



VIDEO STUDENTS' HANDBOOK

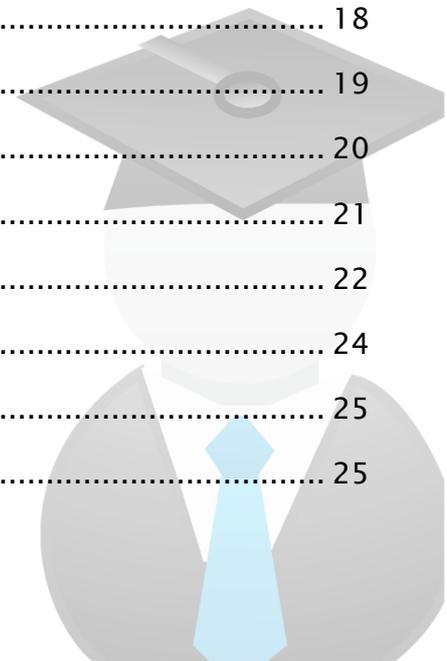
PROGRAMME OF THE COURSE

1. TRAINING MODULE INTRODUCTION
2. PRE-PRODUCTION - DIGITAL STORYTELLING
3. PRE-PRODUCTION - INTRODUCTION TO PROJECT MANAGEMENT
4. PRE-PRODUCTION - VIDEO PROJECT PLANNING
5. PRODUCTION - VIDEO SHOOTING, AUDIO RECORDING
6. POST-PRODUCTION - VIDEO EDITING
7. PROJECT DISSEMINATION

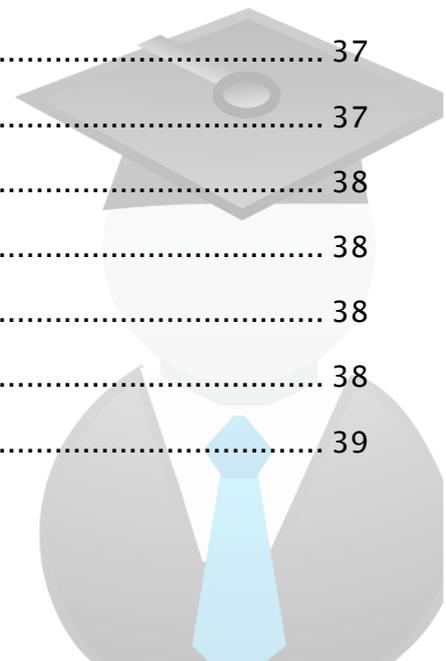


Table of Contents

Introduction.....	5
Pre-production	5
Digital Storytelling	6
Introduction to Project Managment.....	8
Audio-visual management.....	9
Production.....	9
Camera types	10
Camcorder	11
DSLR	12
Smartphone.....	13
Video Standards	13
Resolution.....	14
Aspect Ratio	15
Frames per Second (Frame Rate FPS).....	15
Camera Parts and Accessories	16
Lense	17
Battery	18
Recording Media	18
Tripod.....	19
Lighting.....	20
Audio	21
Camera Exposure	22
Aperture.....	24
Shutter Speed.....	25
White Balance.....	25



Shots Composition	26
The rule of thirds	27
Framed composition.....	27
Horizon	28
Camera movement.....	29
Panorama	29
Tilt	30
Driving	30
Crane	31
Position of the camera	31
High Angle	32
Eye-level	32
Low Angle	33
Camera Shots	33
Long shot.....	33
Full shot.....	34
Medium shot	35
Close-up.....	35
Extreme close-up.....	36
Post-production	36
Editing.....	37
Organization of materials	37
Video material.....	38
Music	38
Non-linear editing	38
Project settings.....	38
Importing of the materials	39



Rough cut..... 40

Final cut 41

Cut, timeline..... 42

Cross-dissolve 43

Sound editing 45

Image editing 46

Colour correction 46

Additional effects (FX, telops, etc.)..... 47

Exporting 48

Distribution 48

Distribution platforms 49

Archiving..... 49

Compression 49

Project map 51

Backup copies 51



Introduction

Audio-visual production is a final phase when you test your competences of photography, audio, video, storytelling and project management. In this module you will implement media projects, which will hopefully motivate you to learn more and further develop your competences and then to implement new projects and again and again and again...

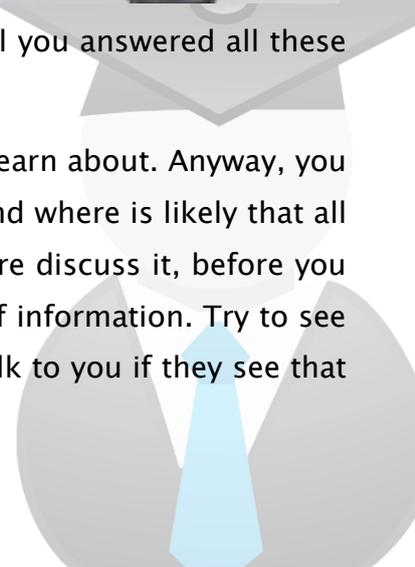
To work on a project means that you often work in a team and you need to communicate your ideas internally and externally. Thereby you will develop social skills, concurrently with creative and digital skills required to implement media projects. Every new project is a new endeavour, for which you need to plan, implement, complete and present results to the target audience even if you target your family members or neighbours. By working on media projects, you will build your entrepreneurial competencies applicable in private and professional life, regardless of your areas of interest.

Pre-production

You just want to grab your camera and start shooting. Now. Something. Somewhere. It is true that some works of art came out spontaneously and out of nowhere. But we are not in a gambling business and we want to improve your chances of success.

Therefore we start with planning which is in audio-visual industry called pre-production. The pre-production output will include two main elements. The first one is a story plan and the second one is a project plan. In both plans you may help yourself by asking 5W questions: who, what, where, when and why. If you need it you may add the question how. You are not ready for the production phase until you answered all these questions.

You should work on a theme that you know very well or you are anxious to learn about. Anyway, you should seek to find a theme where all your team members share interests and where it is likely that all of you will stay focused until the project is finished and presented. Therefore discuss it, before you start it. Do your research. Try to find as many as possible reliable sources of information. Try to see your story from at least two different angles. People will be more open to talk to you if they see that



you did your homework and know what you are talking about. Try to select the most important issues and focus on them. Put your plan on a paper and share it with all people involved. Change it if necessary. It is not a problem if everything didn't go according to the plan. The problem is if you are not ready to adjust your plans to the new circumstances. Therefore think ahead of possible contingency plans.

Before we start with shooting, think again if all the people and all the equipment will be available when you planned your production and if lighting conditions will be just right and if no noise will disturb you and if you are sure you can control all that, please think once again. Don't just think. Before you start your production, go to the locations where you plan your shooting and check the environment. Especially pay attention to the position of sun in the morning and in the evening if you shoot in exterior. If you plan to shoot inside you have to check both artificial lighting setup and the natural light coming from windows.

Digital Storytelling

We tell and listen to stories every day—we meet friends and tell about ourselves, the things that have happened or describe how things were done. Sometimes we want to look into the future and imagine what it might be like. Stories are told about personal life and used in the classroom for teaching purposes and to inform society about events, discoveries, inventions, good practice and much more. In our professional life we also use storytelling technique. In some cases the process of



documentation and sharing our experience can be rather academic, and therefore has no power to inspire the reader. Certainly facts and analytical aspect are essential, but to make good practice memorable, persuasive, and powerful you have to add your own personal touch or attitude.

There are several steps in the process of creating a digital story. The first steps are connected with the creation of the idea, gathering and organising the information. In this process graphic organisers might be helpful as they help to organize information visually, converting a lot of seemingly disjointed pieces into a structured, simple-to-read visual representation. When the story map is prepared the next step is to write the script that will be recorded. If you want to make your story digital then the author should “see” the finished story

before the technical implementation starts. That means it should be decided what media – sound, video, still photos, graphics and interactivity is necessary. This process of organizing media and text in a coherent ways is called storyboarding. This new form of storytelling has emerged and it allows



individuals to share their stories over the Internet, on discs, podcasts, or other electronic distribution systems. The beauty of this form of digital expression is that these stories can be created by people everywhere, on any subject, and shared elec-tronically all over the world.

Although nowadays people are fascinated by creating digital stories and it might seem fun and easy job, making a powerful story still re-quires

fundamental intellectual skills.

In order to make a digital story that is extremely effective and emotionally powerful, you have to acquire a large variety of skills: the skills you need for a traditional story – oral and written storytelling skills as well as digital and art skills, communication skills and critical thinking skills.

A written story becomes more fascinating with the use of visual images that have become a predominant form of communication delivered across a wide range of media and formats. Visual literacy can be defined as the ability to construct meaning from visual images. Visual literacy is about interpreting images of the present and past and producing images that effectively communicate the message to the audience

The key questions to ask yourself to check the structure and content of the story:

- Is it focused?
- Is it logical? Is the thinking clear and concise?
- Is it easy for the reader to understand?



Introduction to Project Management

Project Management is something that every person is faced with at some stage of his or her life. Everyone has to organise a birthday party or a function of some kind. Project management is more a part of one's daily life than we realise or even think of. The basic principles of project management can be applied in organising Sunday lunch for a family gathering, managing the school drama competition, organising a national arts festival and Audio-visual production !

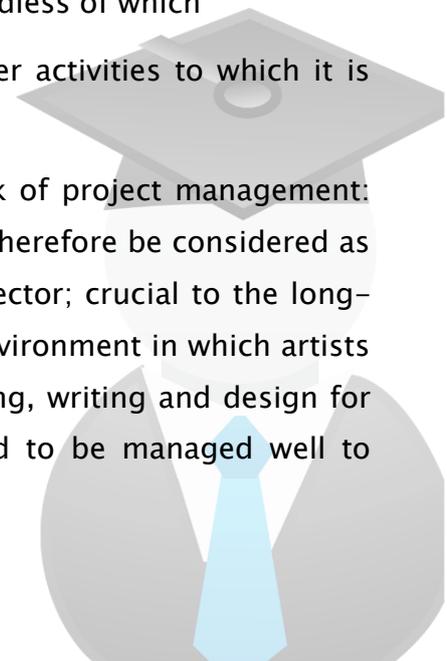
All projects have common characteristics: every project has a scope, budget, timeframe and schedule. Projects also differ. Understanding how projects differ and what that difference means to the management of the project is critical to successfully managing a project. Large, complex projects need project management tools, systems, and processes that are very different from the small and less complex project.



Project management is challenging. In some ways, this is a good thing because students who learn how to manage projects well will find it a rewarding career, and there will always be a demand for their services. Project management is challenging because projects consist of many activities that are interrelated, and the actions taken in one activity affect several other aspects of the project. Project management is complex because project managers must understand several knowledge areas and develop a variety of tools and techniques to successfully manage a project. This complexity makes it challenging to learn about project management because regardless of which

activity you begin to study, you need to know something about the other activities to which it is related.

Nothing or very little, in arts and culture happens outside the framework of project management: creativity, activities, doings and happenings. Project management should therefore be considered as one of the fundamentals of the successful management of the creative sector; crucial to the long-term sustainability of arts and culture and ensuring a sound and stable environment in which artists can be creative. The performing and visual arts, broadcasting, film-making, writing and design for example encompass a range of activities which are economic and need to be managed well to realise effective results.



Audio-visual management

Production

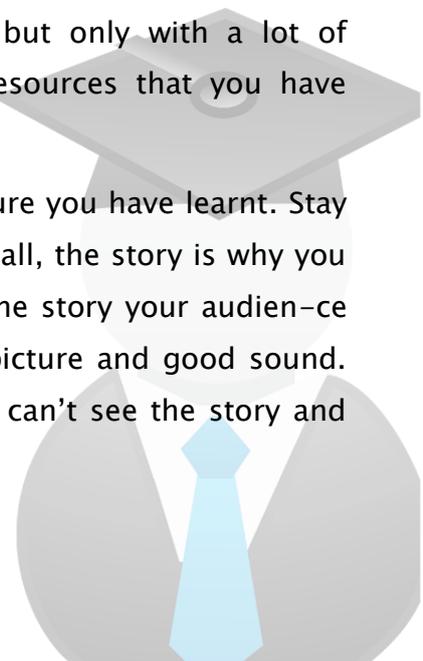
Production is all about creating a content. It is the process of taking pictures, capturing video, recording audio or combination of all three. Now it is the time to jump. I hope you have agreed on who is responsible for what in your team. Production phase is not a good moment to practise democracy and although it is most often wise to hear the alternative opinion, somebody needs to be in charge of the production and make final decisions. Otherwise it might just happen that a cloud goes over the sun and ruin your scene, while you are discussing the right background for an interview with a celebrity who is about to leave in few moments if you don't make up your mind.

