

Creating 360-Degree Videos With Insta360 Cameras

Presented by the Media Creation Lab

Contents

1. <u>Core Concepts</u>	3
2. <u>Insta360 One R: Hardware</u>	9
3. <u>Insta360 One R: Software</u>	17
4. <u>Insta360 Studio: Editing</u>	28
5. <u>Publishing</u>	42
<u>References</u>	44

1. Core Concepts

1.1. Core Concepts: Form

- **Lenses (2+) facing different direction**
 - Blind spots
- **Built-in software *stitches* imagery together**
 - Other functions: Stabilization, object removal

1.2. Core Concepts: Function

- **Spaces**
 - Entire physical environments
- **Scenes**
 - Entire group of activities/subjects
- **Scenarios**
 - Places of pertinent possibility

1.3. Core Concepts: Discretion

- **Intended communication?**
 - *Mona Lisa vs Mona Lisa* in the Salle Des États
- **Safety/security?**
 - Mobile vs stationary
- **Informed consent?**
 - Public settings
- **Duration?**
 - One R battery: ~45 min at highest settings

1.4. Core Concepts: Photography

Three settings affect exposure to light:

1. Aperture (F-Stop): Size of lens opening

- Pupil of eye

2. Shutter speed: Time of lens exposure

- Blink of eyelid

3. ISO

- **Exposure value (EV):** Aperture & shutter speed
- Use Automatic settings or research Manual settings

1.5a. Core Concepts: Manual Settings

Suggested base-settings for *outdoor* environments:

	Sunny	Cloudy
Color	Vivid	Standard
Shutter speed	1/200	1/60 - 1/200
ISO	100 - 400	400 - 800
White Balance	5500K	6000k - 7000k

1.5b. Core Concepts: Manual Settings

Suggested base-settings for *indoor* environments:

	Bright	Dim/Shaded
Color	Vivid	Standard
Shutter speed	1/50 (tripod) 1/60 - 1/200	1/50 (tripod) 1/60 - 1/200
ISO	800	1600+
White Balance	2800K	7500K

(Wilkerson, n.d.; Rossi, 2023)

1.6. Core Concepts: Basic Tips

1. **Seek uniform lighting** to mask stitching
2. **Wipe lenses** with microfibre cloth
3. **Identify blind spots** where stitching can be obvious
4. **Aim main lens** at main element in scene
5. **Suppress BG noise: *Settings* -> *Wind Noise Reduction***

2. Insta360 One R: Hardware

2.1. One R Hardware: Overview

- **Modular system**
 - Battery base
 - Core module (touchscreen, buttons, ports)
 - Lens module: dual-lens, wide-angle, or 1-inch
- **Image recording**
 - Photos, videos, webcam
- **Image effects**
 - Bullet Time, Time Lapse, Tiny Planet

2.2. One R Hardware: Core Module

- **Touchscreen**
- **Top buttons**
 - Power button (smaller, I/O icon)
 - Shutter button (larger, red circle icon)
- **Side openings (behind cover)**
 - MicroSD card (file storage)
 - USB-C cable (charging, file transfer, input)

2.3. One R Hardware: Dual-Lens Mod

- **Front and back lenses**
 - Back lens: Beside touchscreen
 - Field of view: Less than 180 degrees
 - Blind spots: Sides, top, & bottom of module

2.4. One R Hardware: Battery Base

- **Notch inserts** (top)
 - Pair with notches underneath connected core & lens
- **Slide lock**
 - Hold to remove battery
 - Visible yellow: Improper/loose connection
- **Battery life**
 - Max resolution/framerate: ~45 min
 - Drains while turned off: Remove while storing

2.5. One R Hardware: Mount Bracket

Open bracket:

1. Locate slide-lock on buckle (top)
2. Push slide-lock (direction of arrow) & hold
3. Lift bottom-edge of buckle (***Point to Track*** side)
4. Lift top-edge of buckle
5. Open ramp at back of bracket
6. Insert/remove camera through back of bracket

