



ZEISS eXtended Data workflow with RED DSMC2 cameras

Version 4_1

Table of contents

Introduction	1
Pre-requisites.....	1
Overview of the workflow.....	1
Record ZEISS eXtended Data into R3D video files	2
Setup camera	2
Attach lens and verify that the lens is recognized	3
Record ZEISS eXtended Data within video files	3
Prepare recorded media for post-production.....	4
EXR file sequences with embedded ZEISS eXtended Data	4
Any video file format with ZEISS eXtended Data as side car files.....	5
Use ZEISS eXtended Data in post-production	9
Appendix – Short presentation of zeiss-xdcp software	10

Introduction

ZEISS eXtended Data technology provides frame accurate lens characteristics (distortion and vignetting) for use in VFX. Lens characteristics can be recorded in the video files and passed to the post-production – this replaces the standard grids and grey card workflow that are both time consuming and inaccurate.

In this guide, you will learn how to record ZEISS eXtended Data on a RED DSCM2 camera and how to prepare the recorded footage for using ZEISS eXtended Data in post-production.

Note

The following guide is not a user manual, but an optional support document from ZEISS to improve your user experience and to show you possible uses and combinations of our product and ZEISS eXtended Data technology. Please always observe the separate specific user manuals for equipment from RED (<https://www.red.com/>) and software from Pomfort (<https://pomfort.com/>).

ZEISS is not the manufacturer of the RED cameras and Pomfort Silverstack. If you have any questions, please contact the manufacturer of your respective technical equipment, components and software.

We do not claim to declare the use of third party equipment (third party means all companies except ZEISS), nor do we accept any liability for damage resulting from misuse contrary to the instructions of the respective manufacturer.

Pre-requisites

In order to use this workflow following equipment is needed:

- A ZEISS cinema lens featuring ZEISS eXtended Data with PL mount (Supreme Prime or CP.3 XD).
- A RED DSMC2 camera featuring FW version 7.1 or higher.
- Optional: An Apple iMac, MacBook or MacBook Pro (is called Mac in the following pages) with Pomfort Silverstack.
- Optional: ZEISS eXtended Data injection software (`zeiss-xdcp`).

Overview of the workflow

Using RED DSMC2 cameras, the workflow is simple:

1. **Record** ZEISS eXtended Data into R3D video files.
2. **Prepare** video files and ZEISS eXtended Data for use in post-production.
3. **Use** ZEISS eXtended Data in post-production.



Record ZEISS eXtended Data into R3D video files

RED DSMC2 cameras can read ZEISS eXtended Data (distortion and vignetting) through lens mount and record the data to R3D video files.

Note: ZEISS eXtended Data is only recorded in R3D file format not other file formats (ProRes, QuickTime,...).

Use the following steps to check that your ZEISS eXtended Data lens is recognized by the camera:

Setup camera

In order ensure that camera will recognize the lenses, following setup must be made:



①+②+③+④ Enter lens setup menu.



① Activate **Enable Power to Lens**

② Activate **Auto-Detect PL Lenses**

Attach lens and verify that the lens is recognized

- Attach the lens to the camera.
- Lens information are displayed on camera screen (①).



Record ZEISS eXtended Data within video files

ZEISS eXtended Data will be recorded whenever video files are recorded.

Note: Ensure that recording file format is R3D.

Prepare recorded media for post-production

There are two ways to provide recorded ZEISS eXtended Data to VFX:

- Provide EXR file sequences with embedded ZEISS eXtended Data.
- Provide video files of any format with ZEISS eXtended Data side car files.

The choice of the video file format is made by the VFX department.

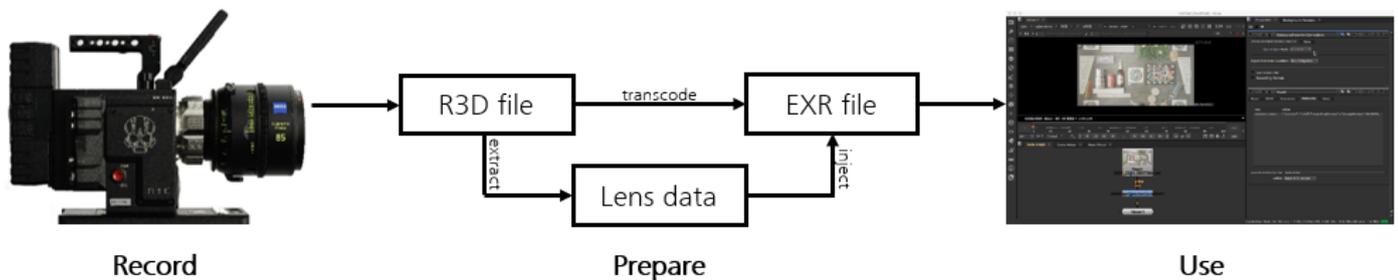
In both cases the ZEISS eXtended Data must be extracted from the R3D files and either injected into the EXR sequence or saved as side car files.