Try to follow the plans and produce the right amount of audio-visual materials that you need for the project. What does it mean right amount? It means that too little materials may force you to go back and produce more if that's possible at all. It also means that too much materials may force you to spend a lot of time just to select the best shots, before you can even start



editing. In other words in media projects quantity is no substitute for quality. Don't worry. Your judgments and quality of produced materials will improve over time, but only with a lot of practise. Organise your production based on the human and technical resources that you have available.

Before you start complaining about the camera or editing software, make sure you have learnt. Stay focused on your story. First story than good picture and good sound. After all, the story is why you started your media project. However, if you can't see the story and hear the story your audience won't be too excited. Stay focused on your story. First story than good picture and good sound. After all, the story is why you started your media project. However, if you can't see the story and hear the story your audience won't be too excited.



Camera types

We watch the world around us with our eyes. The brain processes the information received by the eye and stores it into memory. Recording of moving images requires a camera: a device that has a lens (eye), electric circuits which process the information (brain) and data storage (memory). However, unlike the human mind which is very adaptable and has the ability to learn, a camera is based on electronics and mechanics, it does not have the ability to learn and requires an operator (cameraman) who will wield it.

Unlike a photographic camera, a movie (video) camera allows us to record moving images and the passage of events through time. The choice of camera, dependant on its use and possibilities, is the first step in video production.



Camera types - Camcorder, DSLR, Sport camera, Smartphone...



Camcorder

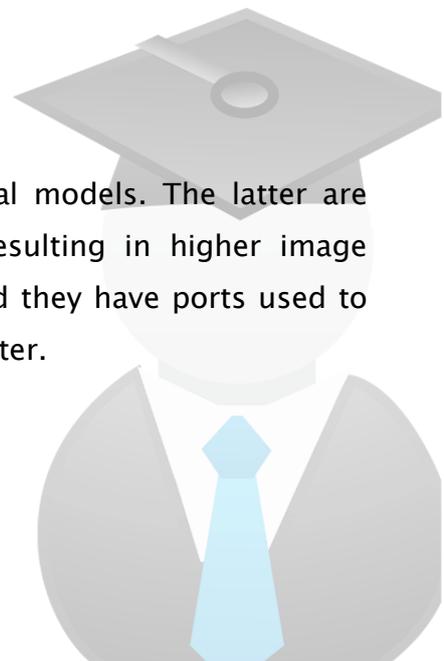
If you want to record a quality video, movie or a feature video, like a video spot or a commercial, you will have to use a higher quality camera which will provide controls more advanced than just the start/stop recording button.



Figure 1. Camcorders



There are many types of cameras, ranging from amateur to professional models. The latter are characterized by larger, higher quality recording sensor and optics, resulting in higher image quality. The cameras have been designed with easy handling in mind, and they have ports used to connect additional equipment to the camera, and the camera to the computer.



DSLR

Although it is not primarily a video camera, the DSLR (digital single-lens reflex) cameras have entered the world of video production and achieved impressive video recording capabilities.

The DSLR cameras are very practical, being a single device which can take photographs and record video. Compared to standard video cameras, with the DSLR cameras it is easier to achieve Depth of field (DOF) and they have a wider array of exchangeable lens objectives. This allows for a “movie-like” video results, often hard to achieve even with the semi-professional equipment.



Figure 2. DSLR | recording with DSLR camera



Smartphone

Although it is not primarily a video camera, the DSLR (digital single-lens reflex) cameras have entered the world of video production and achieved impressive video recording capabilities.



Figure 3- Smartphone

If you use such a camera to record a scene with insufficient light, the camera will try to compensate for the lack of light, reducing the quality of the video. Such cameras have small lenses and sensors, meaning they are unable to capture a high-quality video, unless in perfect conditions with plenty of natural or artificial light.

Video Standards

Besides in size, possibilities and shape, cameras also differ in the way they record and the characteristics of recorded video and audio.

Video Cameras record in one or more video standards. Since the introduction of video around 1951, till the end of 20th century, two basic video standards dominated: PAL and NTSC. With the appearance of new high definition (HD) video formats during the last decade of the 20th century, PAL and NTSC have become the standard definition (SD) formats.

Four characteristics define a video standard:

- dimension of the picture (resolution)
- aspect ratio
- frame rate / frames per second / fps
- display method – interlaced or progressive



Resolution

The quantity of information contained in every image of the video is defined by the resolution. In digital video, the resolution is the most important factor determining the quality of the video. In identical recording conditions (light, composition, camera...) higher resolution results in a higher quality of video.

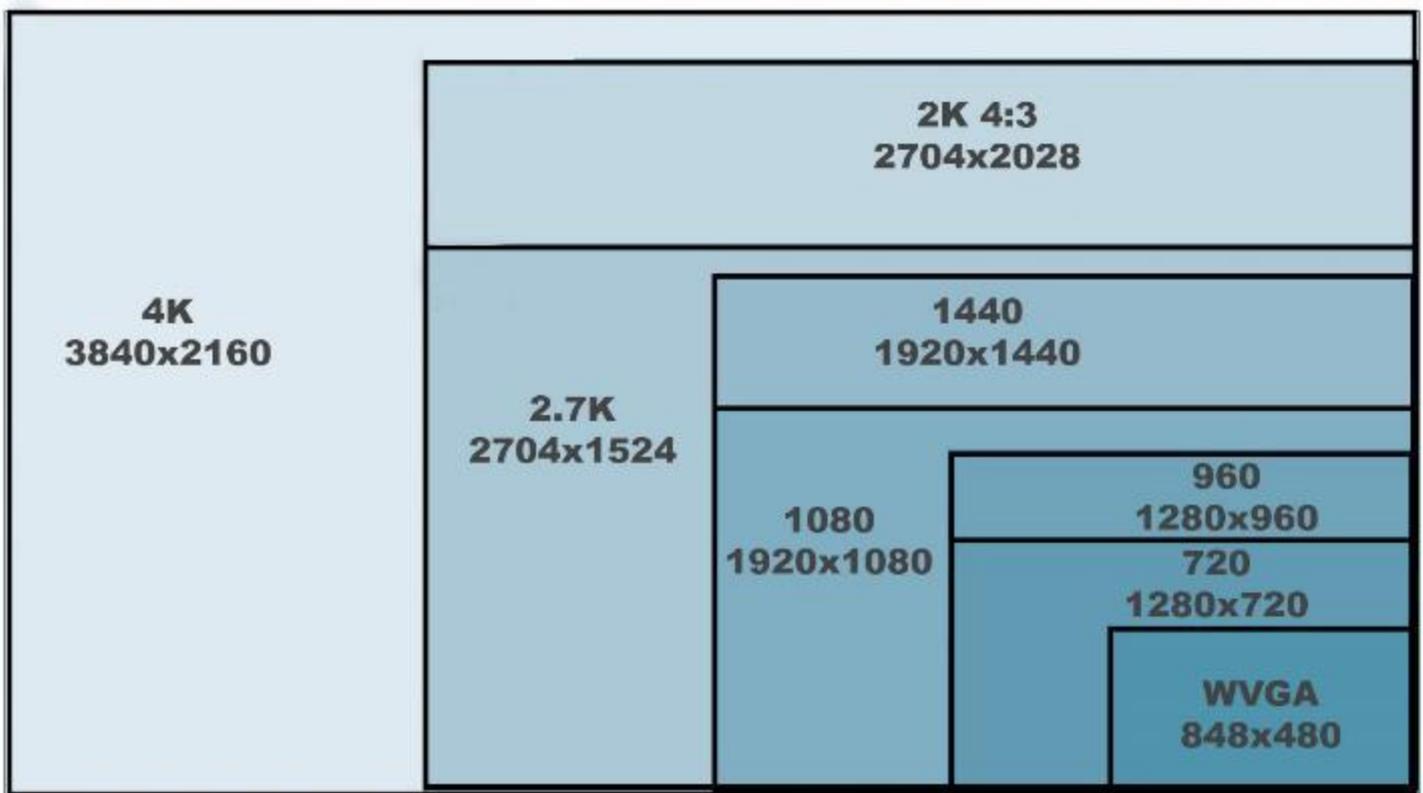
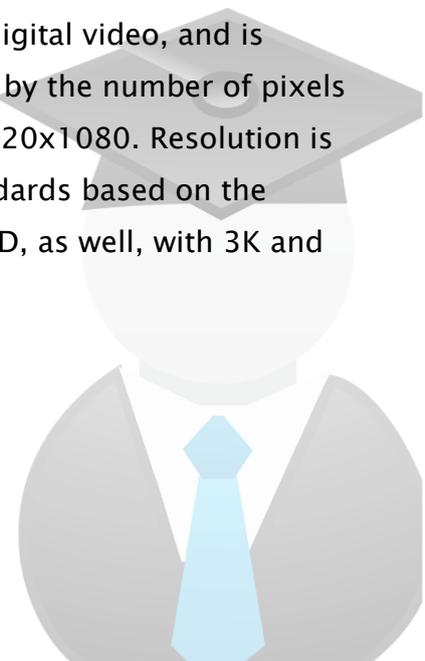


Figure 4- Resolutions

There is little difference between the resolution in digital photography and digital video, and is expressed in number of pixels. The size of an image in a video is expressed by the number of pixels on the horizontal and vertical axis of the image, for example 720x576 or 1920x1080. Resolution is defined by the standard. There are currently two widely accepted video standards based on the resolution: standard (SD) and high (HD). There are resolutions higher than HD, as well, with 3K and 4K being the most prevalent.



Aspect Ratio

The width and height of an image expressed in pixels determines the resolution, as well as the aspect ratio. The aspect ratio is determined by the cut-out of the image or the space the frame depicts. SD video has an aspect ratio of 4:3, while HD video uses 16:9 aspect ratio. The value for video and film aspect ratio is often expressed in decimal form, for example 1.33:1 for 4:3, and 1.78:1 for 16:9.

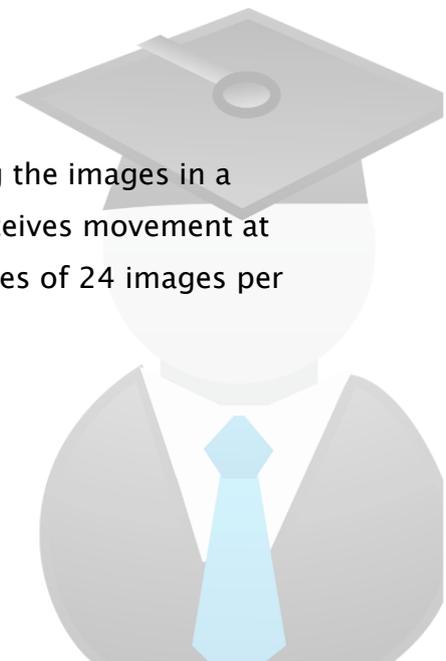


Figure 5- Picture Aspect Ration

The appearance of widescreen TVs (LCD and plasma technologies) with 16:9 aspect ratio has reduced the need for 4:3 aspect ratio, but a problem is that some broadcasting companies still broadcast their signal in 4:3 aspect ratio, which is then deformed (widened) if shown full-screen. Therefore, new TVs have the possibility to insert black lines to the left and right of the image (pillarbox).

Frames per Second (Frame Rate FPS)

The motion picture is created by a sequence of static images. By displaying the images in a sequence an illusion of movement is created. The human eye starts to perceive movement at speeds larger than 8 images per second. The eye sees a smooth flow at rates of 24 images per second and above.



The speed of video is measure by the number of images per second. The recording speed is colloquially called the frame rate and expressed through frames per second (fps). The following frame rates correspond to the following video standards:

- 60 fps – standard NTSC 720p HD frame rate
- 50 fps – standard PAL 720p HD frame rate
- 30 fps – standard NTSC frame rate
- 25 fps – standard PAL frame rate
- 24 fps – standard 35mm film tape frame rate

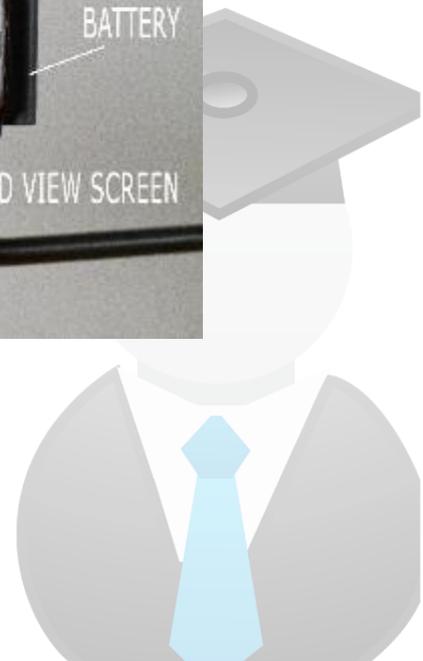
Camera Parts and Accessories

A camera is a complex device used for recording image and sound and transferring the the recorded material to a computer for further editing. In the previous chapter you have learned that there are different types of cameras with different characteristics, both amateur and professional.