(continued)

Close bracket:

1. Insert/remove camera through back of bracket
2. Close ramp at back of bracket
3. Hook back-edge of buckle onto top-edge of ramp
4. Press (snap) front-edge of buckle onto top of bracket

2.6. One R Hardware: Selfie Stick

(Optional) Connect to tripod:

1. Screw top (or side) of tripod into Selfie Stick (bottom)
2. Screw Selfie Stick (top) into bracket hinge (bottom)
3. (Optional) Grab neck (ribbed top) of Selfie Stick & pull
 - Software removes Selfie Stick from underside blind spot

2.7. One R Hardware: Tripod

(Optional) Connect to Selfie Stick or camera (bracket)

1. Screw top (or side) of tripod into Selfie Stick or bracket
2. Hold (folded) tripod legs
3. Hold section (top) housing screws
4. Twist ribbed ring-lock until tight

3. Insta360 One R: Software

3.1. One R Software: Touchscreen

1. Long-press power button (smaller button on top)
2. Swipe touchscreen to view option screens
 - **System settings:** Downward (from top)
 - **Media Gallery:** Upward (from bottom)
 - **Recording modes:** Rightward (from left)
 - **Recording parameters:** Leftward (from right)
3. (Alternative) Select mode/parameters from main screen

3.2. One R Software: Recording

1. Select recording mode
2. (Optional) Change camera parameters*
3. (Optional) Change resolution/frame-rate
4. Long-press shutter button (top) to record
5. (Video) Long-press shutter button to stop

*Consider settings listed in Section 1.5 (8-9)

3.3. One R Software: Serial Number

Get serial number of camera:

1. (Main screen) Swipe downward
2. (System screen) Swipe rightward to page 2
3. Select Settings (gear icon)
4. Scroll to end of **Settings** screen & select **Camera Info**
5. Note serial number (**SN**)

3.4. One R Software: Mobile Device

Set up mobile device:

1. Enable Wi-Fi
 2. Enable Bluetooth
 3. Download **Insta360** app (App Store or Google Play)
 4. Install app
- **Note:** Mobile app *mirrors* camera

3.5. One R Software: Mobile App

Pair mobile app/device & camera:

1. Open Insta30 app
2. Grant necessary permissions
3. Select **Go to App** button
4. Select **Connect** button (or camera icon in toolbar)
5. Turn on camera
6. (Camera) Select **Confirm** connection
7. Select **Join** for camera to join app network

3.6. One R Software: Recording (App)

1. Select camera icon (toolbar)
2. (Optional) Select mode (bottom of UI)
3. (Optional) Select parameters* (next to Record button)
4. Press Record button (circle icon)
5. (Video) Press Record button to stop

*Consider settings listed in Section 1.5 (8-9)

3.7. One R Software: View (App)

1. (If applicable) Exit recording screen
2. Select ***Album*** from toolbar
3. Select recording (photo/video)
4. (Optional) Select ***Export*** button

4. Insta360 Studio: Editing

4.1. Editing: Insta360 Studio Overview

- Proprietary software (free)
 - <https://www.insta360.com/download/insta360-oner>
- Download page requires serial number
 - a. Follow steps in **section 3.3**
 - b. Enter ***IAEAH14BRWSRX9***
- Includes plugins for third-party software
 - Adobe Premiere, Final Cut Pro

4.2a. Editing: File Transfer (USB)

1. Select **Settings** (gear icon) -> **General** -> **USB Mode**
2. Select **U-Disk Mode**
3. Open side cover of core module
4. Use USB cable to connect camera & computer
5. Turn on camera
6. Locate camera as disk drive on computer
7. Navigate to **DCIM** -> **Camera01**
8. Copy files to computer

4.2b. Editing: File Transfer (MicroSD)