EXR file sequences with embedded ZEISS eXtended Data

In case the VFX department works with EXR file sequences, it is possible to read the ZEISS eXtended Data out of the R3D files and inject them into the EXR file sequences.

As of today, none of the EXR transcoders (BlackMagic DaVinci Resolve, Colorfront, etc ...) will automatically inject ZEISS eXtended Data into the EXR file sequences. This must be done manually using ZEISS provided injection software: `zeiss-xdcp`.

Workflow description



Following two steps are needed:

- **Transcode** the R3D files into EXR file sequences as usual.
- Use `zeiss-xdcp` injection software to **extract** ZEISS eXtended Data out of the R3D files and **inject** them into the EXR file sequences.

Example

One R3D file has been transcoded into an EXR file sequence:

- R3D file is `example_R3D/example.R3D`
- EXR file sequence is: `example_EXR/example_001.exr example_EXR/example_002.exr ...`

Data extraction and injection happens using following command:

```
zeiss-xdcp -s example_R3D/example.R3D -d example_EXR/example_*.exr
```

For more information about the different options of `zeiss-xdcp` software:

```
zeiss-xdcp --help
```

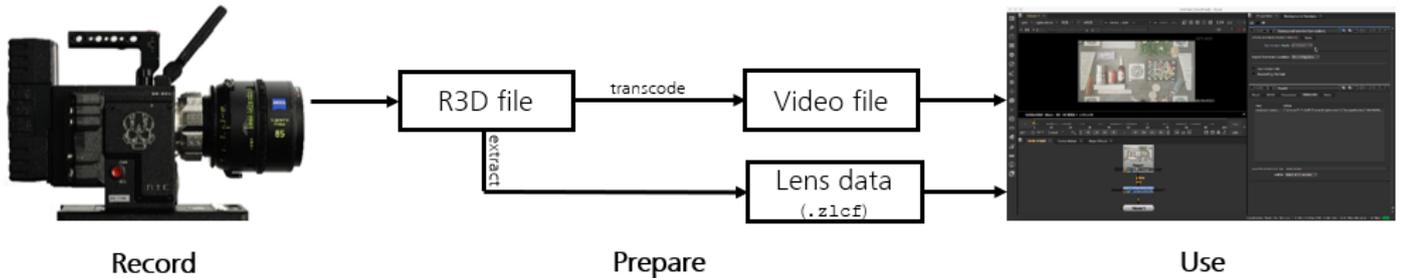
Send the EXR files with ZEISS eXtended Data to the post-production.

Any video file format with ZEISS eXtended Data as side car files

In case the VFX department works with another file formats than EXR, they will need for each video clip one side car file with the recorded ZEISS eXtended Data.

Side car files with extension `.z1cf` (ZEISS Lens Correction File) will be generated using Pomfort Silverstack. These files contain recorded ZEISS eXtended Data and all information needed by VFX.

Workflow description



Following two steps are needed:

- Optional: **Transcode** R3D files into desired file format.
- Use Pomfort Silverstack to **extract** ZEISS eXtended Data out of the R3D files and **generate** `.z1cf` files.

Extract ZEISS eXtended Data out of the R3D files and generate `.z1cf` files using Pomfort Silverstack

What is Pomfort Silverstack?