The more professional the camera, the greater the number of keys, controls and functions. Amateur models allow simple handling: insert recording media, switch the camera on, record. The image quality will be correct, but the more you will use a camera, the more will you need additional image (and sound) controls.



Figure 6 – Camera Parts



Lense

The lens is very important for capturing images and is crucial in setting the film expression: framing, shot selection, focus, depth of field...



In

professional cameras, the lens allows for control of focus, exposition and zoom. Amateur cameras have these controls located on the body of the camera and they are not as accessible during the recording. The lens is very important for capturing images and is crucial in setting the film expression: framing, shot selection, focus, depth of field...

In professional cameras, the lens allows for control of focus, exposition and zoom. Amateur cameras have these controls located on the body of the camera and they are not as accessible during the recording.



Figure 7 - Lenses / DSLR lenses / Clip On Smartphone lenses



Battery

Battery needs to be maintained in order to ensure its capacity and longevity. See usage instructions provided with your camera. Batteries lose capacity with time. Make sure you know the state of your battery so that you may replace your batteries on time.



Figure 8 – batteries and battery grip

The capacity of the battery is reduced with lower temperatures. Keep your batteries in a dry and warm place. Batteries lose capacity with time. Make sure you know the state of your battery so that you may replace your batteries on time. The capacity of the battery is reduced with lower temperatures. Keep your batteries in a dry and warm place.

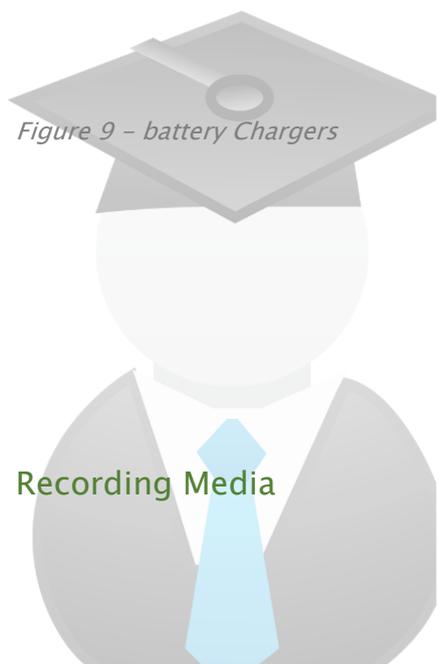


Figure 9 – battery Chargers

Recording Media

Cameras write to different media: magnetic tape (videotape), hard disk drive (HDD), miniDV or memory cards. Each of these media have their advantages and disadvantages.

Recording / storage media have changed as the technology evolved, but some have remained in use due to their practical characteristics. For example, MiniDV tapes are very practical for storage.

Some of the currently present media include:

- Memory card
- MiniDV tape
- Digital Betacam tape
- Hard disk
- MiniDVD



Figure 9 – recording media (cards and tape)

Tripod

A tripod is used to ensure the stability of the image. A video tripod is more robust than the tripod used for photography and it uses different mechanisms which allow for smooth, glitch-free horizontal and vertical movement of the camera.

A video tripod is made up of its legs and its head. Professional tripod has these two components separated, allowing for use of different combinations of heads and legs.

The legs of the tripod need to be solid enough to carry the weight of the camera, and tall enough to raise the camera slightly above the eye-level of an adult person. The head of the tripod is chosen based on the weight of the camera.



Figure 10 – tripod mounts (quick release plates)





Figure 11 – working with tripd



Lighting

Additional lightning is created using a lighting body, a tripod and shades which direct the light. The heat created by a lighting body can be high enough to cause serious burns. Be careful when handling switched-on lighting. After you switch off the lighting, give it time to cool before you pack it, in order to avoid injuries or damage to other equipment.

Figure 12 – light on set (Key, Fill,Back)

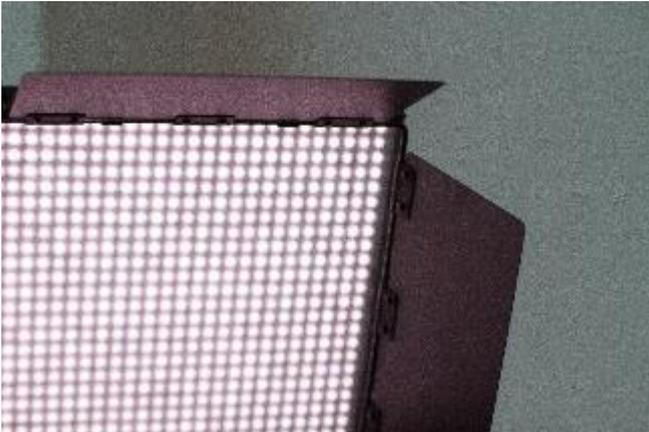


Figure 13 – IKey / Fill LED Light panel

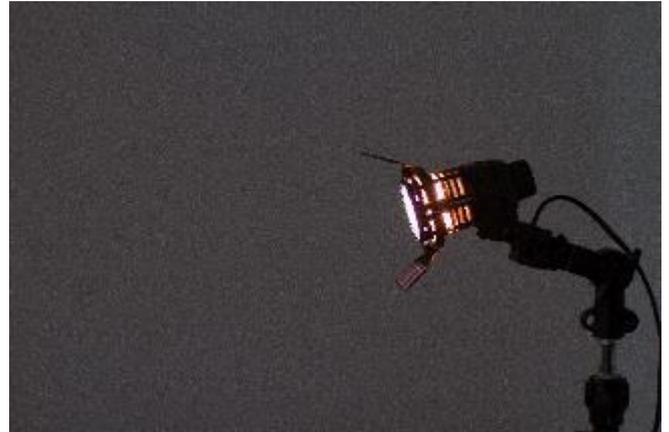


Figure 14 – Small Back Light

Audio

Microphone and earphones are necessary for sound recording. Most cameras have built-in microphones, as well as the possibility to connect external microphones.

When choosing a microphone, make sure you check that your camera has appropriate ports, or you will not be able to connect and use your microphone.



Figure 15 – wireless microphone set



Figure 16 – camera sound panel (XLR connectors)

The most common microphone connection on a camera is the 3.5mm stereo mini jack. The other type of connection is the XLR which is used for connecting professional audio equipment. The XLR

(also known as Canon) has an additional advantage as it can supply condensing microphones with power. Since many amateur cameras do not have the XLR port, certain microphones can be powered via a battery, using an XLR–mini jack to connect to the camera.

When an external microphone is connected to a camera, the built-in microphone is automatically switched off.



Figure 17 – camera sound panel (XLR connectors)



Figure 18 – using smartphone as audio recording device

Camera Exposure

Just as the lens in a human eye regulates the amount of light that reaches the optical nerve, the lens of the objective regulates the amount of light reaching the chip which records images. Due to its similarity with the human eye, this mechanism is called the iris. This function is often called exposure, however it does not stand for the duration of exposing an image to the light as in photography, but only the amount of light passed through.



Figure 19 – exposure bar on DSLR camera



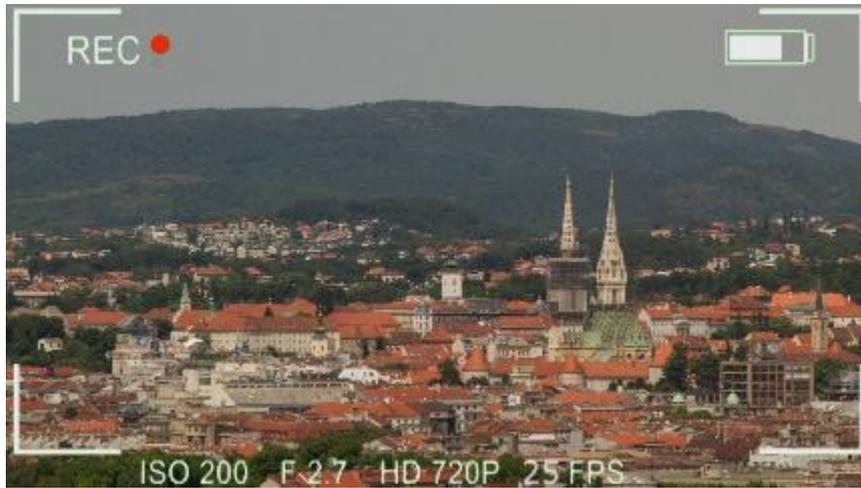


Figure 20 - good exposure



Figure 21 - underexposed shot

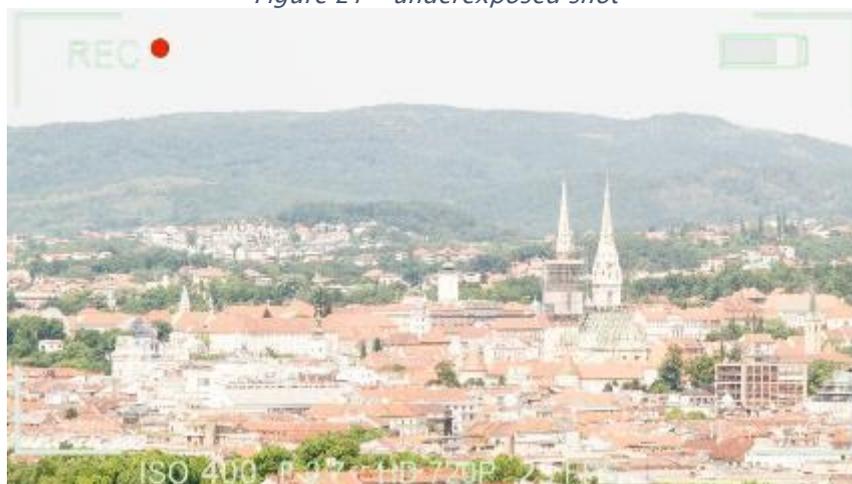


Figure 22 - overexposed shot



Aperture

The aperture is measured in f-stops, the same as with photography cameras.

Most often, the aperture is adjusted according to the face of the subject. This might mean that the remainder of the frame is overexposed (too bright, “burnt”) or underexposed (too dark).



Filmmakers often combine different levels of brightness in order to create a dramatic effect (for example, filming the subject as a dark silhouette against a bright background), while television shows recorded in a studio (news, talk-shows, entertainment...) in general have uniform lighting.

