

PARK ROAD  
POST PRODUCTION

## **Digital Intermediate Guide for Filmmakers**

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## **DIGITAL INTERMEDIATE**

To complement the Spirit and Arri, Park Road uses the Quantel Pablo for digital intermediate work at up to 4K resolution.

The term “Digital Intermediate” (commonly shortened to “DI”) refers to the digital files that result from the scanning of the film source material.

These files are then used for editing, effects and colour grading. This material usually constitutes the whole film. The original film scan for the DI process should contain all the information from the original camera negative (OCN).

The Pablo is a complete DI system, enabling online editing, grading, graphics and deliverables. The Pablo can output to all standards and most formats. Once grading has begun, sections or scenes can be recorded out to 35mm for test screening in our 35mm theatre.

The Pablo can output multiple versions for distribution. We support all standards and most formats.

## **Advantages of Park Road Intermediates**

- After shooting, the camera negative need never leave the Park Road building, reducing risk of damage, and increasing security.
- All duplication and copies can be made at Park Road and, if required, they can have embedded security markings.
- Most other processes up to the final output (tape, film or both) are carried out by one integrated facility.
- Shots can be easily re-framed with minimal quality loss.
- All effects, grading and titles can be created and previewed in one place.
- Only one digital master needs to be made to meet all delivery requirements.
- The iQ is a non-linear device, enabling instantaneous cueing to any point.
- The data can be exported and stored indefinitely for future use, with no degradation or colour shift.
- Title versioning in the iQ makes meeting international delivery requirements even easier.

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## HOW TO PREPARE FOR A DIGITAL INTERMEDIATE

Once the decision is made to use the DI process, there are elements that need to be provided to Park Road to help achieve a cost-effective use of time and equipment.

### Preparation

1. Hold a pre-production meeting with Park Road and members of the production crew involved in the DI process (producer, editor, DOP, VFX artist if applicable). All of the following items can then be discussed in detail. After this meeting, it is not necessary for any production crew to be at Park Road until the final stages of the process.
2. Consider negative handling. The total amount of footage shot will determine whether it is necessary to make selected scan rolls (requiring a neg cutter) or if the original lab rolls can be used. For short films, or long form work with a low shooting ratio, a considerable cost saving can be made by not cutting the negative. This also saves time and money later, as less negative handling means less work is needed to digitally de-spot (remove blemishes) from the finished film. Above a certain footage (Park Road would advise this level after the original meeting) Park Road would require the negative to be broken down into rolls for scanning.
3. Provide a 25fps EDL. Park Road will discuss the exact specification with the editor, as it may vary slightly between productions. If the original lab negative rolls are to be scanned, the editor will supply Park Road with the EDL; if using select rolls, the neg cutter would normally need to provide Park Road with a scan EDL, derived from the editors EDL of the finished production. Generally, the entire length of each shot to be used will be assembled. This reduces handling, which helps prevent damage, reduces dirt on the negative, and allows for later re-editing.
4. Park Road will clean and scan the negative, adding a few frames (handles) to the exact shot length in the EDL. Handles allow for creative changes or minor corrections that may result from EDL or neg cutting inaccuracies (although these are rare).
5. The editor will provide Park Road with a 25fps tape / Quicktime of the locked off edit. 25fps is needed to make a frame or frame match within the iQ, regardless of the frame rate of the finished versions (the iQ can output at any frame rate).
6. Provide titles, logos and credits; Park Road will advise the format for these. Some of these elements might be generated by the iQ; again, Park Road will be able to advise the most cost-effective way to generate each element.

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## THE SCANNING PROCESS

The scanning process effectively makes a digital clone of each frame of the negative, storing it as a data file.

### Spirit Datacine

The Spirit can scan Super 8, 16mm (Super or Academy) and 35mm (any format), at up to 2k resolution. It can capture the full 12 stops exposure latitude of modern negative stocks, from which it produces 10-bit log files. An EDL is used to control the Spirit, to scan only the film material needed for the final film.

### Park Road Requirements

1. The negative rolls to be scanned, either the original lab rolls or select (scan) rolls, as previously discussed.
2. An EDL relating to the provided negative rolls.