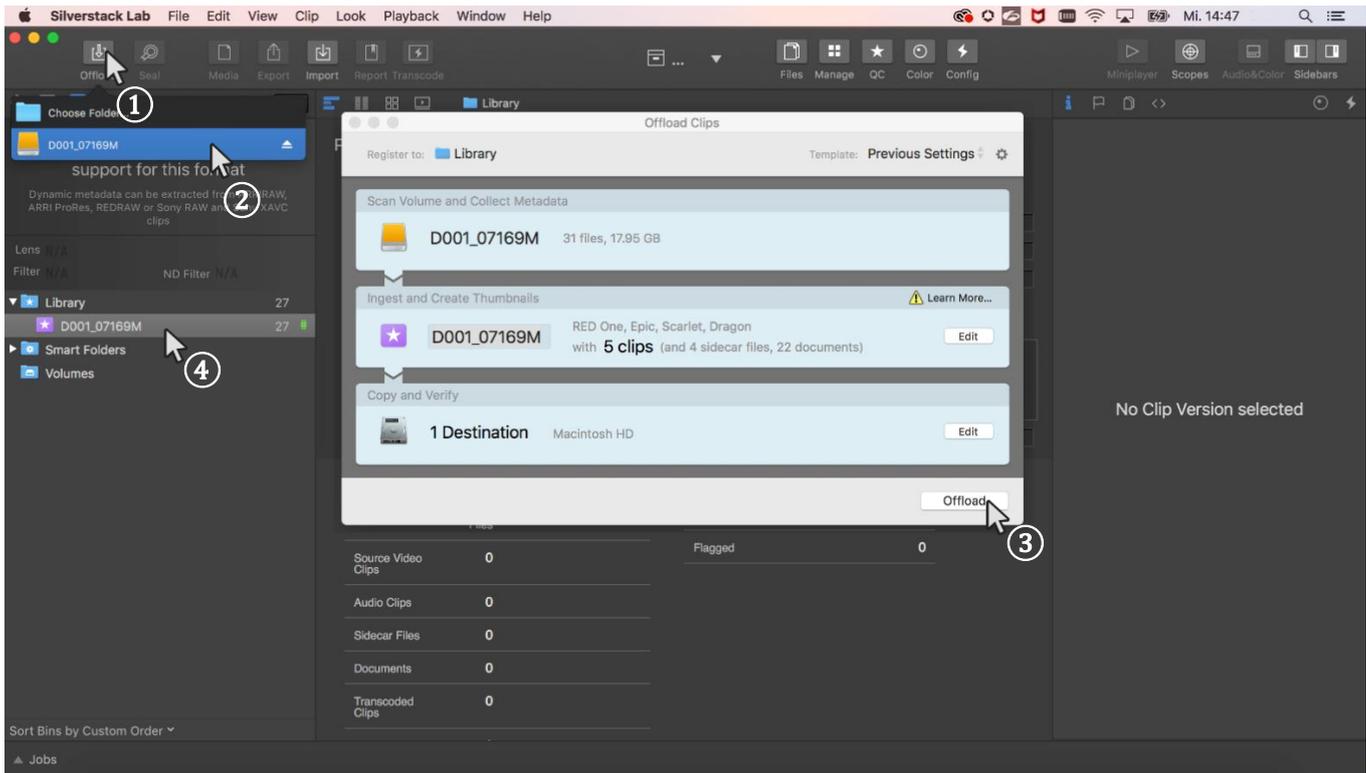
Silverstack is a Mac software, developed by Pomfort GmbH, for on-set data management in all kinds of professional film productions. A broad set of features including copying, playback and reporting enables the user to backup, preview and prepare movie data right on the film set.

Silverstack XT or Silverstack Lab allows to read the corresponding ZEISS eXtended Data from each RED R3D clip and generate ZEISS Lens Correction Files (`.z1cf`) for each clip. Always use the latest version of Silverstack.

Prepare Pomfort Silverstack

- Download Silverstack from Pomfort website and follow installation instructions (<http://pomfort.com/silverstack/download/>).
- Choose a license and install it using instructions from Pomfort website.

Load video files in the Silverstack library



①+②

Select the media with the video files.