Figure 23 – lens with manual aperture (Blades)

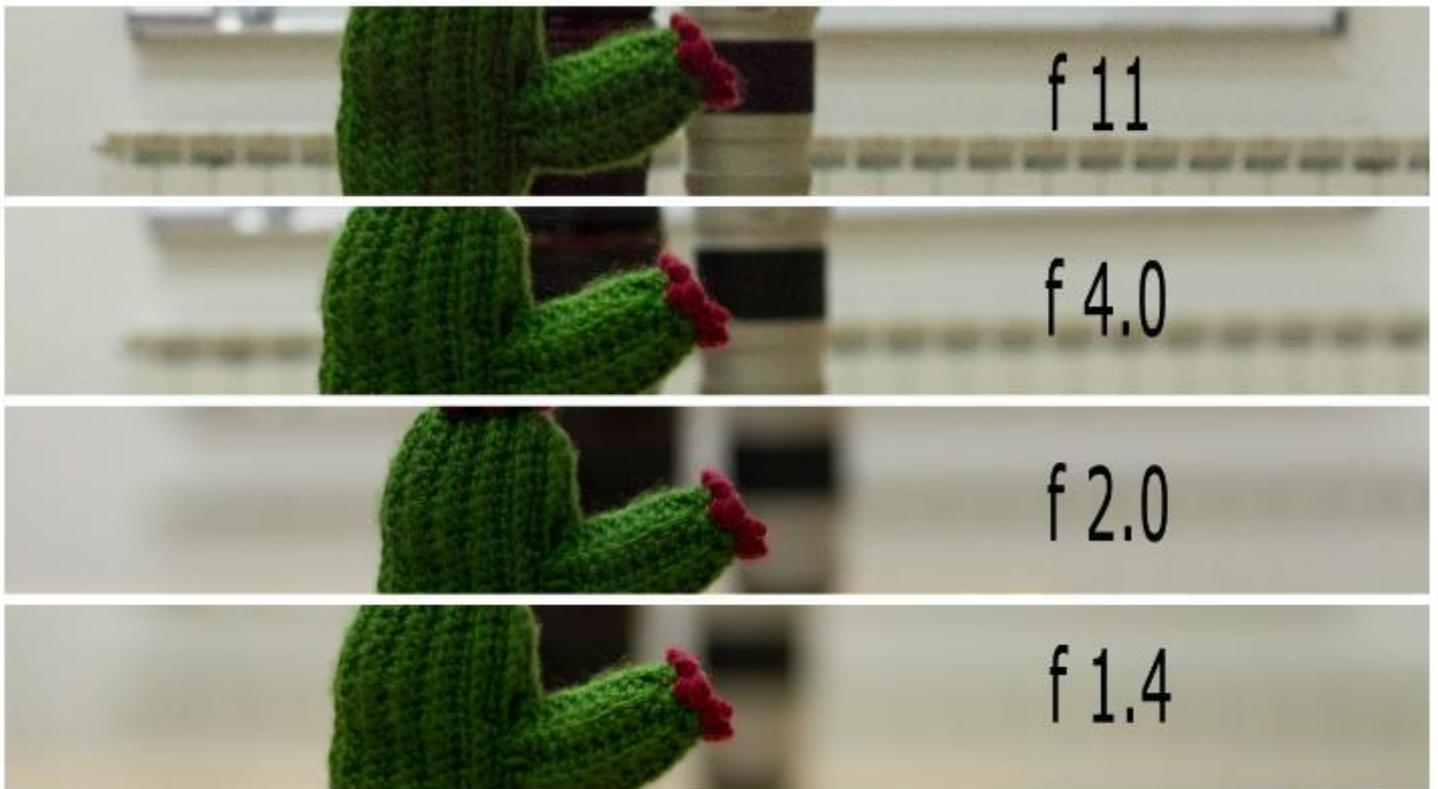


Figure 24 –difference between f numbers (f-stops)



Shutter Speed

The shutter speed on a video camera has the same function as with a photography camera: it controls the amount of light reaching the sensor and affects the recording of movement. It is measured in fragments of a second: 1/50 means that the shutter is opened for a fiftieth of a second (which is also the standard setting for recording in PAL standard). Technically speaking, the shutter on the video camera functions differently than that of the photography camera, but to the same effect. Instead of using a mechanical switch, the speed on the camera is regulated through the time in which the sensor of the camera is switched on.

White Balance

Adjusting the white balance basically means making sure that a white or any grey shadowed part of the picture is really white or grey, not with any red, blue or green tones. If the colour of white or grey parts corresponds to original colours, we are sure that all other colours are correct.



Figure 25 – white balance effect in kelvins



Colour	Temp	Light source	Setting icon
	1000K	Candles	
	2500K	Household light bulbs	
	5000K	Average daylight, electronic flash, industrial lights	
	6000K	Bright sunshine with clear sky	
	7000K	Slightly overcast sky	
	8000K	Hazy sky	
	9000K	Open shade on clear day	
	10,000K	Heavily overcast sky	

Most modern cameras have an AWB (automatic white balance) setting. In the most cases can be let switched on, especially out doors when light is strong. Ever if your photos have wrong colour balance, it can be easily corrected in the computer.

Figure 26 – white balance table

Shots Composition

Assembly of a film shot is done by applying the same rules as in photography. Special attention needs to be given to the layout of the elements in a shot. The composition of the shot can be aided by applying the the golden cut rule and its variant, the rule of thirds.



Figure 26 – video recording with smartphone



The rule of thirds

Split the shot into three equal horizontal and vertical parts. The four points of intersection produced refer to the positions to which the human eye pays most attention. Objects situated in the gold cut produce a harmonic relation with their surroundings, while the shot itself becomes more dynamic and interesting.



Figure 27 – using rule of thirds with grid



Figure 28 – video recording with DSLR (subject in thirds)

Framed composition

Framing is a method in which we try to capture the object of the photograph within a homogenous content, as diverse from the object as possible, in order to completely isolate the object from the rest of the photograph.



Figure 29 – Framed composition





Figure 30 - Framed composition / rule of thirds

Horizon

If the horizon splits your shot in the middle, you will get a static, uninteresting composition. The shots should not be divided into equal halves (horizontally or vertically) unless you are capturing a symmetric object or scene.

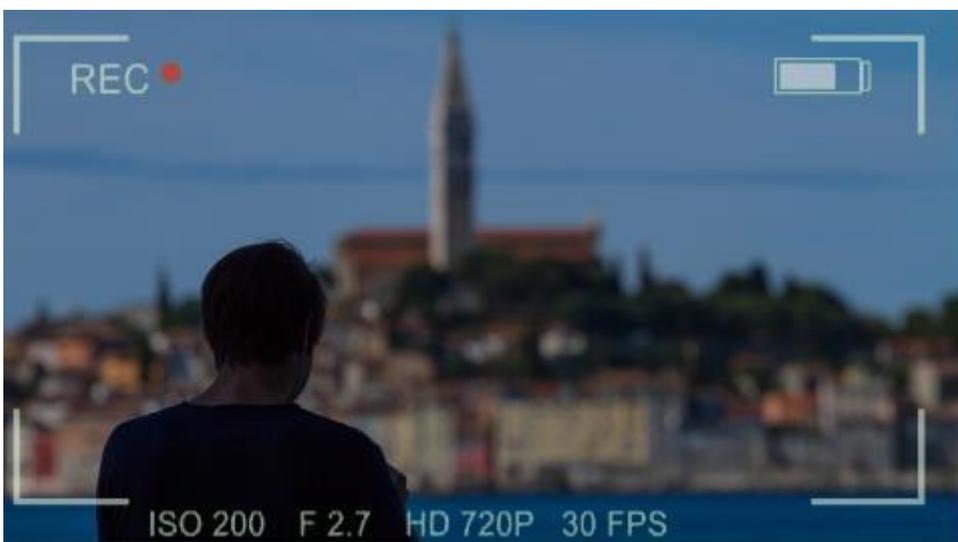


Figure 31 - following horizon line

Camera movement

Panorama

Regardless of the camera movement, a single shot should include the beginning and the end shot as static shots. Rotation of a camera around its axis is colloquially called a panorama. A panorama creates a feeling of a wider field of view. Before shooting a panorama, run a test shot in order to set the right speed of movement and create a good composition including a start and end of movement.

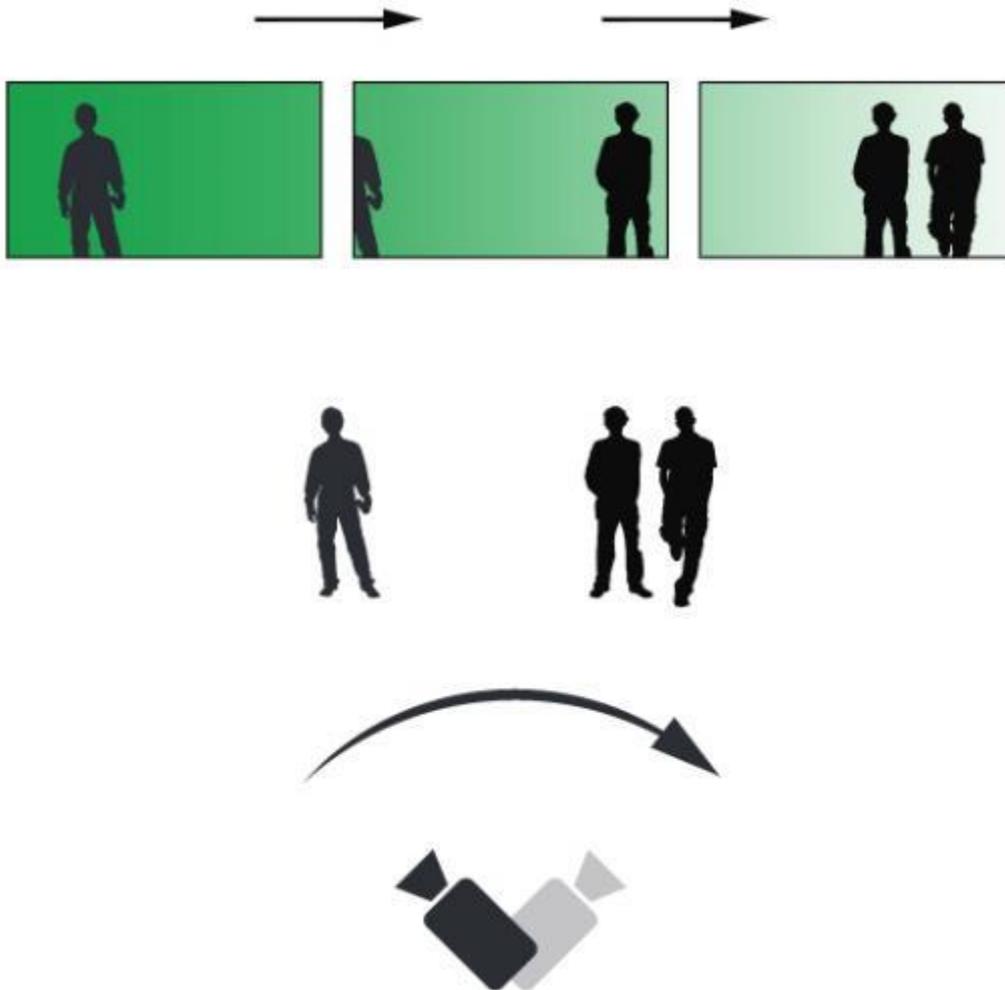
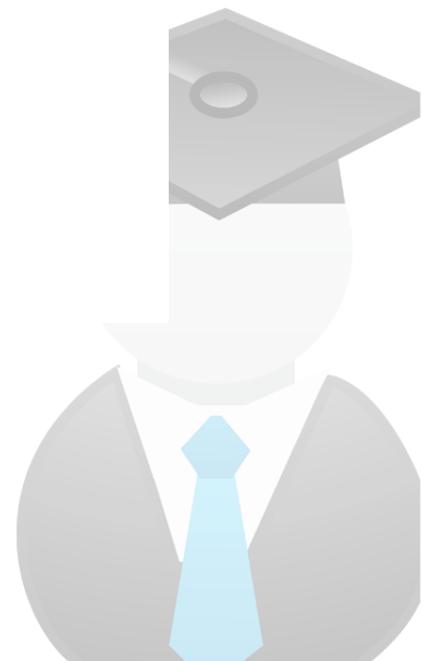


Figure 32 – Rotation of a camera around its axis – left to right and right to left



Tilt

Tilt is a vertical panorama in which the camera moves perpendicular to its axis. It is used to depict the height of the object.

