers, where sound and video can be packed simultaneously. This is avi, mov and OggTheora/Vorbis. The first container avi is a bit old and doesn't support video sizes more than PAL and NTSC. Sound can be packed into avi compressed by such codecs: TwosComplement, MP-3, Mpeg-4 and video compressed by codecs H-264, Mpeg-4, JpegPhoto, MotionJpeg-A. The next container is mov (QuickTime for Linux). Mov allows to pack video of any size, for example HD. Sound can be compressed by codecs: TwosComplement, MP-3, Mpeg-4 and video can be compressed by H-264, Mpeg-4, JpegPhoto, MotionJpeg-A, PNG, PNG with Alpha. In general, there isn't a big choice. In both cases it is better

to apply MP-3 for sound and H-264 for video. The third container is used with "native" codecs and there is no problem with the choice.

The question arises as to what to do if there is a need to create a video film, for example, for DVD. The answer is simple. You need to render material into special formats. For example, video into Mpeg-2 (m2v) and, separately, audio into AC-3. You can use Mencoder for packing these formats into .VOB container and those, who have difficulties with work in the console command line, may apply another variant.

Use .MKV container in the capacity of an intermediate container. Unfortunately, Cinelerra doesn't work with this container so far. That's why for packing and unpacking of any video and audio resources of .MKV container you can use mkvmerge GUI v.2.0.2 (You're My Flame). Receiving data packed into this container we get the ability of repacking those data into any other container by means of another application, for instance - Avidemux. In this case we get DVD file in .VOB container. It's very easy to work with above-mentioned applications and it won't take much time to find out how they work, that's why consider them as necessary plugins for Cinelerra.

Happy renders in Cinelerra!