1. Turn off camera (long-press power button)
2. Open side cover of core module
3. Press exposed edge of MicroSD card & remove
4. Insert MicroSD card into SD card adapter
5. Insert card adapter into computer
6. Locate camera as disk drive on computer
7. Navigate to ***DCIM*** -> ***Camera01***
8. Copy files to computer

4.3. Editing: Studio UI

1. Menu bar

- Essential actions/commands

2. Left panel: Files

- Importing/imported files & rendering files (export)

3. Middle panel: Playback/editing

- Image area, frame parameters & actions
- Toolbars, timeline, export button

4. Right panel: Parameters/projects/properties

4.4. Editing: Studio Timeline

1. **Playhead:** Large, white line
 - Click timeline to set
2. **Skimmer:** Thin, yellow line
 - Move cursor along timeline
3. **Trim start/end:** Shorter, white lines
 - Mark start/end of exported project
 - Drag to spot or click ***Mark [...] start/end*** (at playhead)

4.5. Editing: Playback Shortcuts

- **Play/pause/resume:** Space
- **Skip to trim-start:** [
- **Skip to trim-end:**]
- **Zoom out timeline:** Ctrl/Cmd + Minus key (-)
- **Zoom in timeline:** Ctrl/Cmd + Equals key (=)
- **Forward/backward 1 frame:** Right/Left
- **Forward/backward 10 frames:** Shift + Right/Left
- **Increase/decrease volume:** Up/Down

4.6. Editing: Playhead Shortcuts

- **Add trim start:** Ctrl/Cmd + [
- **Add trim end:** Ctrl/Cmd +]
- **Add keyframe (Reframe View only):** Ctrl/Cmd + K
 - Set parameters (FOV, angles, etc) at specific point

4.7. Editing: Image Area (360 Video)

- **Reframe View or 360 View (tabs above image)**
- **Changing shown-image:**
 - Click & drag: Change angle
 - Mouse-scroll up: Zoom out
 - Mouse-scroll down: Zoom in
- What you see is what you get with ***Export reframed video***

4.8. Editing: Image Toolbar

- **Lower-right corner of image area**
 - **(Reframe View) Ratio:** Change aspect-ratio
 - Default: 16:9
 - **(360 View) Switch FOV:** Change field-of-view
 - Default: Fisheye
 - **Take Snapshot:** Ctrl/Cmd + S
 - **Full Screen:** Shift + Ctrl/Cmd + F

4.9. Editing: Editing Toolbar

- **Between image area & timeline, right-side**
 - **(Reframe View) Mark as keyframe:** Mark transition
 - **(Reframe View) Deep Track:** Focus on subject
 - Follow prompts
 - **Time Shift:** Slow down or speed up
 - Starts at playhead, ends at click on timeline
 - **Motion Blur:** Toggle on/off motion blur

4.10. Editing: Keyframe Parameters

- **Views**
 - Default (fisheye), Crystal Ball, Tiny Planet, Natural
- **Angles**
 - **Pan:** x-axis (horizontal)
 - **Tilt:** y-axis (vertical)
 - **Roll:** z-axis (canted)
- **Field of view (FOV)**
- **Distortion**

4.11. Editing: Right Panel

- **Stabilization Type**
- **Stitching:** Presets & customization
- **Media Processing:** Effects/filters for colour & audio
- **Logo Settings:** Watermark image
- **Project Management:**
 - Projects: Sets of changes auto-saved to source files
- **File Properties:** Specifications of source file

4.12. Editing: Exporting Videos

1. Click Start Export button (yellow square, beside timeline)
2. Select export type:
 - a. ***Export reframed video:*** 2D video
 - b. ***Export 360 video:*** 360-degree video in suitable apps
3. (Optional) Adjust parameters
4. Set name & location

5. Publishing

5.1. Publishing

Video-hosting platforms:

- Facebook
- VeeR
- Vimeo
- YouTube

References

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