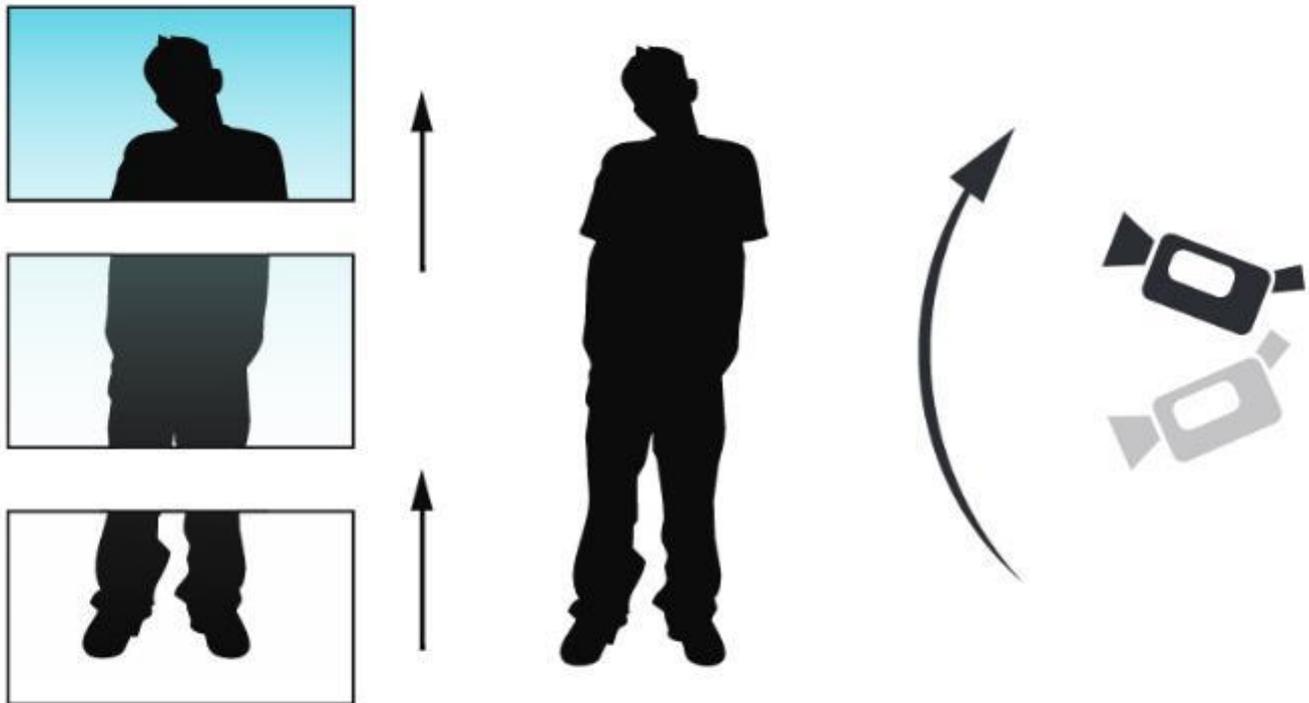
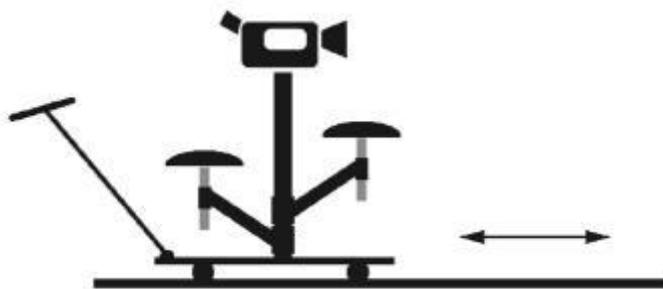


Figure 32 - Tilt camera movement

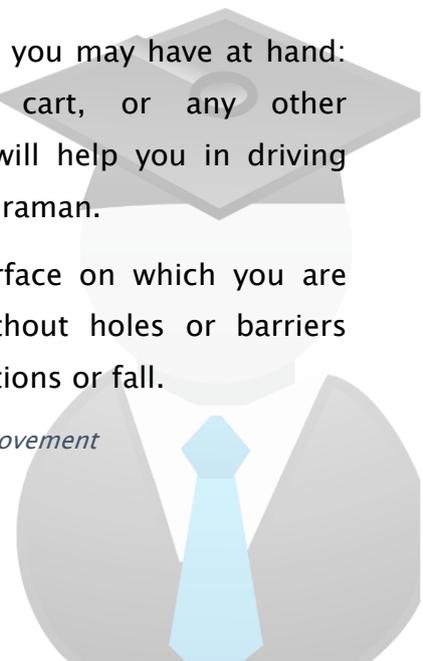
Driving

Professional driving equipment is expensive. Improve using the elements you may have at hand: skateboard, shopping cart, or any other assembly with wheels will help you in driving the camera and/or cameraman.



Make sure that the surface on which you are moving is flat and without holes or barriers which could cause vibrations or fall.

Figure 32 - Driving camera movement



Crane

A crane allows movement of the camera within all three spatial dimensions. It resembles a see-saw you might find in a children's playground. It is made of a tripod and a 'hand' which is mounted on the central pole. One end of the 'hand' features a station for mounting the camera, while the other has a counterweight. The crane can rotate 360 degrees both horizontally and vertically. Lately, instead of cranes, cameramen are reverting to flying drones.



Figure 33 – crane also known as jimi jib

Position of the camera



Figure 34 – Different camera angles

The filming angle can correct a composition and make a dull shot interesting.



High Angle

This angle is used for depicting a space or a situation, relations between people and/or objects in space. A person shot from a high angle seems smaller, inferior, weak and subordinated.



Figure 34 - High Angle shot

Eye-level

This is the point of reference that we experience most often as we observe the world around us – at eye level of an average height person standing.



Figure 34 -Eye-level shot





Low Angle

Low angle is a shot from a camera angle positioned low on the vertical axis, anywhere below the eye line, looking up.

Low angles shots give a sense of powerlessness and makes you feel useful in the scene and this type of camera angle would be useful for short actors.



Figure 35 - Low Angle shot

Camera Shots

Long shot

This is the widest shot in which one can see the entire space in which the action takes place. It is used to depict landscapes, panoramas or massive scenes. This shot is not determined by a human figure, but by space.





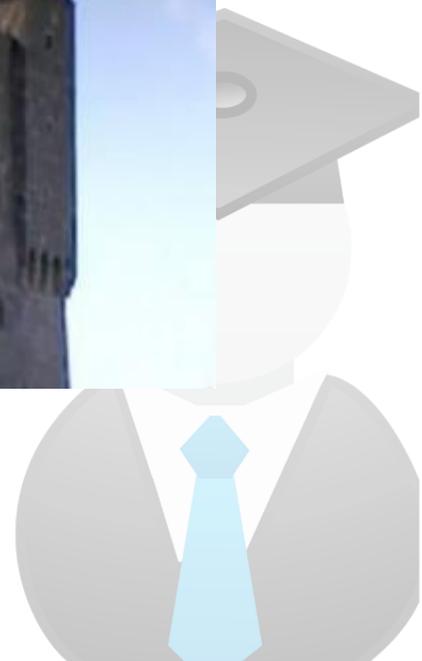
Figure 36 - Long shot

Full shot

This is a shot in which one can see the entire, or almost the entire human figure, with ample space and visibility. It is one of the most often used shots, especially in documentary film, as it resembles most closely the human eye's width of the field of view.



Figure 37 - Full shot



Medium shot

This shot captures a person from the waist up, where the person is covering most of the shot. In wider formats (1,85:1 and wider) the medium shot can fit more persons. In this shot, the attention of the viewer is focused on the subjects of the action.



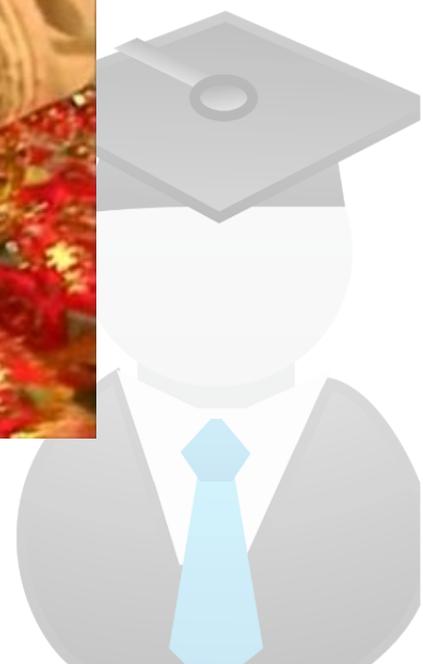
Figure 37 - Medium shot

Close-up

The attention of the viewer is concentrated on the face or an important details of a scene. The closer the shot, the more attention is given to the internal, emotional life of the character.



Figure 38 - Close-up shot



Extreme close-up

This shot depicts only a part of a person or object (eye, hand with a ring, dials of a clock). The extreme close-up can also be a shot of an entire object which is a part of a larger composition, for example a cup of coffee on a restaurant table.

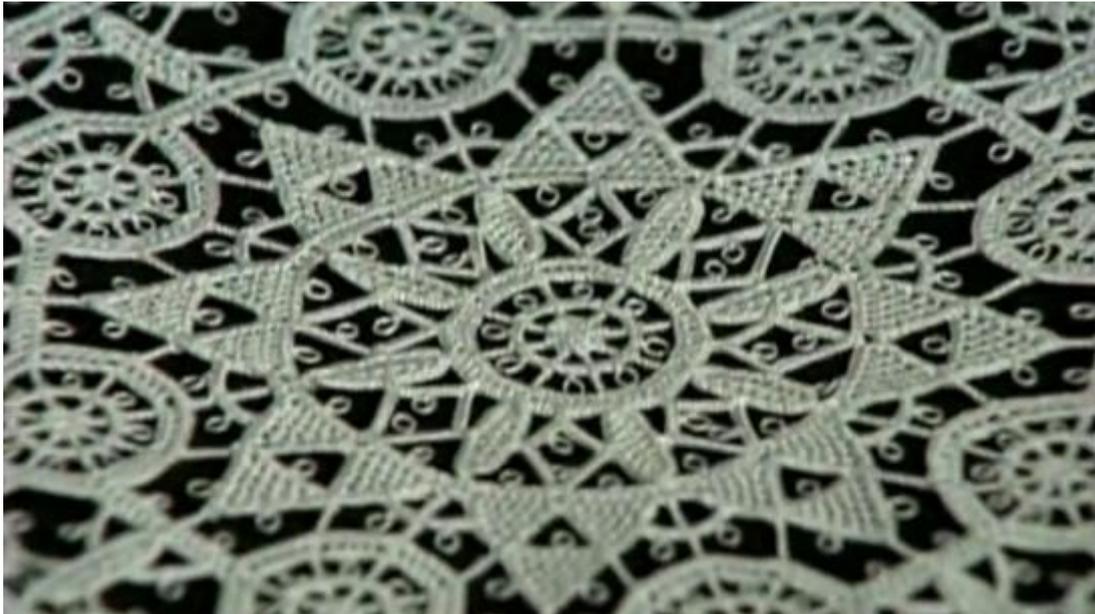


Figure 38 - Extreme Close-up shot

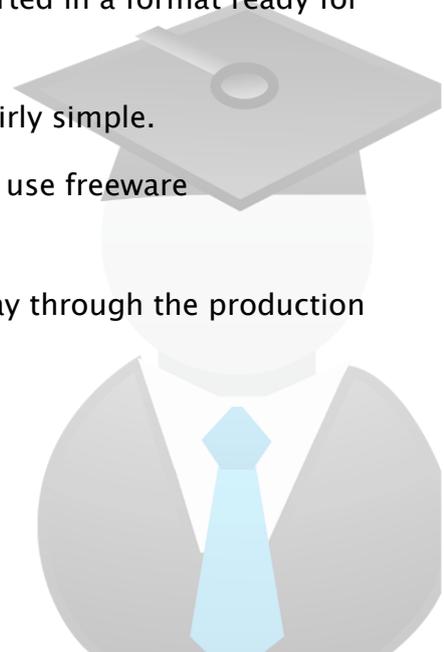
Post-production

When the shooting and recording is over you start a post-production phase of your project. In the post-production you will make corrections of brightness and contrast, exposure and colour, size and resolution, you will trim and cut, equalize and amplify, add this, remove that and finally assemble the story. It is the phase that ends when your work of art is exported in a format ready for distribution on different media platforms.

What is the best editing software for you? The answer to that question is fairly simple.

The one that satisfy your needs. For simple projects it will be sufficient to use freeware applications.

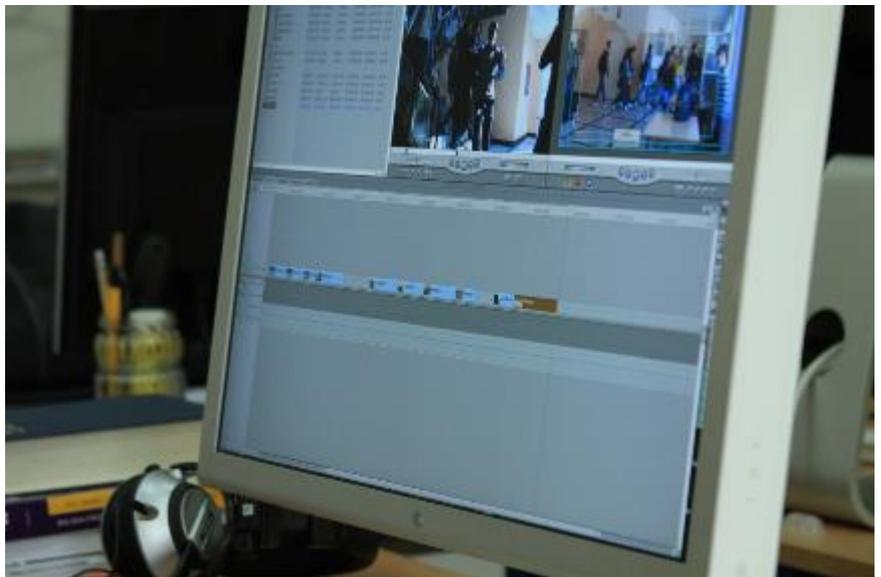
For professional projects you will have to learn professional tools all the way through the production workflow.