③

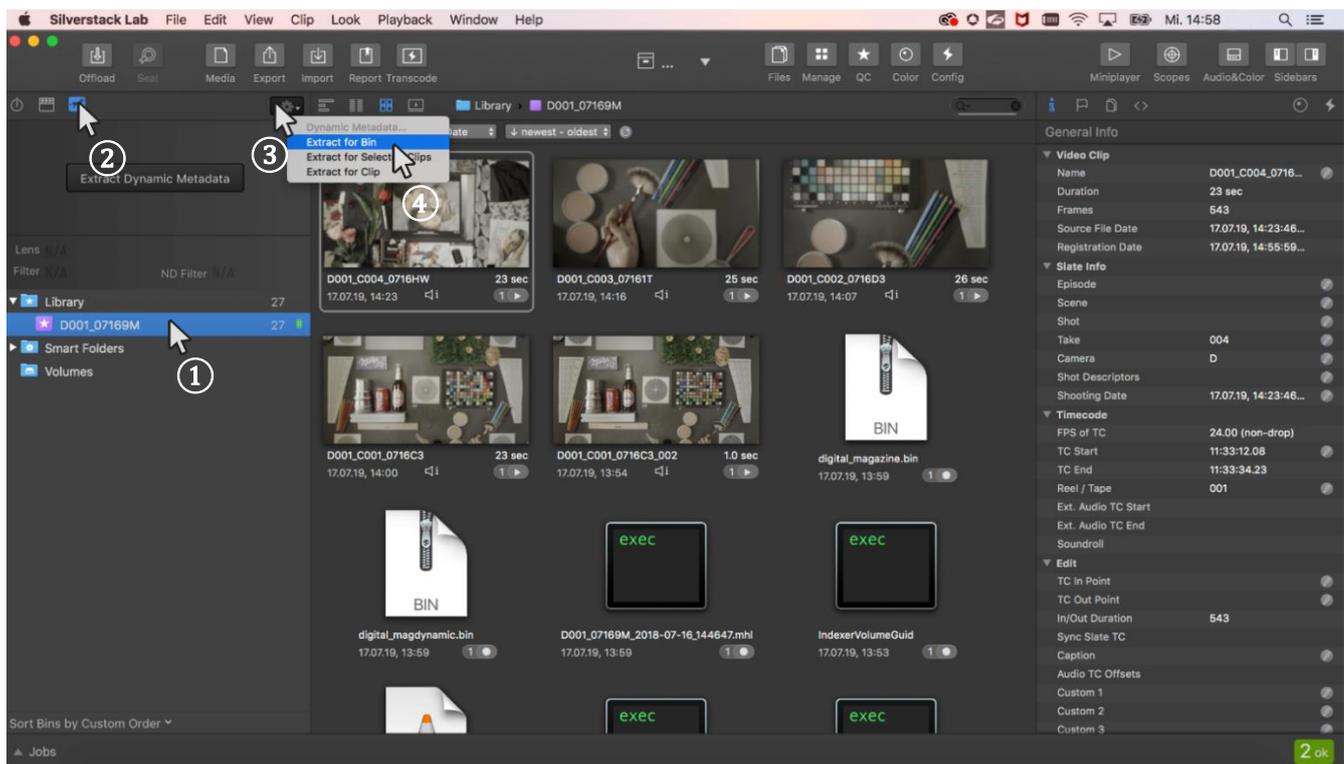
Choose a destination path where the video files will be saved, then **Offload**.