### The Scanning Process

The following steps describe the scanning process;

1. The film is provided to Park Road, as above. Uncut lab rolls will have been kept at Park Road; select rolls (and their EDL) will be provided by the neg cutter.
2. Park Road cleans the negative prior to scanning.
3. Park Road sets up the Spirit Datacine to ensure it captures all the image on the negative. Each job is set up individually, to allow for the slight differences between film stocks etc.
4. The supplied EDL is loaded, and controls the Spirit Datacine during the scanning process. This generates the (normally) 2k data files.
5. The files are directly transferred to Park Road's data network, for transfer into the iQ, or to a hard drive if they are required by an outside effects house.

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## THE CONFORMING PROCESS

The conform is the final assembly of the film. Using the information from the provided EDL, the iQ arranges the scanned data into the film reels (if needed for a film output) ready for grading. At this stage, the offline version (provided by the editor) is recorded into the iQ to make a direct comparison with the conform, to check all shots and edits are correct.

## PABLO and iQ

The iQ is a hardware-based editing and effects system made by Quantel (makers of Henry, Edit Box and other systems); it can work at any resolution up to 2k. It is resolution co-existent, which means different video formats can be put together in one sequence; low resolution test graphics and so forth can be combined with 2k files to check continuity etc. It can also generate titles, and make traditional film optical effects (e.g. dissolves or wipes); it can be used for spotting (removing blemishes) and image stabilisation. Regardless of the resolution of the various imported images, it can output any resolution. Some of the available tools are:

- Titles / Rollers / Subtitles
- Dissolves and wipes (any pattern)
- Basic compositing
- Image stabilisation (to remove camera shake etc)
- Wire / Boom removal

## Requirements

Park Road will need to be provided with:

- An EDL of the final edit
- A time-coded PAL BetaSP at 25fps of the locked-off edit. 25fps is needed to provide an exact frame for frame comparison.
- Any titles, graphics or credits not being created by the iQ. Park Road will provide the specification for delivery formats of this material.

## Stages

1. The data files from the Spirit are imported into the iQ.
2. The iQ conforms these files into reels (for film output), adding any dissolves, wipes or other effects, using the supplied EDL.
3. The iQ imports any other material from a third party source (e.g. 3D effects, video graphics).
4. A direct comparison is made with the provided offline tape (preferably BetaSP); the editor (or someone else able to confirm the edit is accurate) should attend.
5. The material is now ready for grading, in the DI Grading Theatre using the Quantel Pablo system.

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## THE GRADING PROCESS

Once the conformed edit has been checked, it is ready for grading. The final match grade for DI will produce the best result from scanned material and requires attendance. It involves completely pre-grading all of the footage, using a still store to match grade. Specific "looks" can easily be created and kept consistent throughout the footage. This transfer therefore requires more time and is charged at an hourly rate.

## THE OUTPUT PROCESS

Once the conform and grade are complete, the titles are then added and signed-off, the finished film is ready for output.

### Output Options

Park Road offer a variety of options for the output of finished film:

#### 1. Theatrical

Park Road will send graded, conformed data to Weta Digital for output to 35mm negative.

#### 2. High definition

Park Road will output and record a down-converted 24fps high definition master from the iQ.

#### 3. Standard Definition

Park Road will make a standard definition Digital Beta master from the data. The iQ can output both PAL and NTSC for domestic and international releases.