It means both hardware and software should be in the same league. If you are somewhere between amateurs and pros you will have to check your budget and be realistic about how often you are going to use the equipment. It makes no sense to spend a fortune and then have one more item to dust on your desk. Don't get overexcited by special effects before you can handle basics of image, sound and video editing. I'm sure you remember, but let me remind you once again. Story, story, story...

Editing

Many audiovisual creations get their features once they reach editing. This is especially true of documentary movies in which it is difficult to plan all the shots and situations, but also of hybrid forms such as reconstructed (acted-out) documentaries. The editing is the fourth stage in movie making, the one in which the final look, rhythm and structure of the film are defined. The editor is one of the



authors of the film, a person that shaped the film into what the viewer will finally see (once the edited film is enriched with audio-visual effects and music). The editor is in a way the last author and the first viewer of the film, the first person watching the recorded materials, sometimes without having participated in the actual filming.

Organization of materials

Dependat on the media on which you made your recordings, yout material is stored on digital cassettes, hard drives built into the camera or flash memory cards. One thing common to all these media and writing methods is that you cannot name the individual created files during the recording.



MVI_0024.MOV



MVI_0025.MOV



MVI_0031.MOV



MVI_0032.MOV

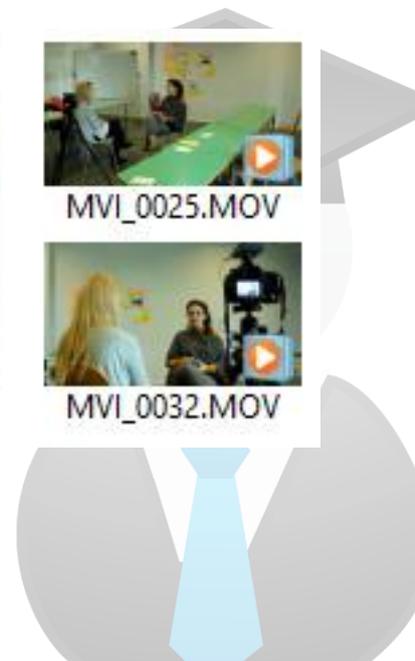


Figure 39 - default video clip names

The best way to import your materials is by using an editing program. In case you are not recording with a camera that has a built in hard disk drive or flash memory, a good practice is to copy all the materials to a local hard drive at the end of each day of shooting, organized into maps with dates of the recording. Making of a backup copy is advised.

Video material

The material which was recorded to other media (hard disk drives, memory cards, smartphone memory...) needs to be transferred to the hard disk drive of the computer which will be used for editing, most often with a USB cable, directly from a camera to the computer, or directly if the computer has a memory card or optical device reader.

Music

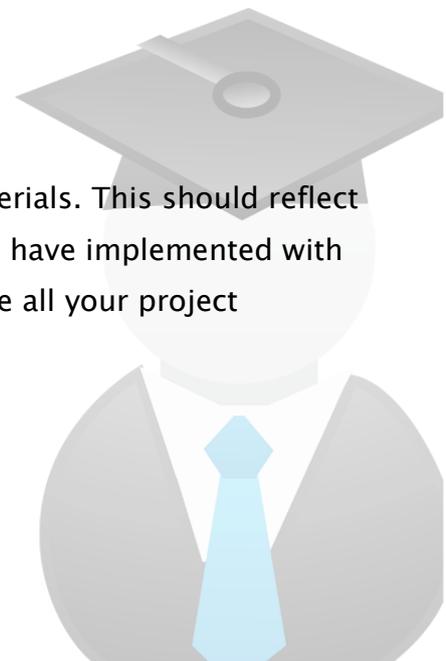
The sound can also be edited by cutting or blending. By selecting the start and end points of a shot, you are also selecting the start and end points for the sound track. However, when you are using a separate sound source (music, recorded audio effects, atmosphere, commentary...) you will have to edit it, just like you would edit a video. When working with sound, instead of an image, your editor will display a sound wave (or two sound waves if the recording is in stereo), which can for editing purposes be zoomed-in to a level of four hundredths of a second.



Non-linear editing

Project settings

The format of the film has to correspond to the format of the recorded materials. This should reflect the decision you have made in the preparatory stage and which you should have implemented with consistency up to this point. In ideal scenario, at this stage you should have all your project materials in the same format.



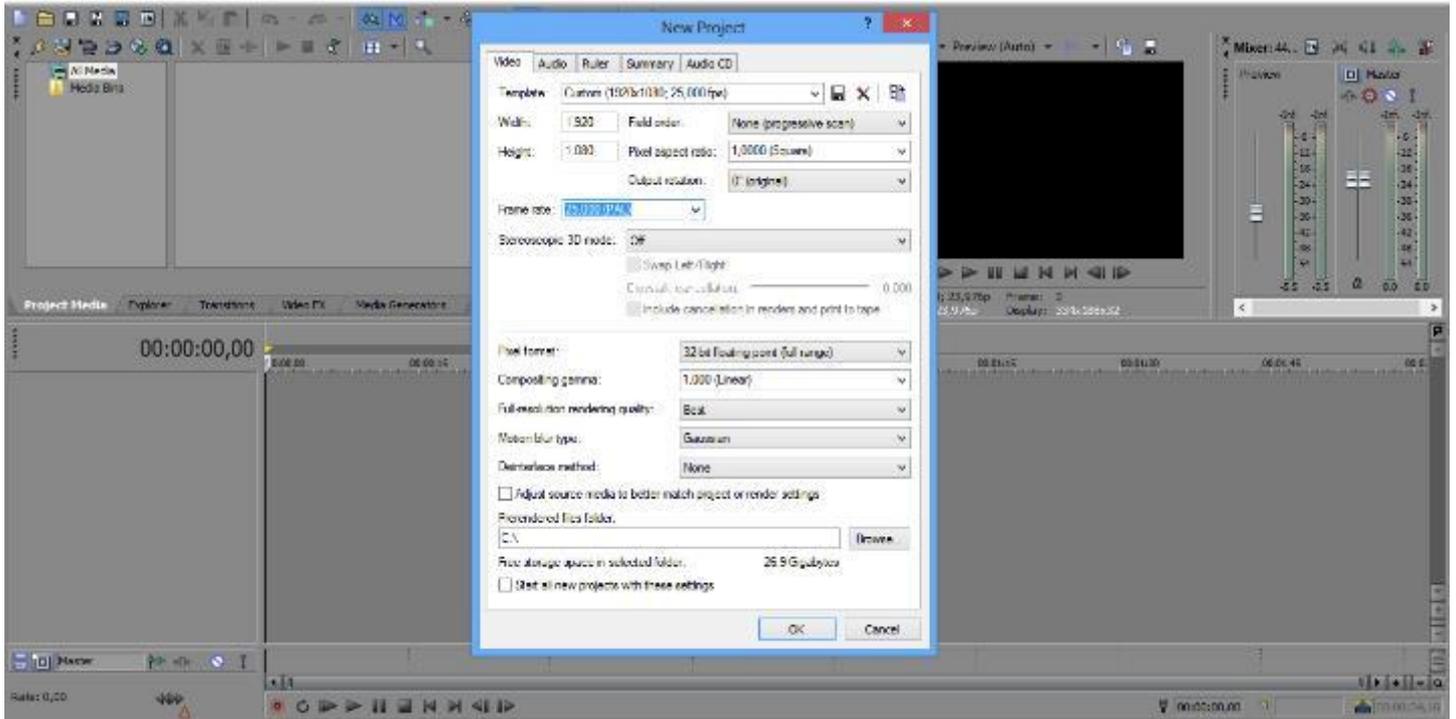


Figure 40 – Starting a new project in Sony Vegas software

Importing of the materials

All the clips, regardless of the way you are going to import them to your computer, can be renamed afterwards in the editing software, in the browser window. You should avoid changing the names and locations of clips on the hard drive in order to avoid breaking the links between the editing software's database and the actual materials stored on your computer.

Within the editing program you can group clips into maps (bin), which allows for easier orientation among all the project materials.



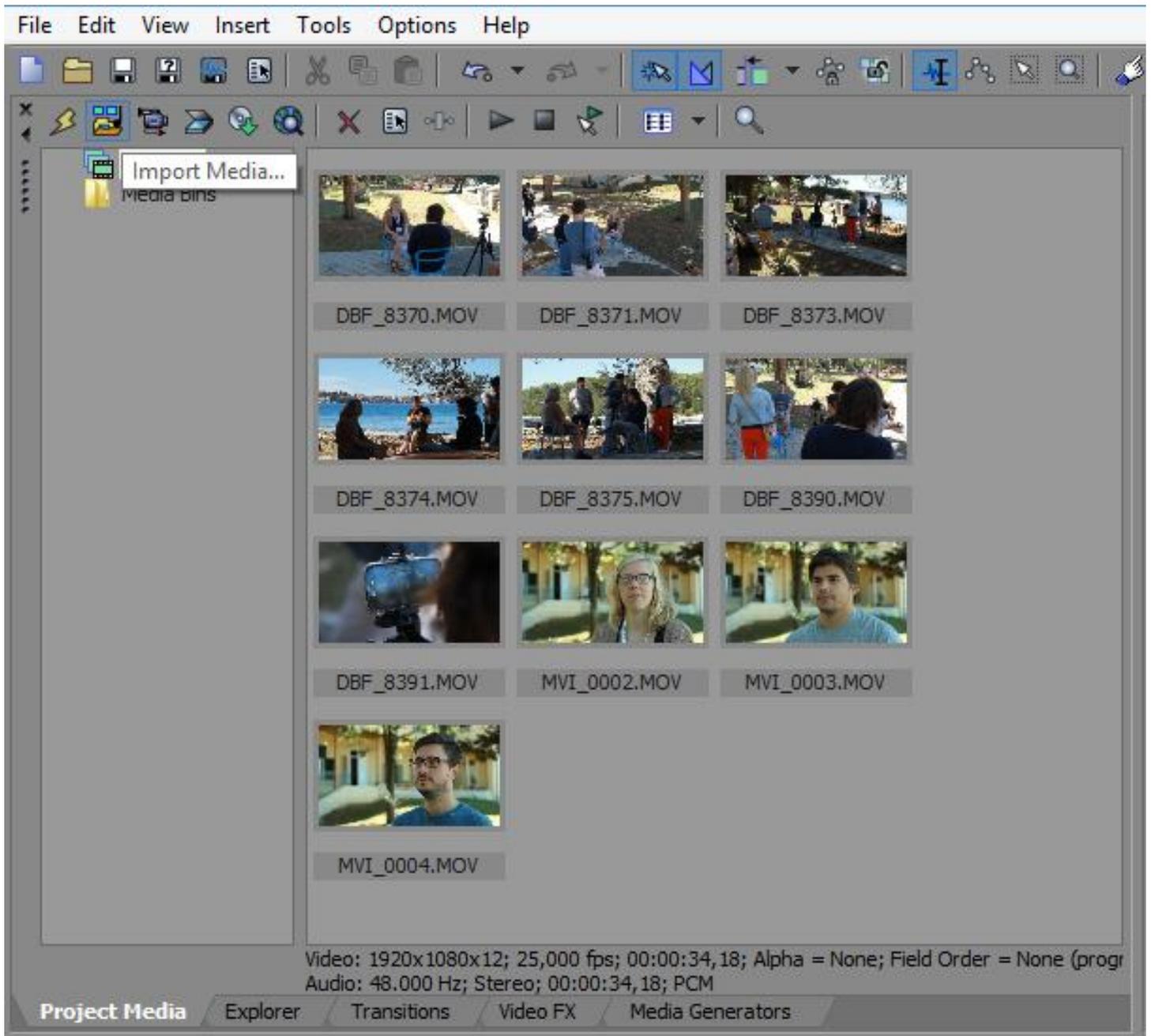
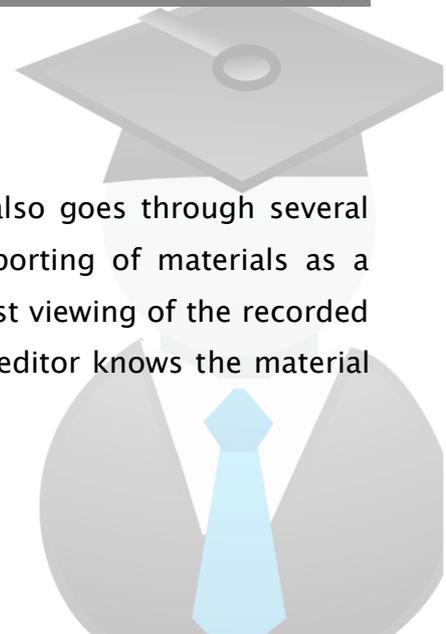


Figure 41 - Importing media in Sony Vegas software

Rough cut

Just like writing a scenario or shooting a video, the process of editing also goes through several stages of refining the video until the final version is reached. The importing of materials as a process, besides helping us organize the materials, also represents the first viewing of the recorded material, including the assessment of its quality and style. The better the editor knows the material he is working with, the easier his editing task.