④

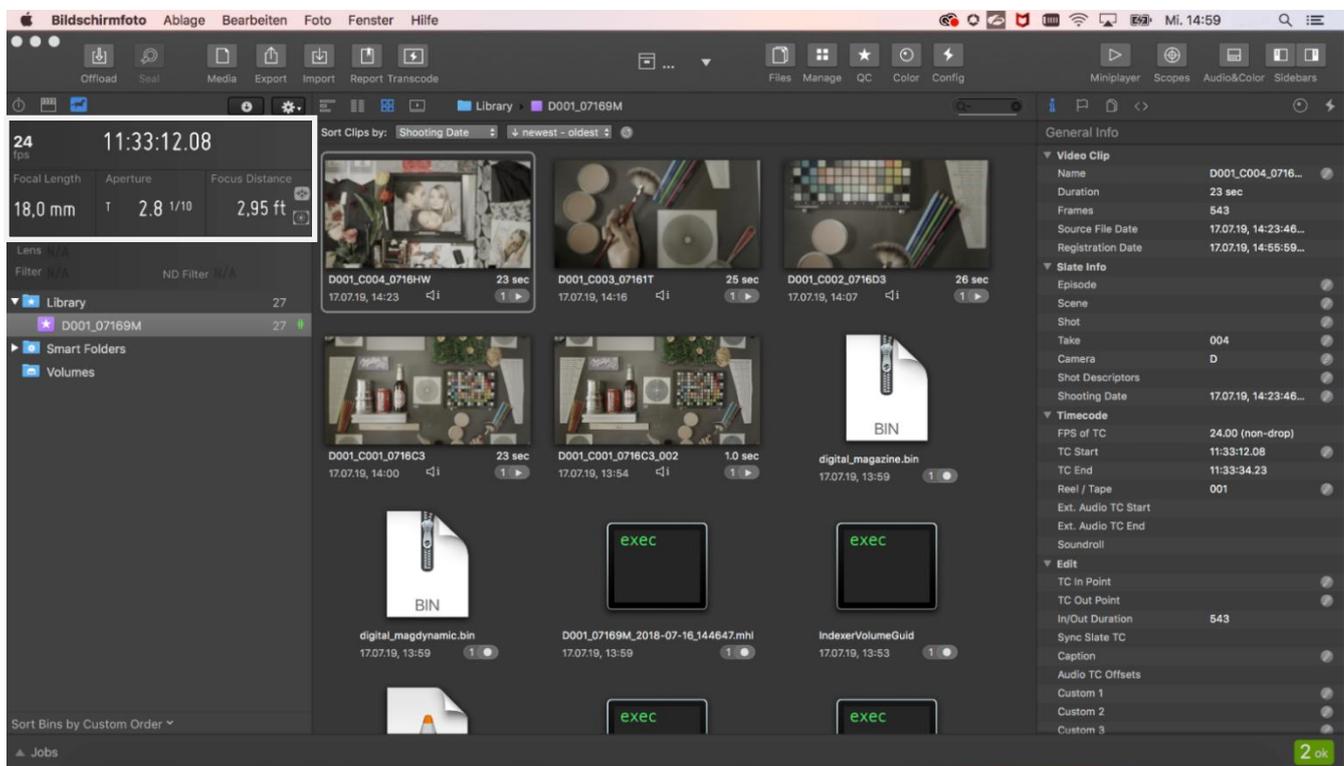
All clips will be listed in 'Library'.

Extract ZEISS eXtended Data from RED R3D video files

ZEISS eXtended Data are recorded into R3D video files as dynamic metadata. They must be extracted using Silverstack and saved into .z1cf files.



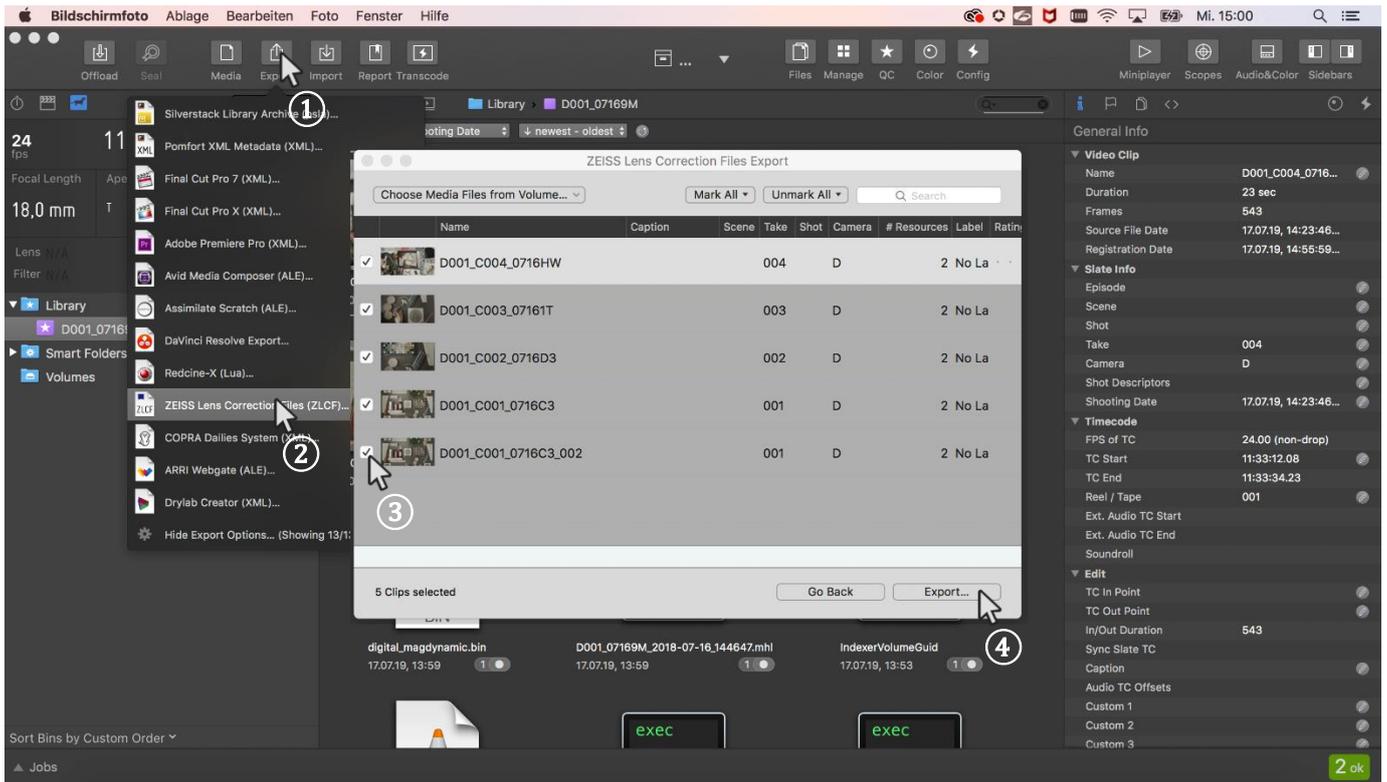
- ① Select the **Bin** that contains the R3D files.
- ② Open the "Dynamic Metadata" section.
- ③+④ Extract dynamic metadata (**Extract for Bin**).