#### 4. Archive

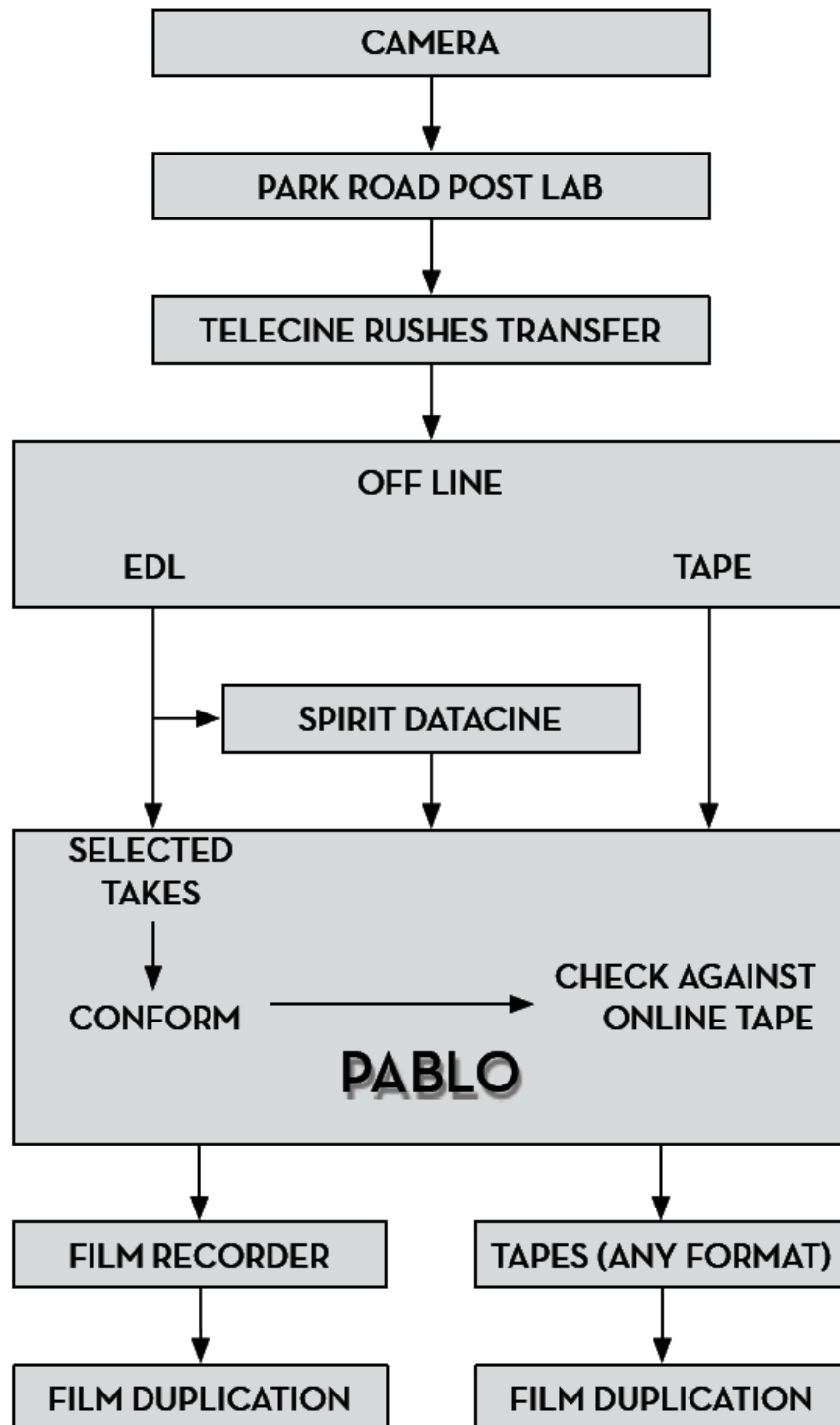
Park Road will back-up your 2k data onto drives for future use. NB Park Road recommends this for all productions.

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## DI PROCESS WORKFLOW CHART

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### **Telecine Transfers at 24 or 25 frames per second**

Film projects for theatrical release are usually shot at 24fps and projected at 24fps. Television projects are usually shot, transferred in telecine and always transmitted at 25fps. Historically, telecine transfers were done at 24fps but with the advent of software based editing systems, it is quite standard to run at 25 fps/50 fields. This is the standard speed for all PAL video systems that have a matching timecode of 25fps.

To enable a 24 frame transfer in PAL, the system must repeat one frame every second during the transfer. These “bogus” frames or pulldowns must be identified for the editor or neg cutter to know which are the true frames and which are bogus. The pulldown of these bogus frames gives the impression of a jerky motion that can be disconcerting to the viewer, but is necessary to maintain a 24 frame speed in what is a 25 frame PAL editing system.

However, transferring at 25fps gives one the advantage of smoother looking pictures and better compatibility with video systems. With the advent of advanced editing software programs (like AVID’s “Film Composer” software) the speed change back to 24fps will be done as part of the editing process.