The recorded material will dictate the style of the editing to a certain point, so it is definitely better to get acquainted with the material before making the final decision on the style of editing.



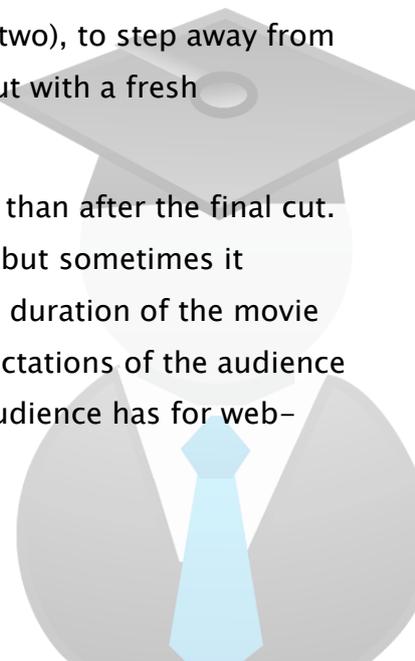
Figure 42 - Editing interface in Sony Vegas software

During the rough cut, one can note the relations between the various elements of the film, and through the process the film takes the form of a golden cut, progressing from the lesser to the greater: a shot in relation to a scene, a scene in relation to a sequence, a sequence in relation to the film.

Final cut

After making the rough cut, it is advisable to make a short break (a week or two), to step away from the materials and let your mind clear, in order to be able to make the final cut with a fresh perspective.

The practice shows that after the rough cut the movies are some 50% longer than after the final cut. Most often this reflects the decisions made based on the artist's perception, but sometimes it results from adapting to the conditions set by the producer or the client (the duration of the movie or the duration of the song for which you are making a video spot), the expectations of the audience (the average duration of a feature movie, or the average concentration the audience has for web-



content) or the limitations of the media (full story or a news bulletin, the time allocated by the TV channel).



Figure 43 – Editing interface in Sony Vegas software

The basic transitions in editing are the cut and the cross-dissolve. A cut indicates a change in the space / environment, while a cross-dissolve marks the passing of time.

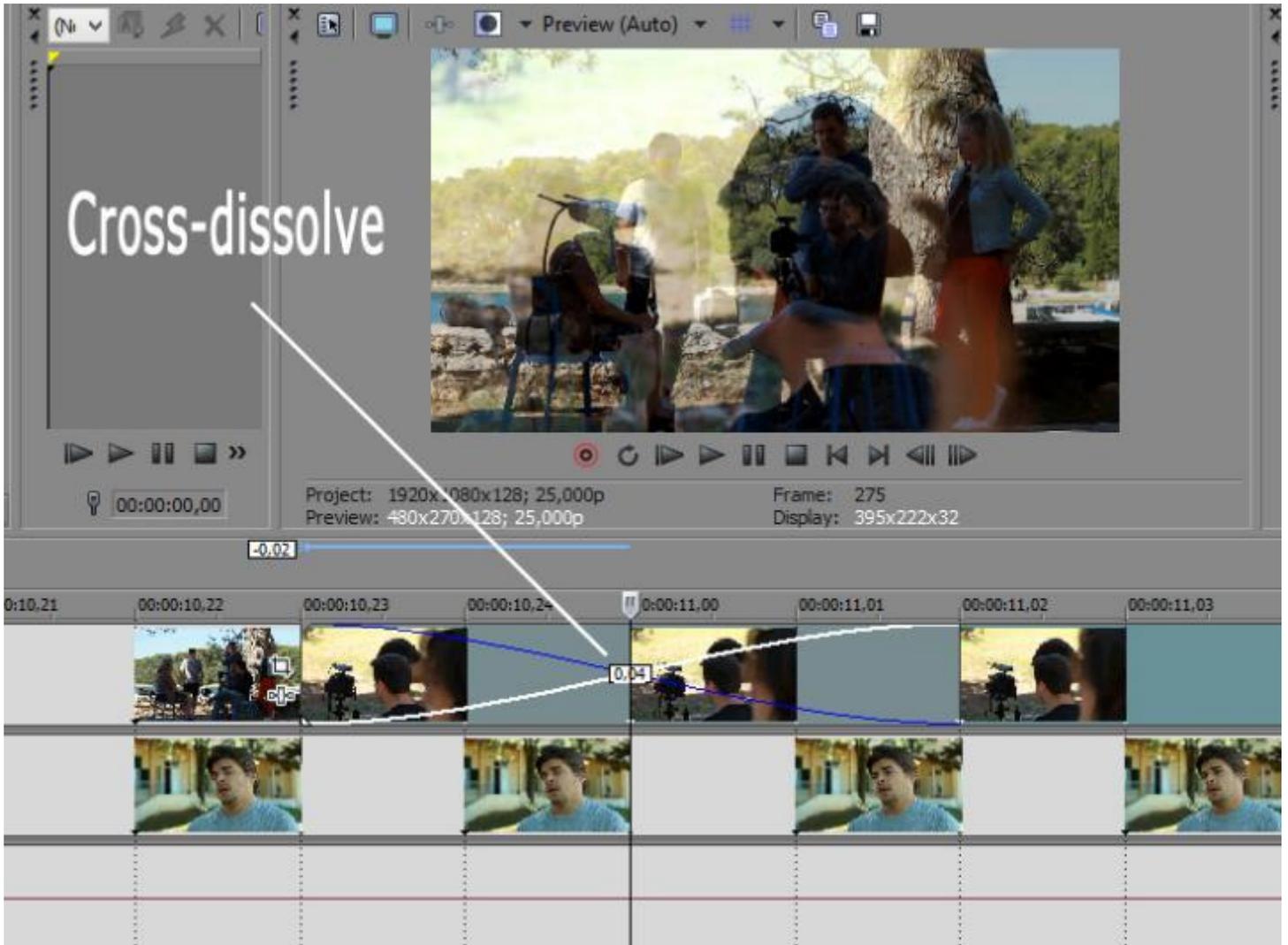
Cut, timeline

The cut is the most common way of merging two shots and the closest to the human eye due to its similarity with a blink of an eye. Therefore a cut represents an unbroken flow of time, unlike a cross-dissolve which connotes flow of time between the shots.



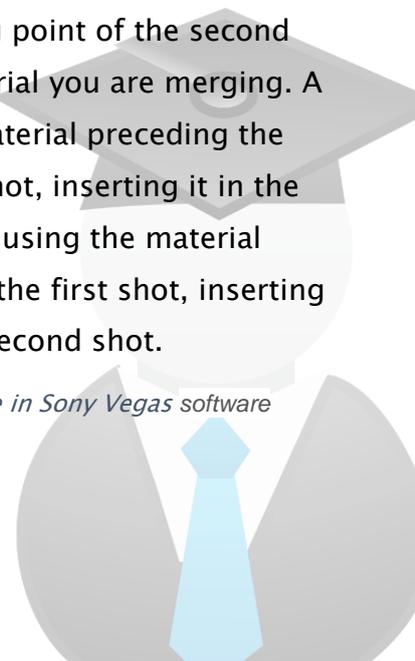
Cross-dissolve





In order to perform a good cross-dissolve, you need to pay attention not only to the moment in which the cross-dissolve begins (the ending point of the first and the starting point of the second shot), but also to the material you are merging. A cross-dissolve uses the material preceding the beginning of the second shot, inserting it in the end of the first shot; while using the material following the end point of the first shot, inserting it in the beginning of the second shot.

Figure 44 - Using Cross-dissolve in Sony Vegas software



Therefore, you cannot cross-dissolve shots which have been used from beginning to end, but have to use the shots imported with “tails” (five seconds at the beginning and end of each shot).

Sound editing

Sound editing is also called horizontal sound editing. It is a process of problem-solving: how to connect an ending tone with a new one. Sound editing does not need to follow the logic of image editing: at an instance where you have a cut between two shots, the tone can also have a cut, but also a cross-dissolve, or can continue from the previous shot.

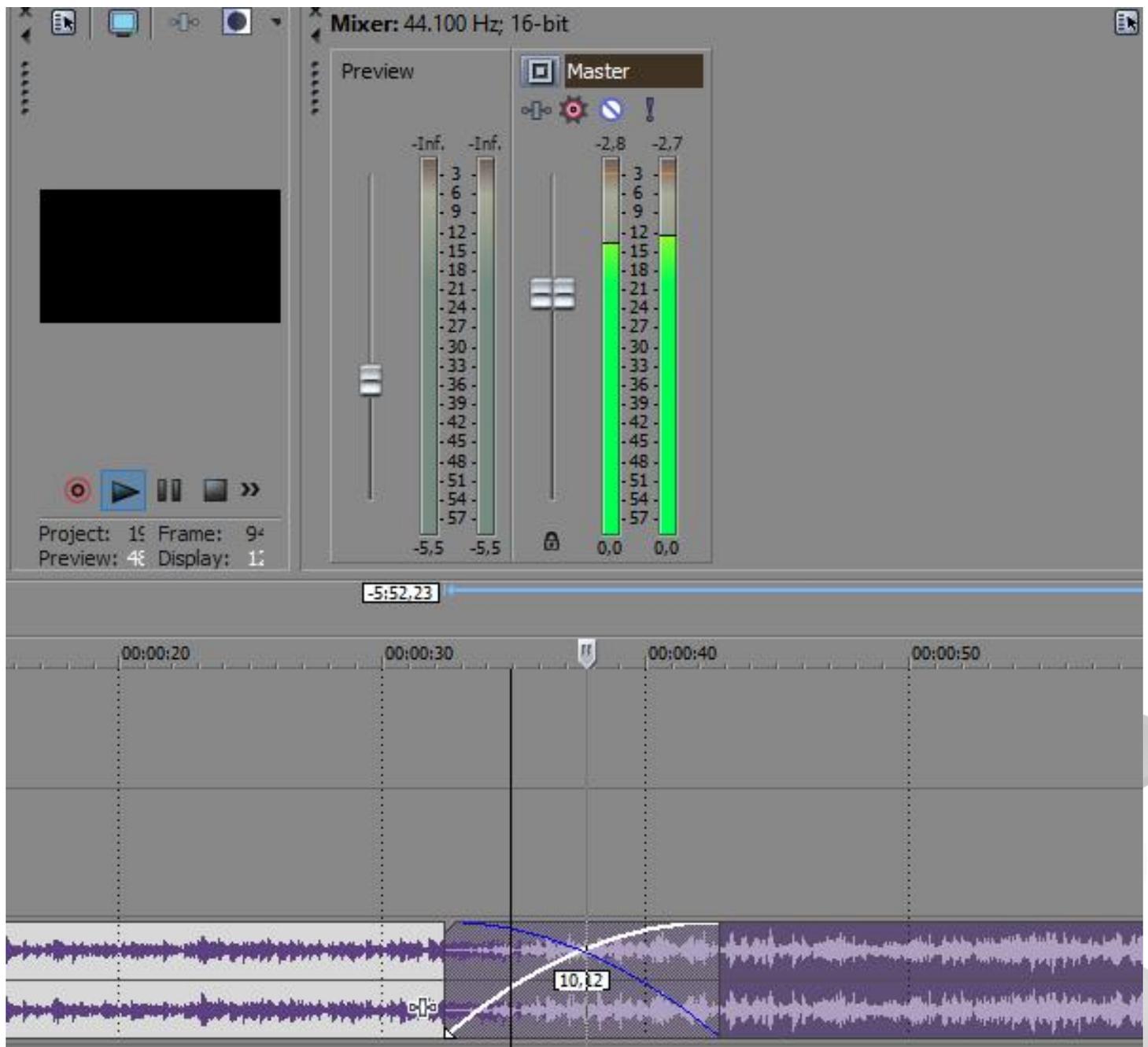


Figure 45 – Sound editing in Sony Vegas software

Image editing

A film needs to be visually balanced in order to achieve a sense of wholeness. Shots that visually stand-out should be avoided. During image editing you can color the scenes or emphasize certain elements of a shot through use of color, contrast and brightness. All interventions made with the images (and sound) are called effects. Different effects include transitions, filters and generators.