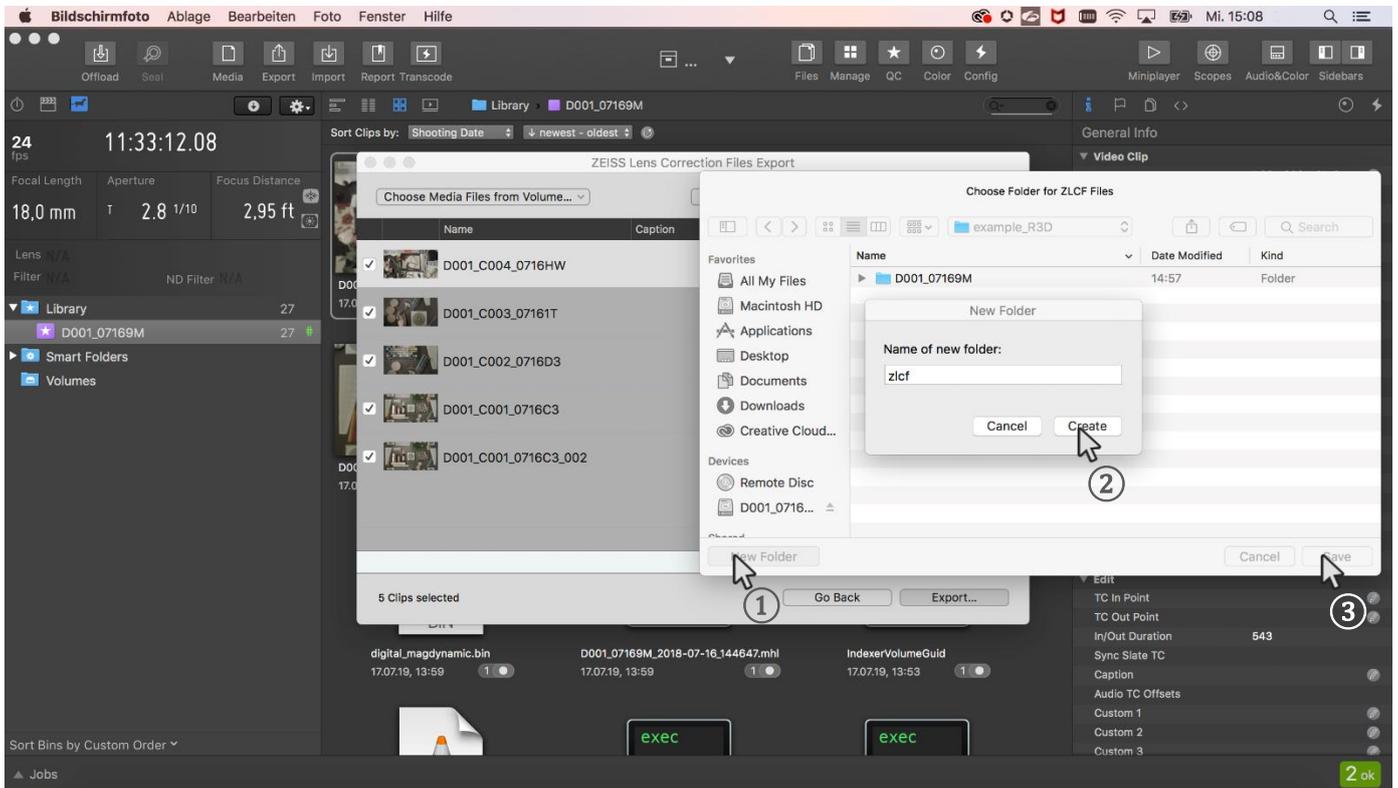
After successful extraction, the dynamic metadata panel reveals the extracted dynamic lens and camera metadata. The metadata can now be inspected during playback or while scrubbing through a clip.