### **Cutting Copy Transfer at 24 frame for Sound Mixing**

It is standard to do a 24-frame transfer to lay the sound back to, because the audio has been composed and mixed at this speed. Any difference in speed would cause a sound pitch difference and will also be unsyncable. 24 frame picture and sound mix are for theatrical release only and not television.

The final mastering of feature films and short films for television is done at 25 fps to get the best from the 25-frame PAL system.

Although this causes a 4% speed change (ie the audio is sped up) from the original theatrical version and therefore creates a slight pitch change, by shifting the pitch down it is possible to compensate for the increase in speed.

Every lab roll must be transferred at one constant speed, from head of roll to tail leader with continuous EBU timecode. The timecode should be 01:00:00:00 on the 2-pip or punch on the first roll, and 02:00:00:00 on the second roll increasing incrementally up to 20:00:00:00 for roll 20. Then at roll 21 timecode changes to 01:20:00:00 and roll 22 is 02:20:00:00 etc.

The lab roll boxes will be clearly labeled to indicate the timecode assigned to each roll. A keylink flex file can be created – this will contain a list of edge numbers on each lab roll.



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## HINTS AND TIPS

### Colour Correction

Film has a wider contrast and colour range than video – colour correction is necessary to adjust these characteristics to suit the client's needs.

Any desired look can be achieved by grading the film electronically in telecine.

Scene by Scene Colour Correction - Full Grading

Each scene is graded for the best possible image usually in consultation with the DOP. Together with the colourist, the DOP establishes a “look” for each scene that the colourist works to maintain consistently throughout the project. This involves match grading every shot to match other shot in the same scene.

### Contact with DOP

Communication with the DOP is important to establish the following:

Target Chart – this is necessary for the colourist to set the correct framing of the image and to ascertain the desired aspect ratio. It is a good representation of the ground glass through which the DOP has shot the image. A chart must consist of a center cross-hair, a framing box indicating the framing for height and width of the picture, the production name and the aspect ratio eg 1:1.85. This should be shot at the head of the first camera roll prior to the colour chart and must remain consistent throughout the shoot.

Colour Chart – this is used by the Colourist to establish a neutral grade and should ideally consist of a grey scale, 18% grey card and a colour swatch, eg MacBeth Colour Chart. By neutralizing the grade on this chart it allows the Colourist to see any artistic applications used in the shooting of the production eg a coral filter. The use of any artistic applications must be noted clearly on the camera sheets as well as on the slates.

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### **LABORATORY COLOUR GRADING / TIMING**

The process of colour grading begins the moment the image has been exposed onto the negative. It is at this point that good communications with the laboratory have a major impact on the way the film will look on screen.

The Grading Department is responsible for producing an even print (with or without sound) to the client's specifications once a negative matcher has assembled the master negative. The process includes preparing a negative report and programming the negative. The negative report is used to document the condition of the material before it goes through any machines. It is a standing procedure to expect a print three working days at the earliest after the cut negative arrives in the Laboratory.

### **Grading Tests**

If you over expose the negative, you will have greater latitude. The laboratory can always print it down, making the print darker with the image quality suffering, but you may increase the saturation of the colours and improve the blacks. Under exposing then lifting the image will increase the graininess in the blacks and could give a washed out look if you go too far. If you have critical lighting or a specific look for the film, it may be best to shoot tests that are taken through the dupe process to release print generation. This will show any adverse effects that may occur in shadow detail or image quality.

Cut negative arrives from the negative matcher with the cutting copy or video. The cutting copy or video is used as a reference guide for the grader to check density and colour requirements. Usually the cutting copy is projected first, so double tape splicing is preferable. Then, if necessary, the cutting copy is run on an editing bench to assess the finer details. The grader will get a feel for the intended look and style (mood) of the film from the client.

With regard to small budget jobs it is a good cost saving opportunity to obtain a first trial print with sound, thus supplying the client with a useful print for show. Please note we do not guarantee that a final grade can be achieved at First Trial Print stage.

Remember to arrange through a Facilities Coordinator for the Sound Department to make an optical sound negative.

After going through the grade, allow enough time to complete the negative inspection, programming, sound line-up and the grading of the film. It also gives us an opportunity to check the quality of the picture and sound.