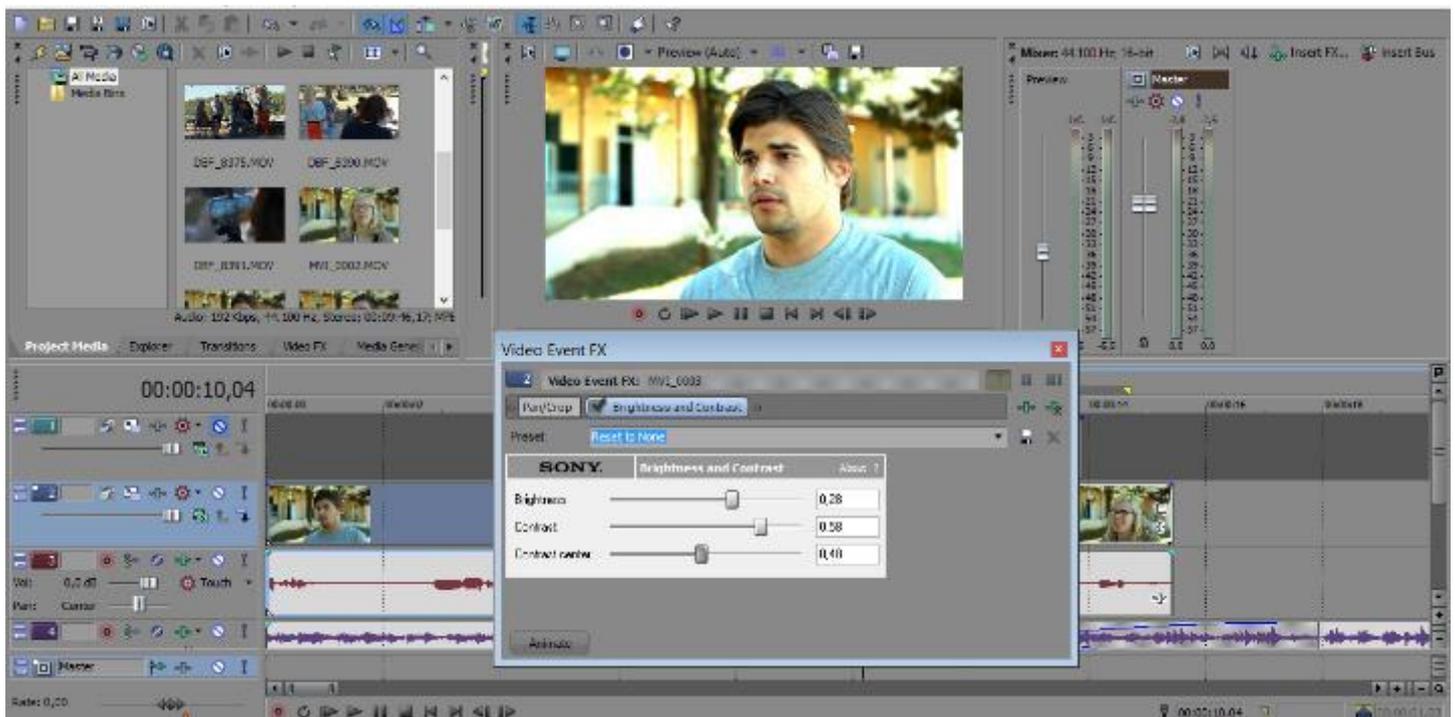


Figure 46 – Editing image brightness and contrast in Sony Vegas software

Colour correction

During the recording of the video, you may run into errors in white-balance settings resulting in certain shots being overexposed. Such errors can be corrected in post-production, to a certain point, using the the color correction filter.

The effects change every single pixels of every single image of a shot that you are correcting. They are very resource-intensive for computer processors (using both the main processor and the graphic processor, if you have both). Sometimes the results of applying the effects will not be visible in real time, so you will have to wait for your computer to do the rendering, which can last from several minutes to several hours.

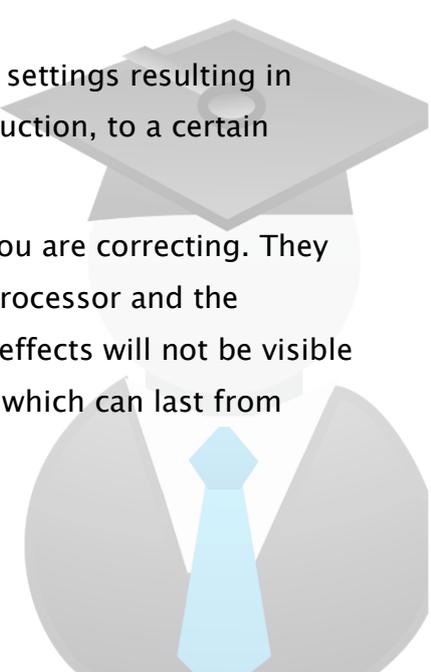




Figure 46 - Editing image colour in Sony Vegas software

Additional effects (FX, telops, etc.)

Application of certain effects can slightly contribute to a movie (for example, colour correction, brightness leveling, image stabilization, etc.), while others create very visible results (color correction, erasing or highlighting a colour, image rotation, etc.). There is no universal rule on when to apply effects, just as there is no universally correct shot, or universally adequate editing style. Every film has its own shot, its own editing and its effects which are just right for that film, for that shot, for that story.



Figure 46 - Adding text layer in Sony Vegas software

Exporting

You have reached the end of editing – the images have been processed, the tone levelled, you have added all the graphic elements, and made a title sequence listing all those who participated and helped in the making of the film. Now the film needs to be exported so that you will be able to prepare it for publishing across different media in the next step.

Dependant on the length of the film and the quantity of raw material, the exporting can last from several minutes to several hours. Export the finished film to a map in which you have all the materials with a clear filename. Most often, a suffix "final" is added after the title of the film.



Figure 47 – Rendering and exporting in Sony Vegas software

Distribution

Converting the final version of your film to a format ready for viewing and the distribution of the film are the last steps in movie making. Screening of the film is a public projection in a theatre, at a festival, or on television. Publishing of the film means making it available to the audience for consumption, be that on DVD, BluRay, internet video channels, television, etc.

Distribution platforms

You can use social networks to quickly distribute your film to a wide audience (viral video). Internet video services allow you to reach a large audience. The film can be open and available to anyone, or locked – targeting specific viewers. Also, the film can be available for free, can be rented (with a limited number of views in a limited time) or sold (for unlimited number of views in unlimited time). The practical side of this distribution is the fact that it does not require physical copies, since the distribution takes place over the internet. Optical disks (DVD and BluRay) are common distribution formats of audiovisual content for home use and can be rented or sold. They are practical because they are cheap to make and easy to transport.



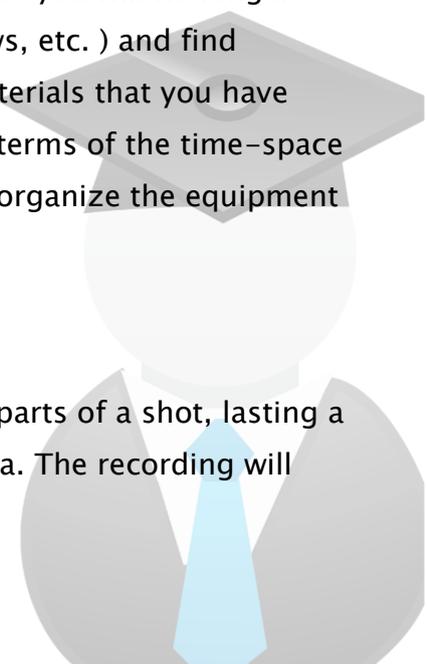
Archiving

Once you have exported your film to all the formats you will need for publishing, there is one last step you need to do – archive the project map to a safe place. That way you will always be able to open the project in the editing software and make any changes if necessary, continue working on it, transfer the project to another computer or export a new master.

Although at this stage you are done with film editing, that does not mean that you will no longer need the recorded materials. If you are working on a new film (story, TV news, etc.) and find yourself in need of a specific shot, you might be able to use some of the materials that you have recorded in previous projects. If the material you already have is suitable in terms of the time–space context of your new project, it will be easier to use an existent shot than to organize the equipment and shooting from scratch.

Compression

The sequence of images that make a video often have identical, unchanged parts of a shot, lasting a couple of seconds. Imagine a static recording of a person waving to a camera. The recording will



show a moving person within static space. That part of the image is repeated in every frame. A codec will make sure that only the information on the change taking place between two keyframes is recorded. The areas of the image that are static are recorded only once between the two keyframes. This reduces the amount of information that needs to be written. The flow of information which is written down every second is called the bitrate. The result is an encoded (compressed) video placed in a container, ready for decoding (decompression) on the playback device.

H.264 / MPEG-4 AVC – is used in cameras which store the recording to a hard disk drive or a memory card.

DV and HDV – is a standard developed for recording of digital video to a magnetic tape and miniDV tapes. DV is limited to SD video standards, while HDV was developed for recording of HD video to miniDV tapes.

H.262 / MPEG 2 Part 2 – is used for recording to a Digital Betacam camera (a standard in TV production).

Codecs for optical media

H.262 / MPEG 2 Part 2 – is a standard compression for DVD media. It is limited to the SD standard, and also exists a container format.

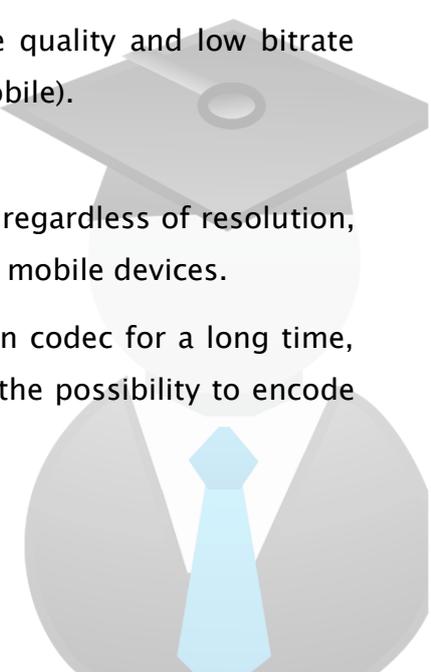
H.264 / MPEG-4 AVC – is the same codec used for recording. It provides a stable and high quality image with a low bitrate and high compressions in various resolutions, making it a great choice for BluRay reproduction.

Microsoft VC-1 – is used for encoding video content for BluRay and Microsoft Silverlight technology.

Publishing a video on the internet requires a compromise between image quality and low bitrate which ensures smooth flow of data through the internet (broadband and mobile).

H.264 / MPEG-4 AVC – provides a good quality video at very low bit rates, regardless of resolution, and is fast becoming the standard for video streaming on both desktop and mobile devices.

FLV/F4V – until the H.264 codec appeared, Flash video was a very common codec for a long time, used for internet video streaming. Almost all the Adobe applications have the possibility to encode videos to FLV format. FLV can not be reproduced on Apple (iOS) devices.



WMV (Windows Media Video) and MPEG-1 – older codecs from the early days of internet video streaming. Their quality, compared to the newer codecs, is much lower.

Project map

Be organized. You should always be able to easily access your project material, regardless of when it was recorded or edited.

Backup copies

Make backup copies. The currently available technology allows for storage of large amounts of data to various media. Due to its capacity and ease of use in video reproduction, the most common media used are hard disk drives, optical media (CD, DVD and Blu Ray) and online data storage systems (servers and cloud services).

The purpose of a backup is to secure data from any kind of hazard that could lead to its loss: technical malfunction, virus, short circuits, theft, fire, flooding or human error.

The backup is divided into the primary and secondary.

The primary backup most often refers to copying the materials from the camera to the working hard disk drive of the computer used for editing.

Secondary backup is usually done by copying the recorded and edited material to a second hard disk drive, which can be internal or external. In case of malfunction of the working disk drive, or loss of material, the secondary backup will allow you to keep working on your project. In order to use all the advantages of the secondary backup, you need to keep it up to date with the modifications created on the primary storage device (incremental backup).