Generate ZEISS Lens Correction Files (.zlcf)

Now that the ZEISS eXtended Data has been extracted from the video files, ZEISS Lens Correction Files (.zlcf) can be generated.



- ①+② Open the Export function by selecting Export + ZEISS Lens Correction Files (ZLCF).
- ③ Choose all video files for which you want to generate a .zlcf file.
- ④ Go to the next step by choosing Export.



- ①+②+③ Choose a folder in which the .zlcf files will be saved.

Send the ZEISS Lens Correction Files together with the video files to the post-production.

Save the .z1cf files in a folder within the same directory that contains the R3D video files folder.

Use ZEISS eXtended Data in post-production

For introduction on how to use ZEISS eXtended Data in post-production, please read the ZEISS eXtended Data plug-in Quick Guide. It can be found on the ZEISS website <https://www.zeiss.com/cine/xd>.

Appendix – Short presentation of zeiss-xdcp software

ZEISS eXtended Data injection software (`zeiss-xdcp`) is a command line tool used for injecting ZEISS eXtended Data into EXR files.

It can be downloaded from the ZEISS website <https://www.zeiss.com/cine/xd> and runs on Mac, Windows or Linux. You only need a terminal. For detailed list of options: `zeiss-xdcp --help`

Usage:

```
zeiss-xdcp [OPTION]... -s SOURCE... -d DESTINATION...
```

Options:

<code>-h [--help]</code>	Display help text and exit.
<code>--version</code>	Output version information and exit.
<code>-s [--source] arg</code>	Path to one or more files where the metadata shall be copied from.
<code>-d [--destination] arg</code>	Path to one or more files where the metadata shall be copied to.
<code>--ask-before-overwriting-metadata</code>	Prompt before overwriting existing metadata.
<code>--do-not-overwrite-metadata</code>	Do not overwrite existing metadata.
<code>--abort-on-first-error</code>	Abort copying on the first error occurred.

Description:

A command-line tool used for timecode-based copying of ZEISS eXtended Metadata from a given container into the metadata section of the given image file(s).

After copying the metadata, the image files (e.g. of type `exr`) can then be used directly by the ZEISS eXtended Data Plug-ins to perform different kinds of lens corrections just on the basis of the embedded metadata. An additional metadata description file (e.g. of type `zlcfc`) will no longer be needed and this will simplify the workflow with the ZEISS eXtended Data technology.

Supported File Formats:

`zlcfc`: Path to a single file of this format can be used as `SOURCE`.
`r3d`: Path to a single file of this format can be used as `SOURCE`. If the footage is split into multiple files, please select only one of them because the other parts will be found and used automatically.
`exr`: Path to one or more files of this format can be used as `DESTINATION`.

Examples:

```
Copy from "clip.zlcfc" to "clip-0000.exr".
$ zeiss-xdcp -s clip.zlcfc -d clip-0000.exr

Copy from "clip.zlcfc" to "clip-0000.exr", "clip-0001.exr" and "clip-0002.exr".
$ zeiss-xdcp -s clip.zlcfc -d clip-0000.exr clip-0001.exr clip-0002.exr

Copy from "clip.zlfc" to files which start with "clip-" and end with ".exr".
$ zeiss-xdcp -s clip.zlfc -d clip-*.exr

Copy from "clip-001.r3d" and all the other r3d files contained in the same
directory which belong to the same footage to files which start with "clip-"
and end with ".exr".
$ zeiss-xdcp -s clip-001.r3d -d clip-*.exr
```

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<http://www.zeiss.com/cine>