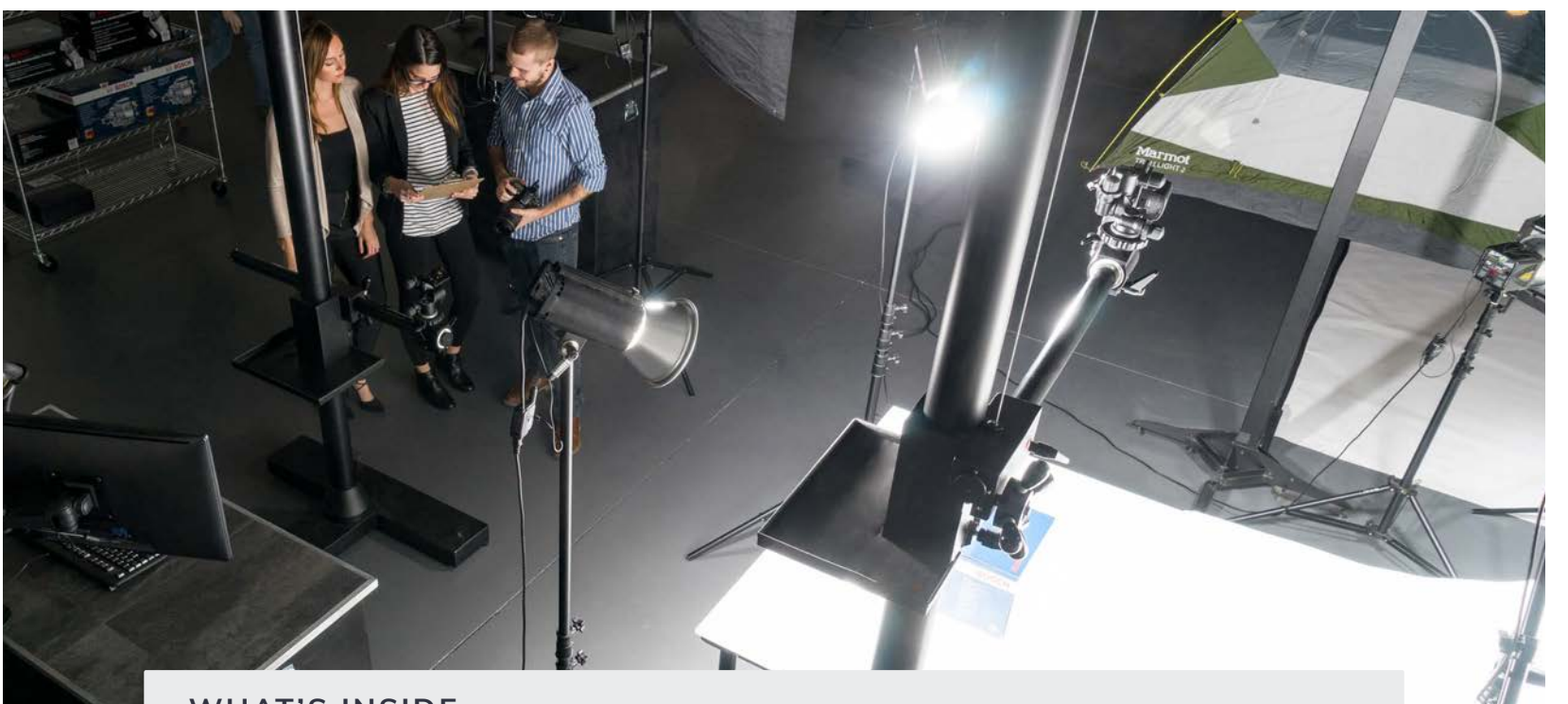
The Ultimate Guide to 360° Product Photography and Image Production

LEARN ABOUT 360° AND 3D IMAGES AND MAKE THE BEST DECISIONS FOR YOUR BUSINESS



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Questions You *Must* Answer Before Plunging into the World of 360° Images

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Terms You *Need* to Know About 360° Product Images

360° / 3D Product Photography	360° Product Images
3D Product Images	Image Frame
Plane	Hemispherical Images
Spherical Images	Northern Hemisphere
Southern Hemisphere	360° Image Viewer Software
360° Equipment Software	Product Angle
Camera Angle	Image File Name
Image Resolution	Image File Size
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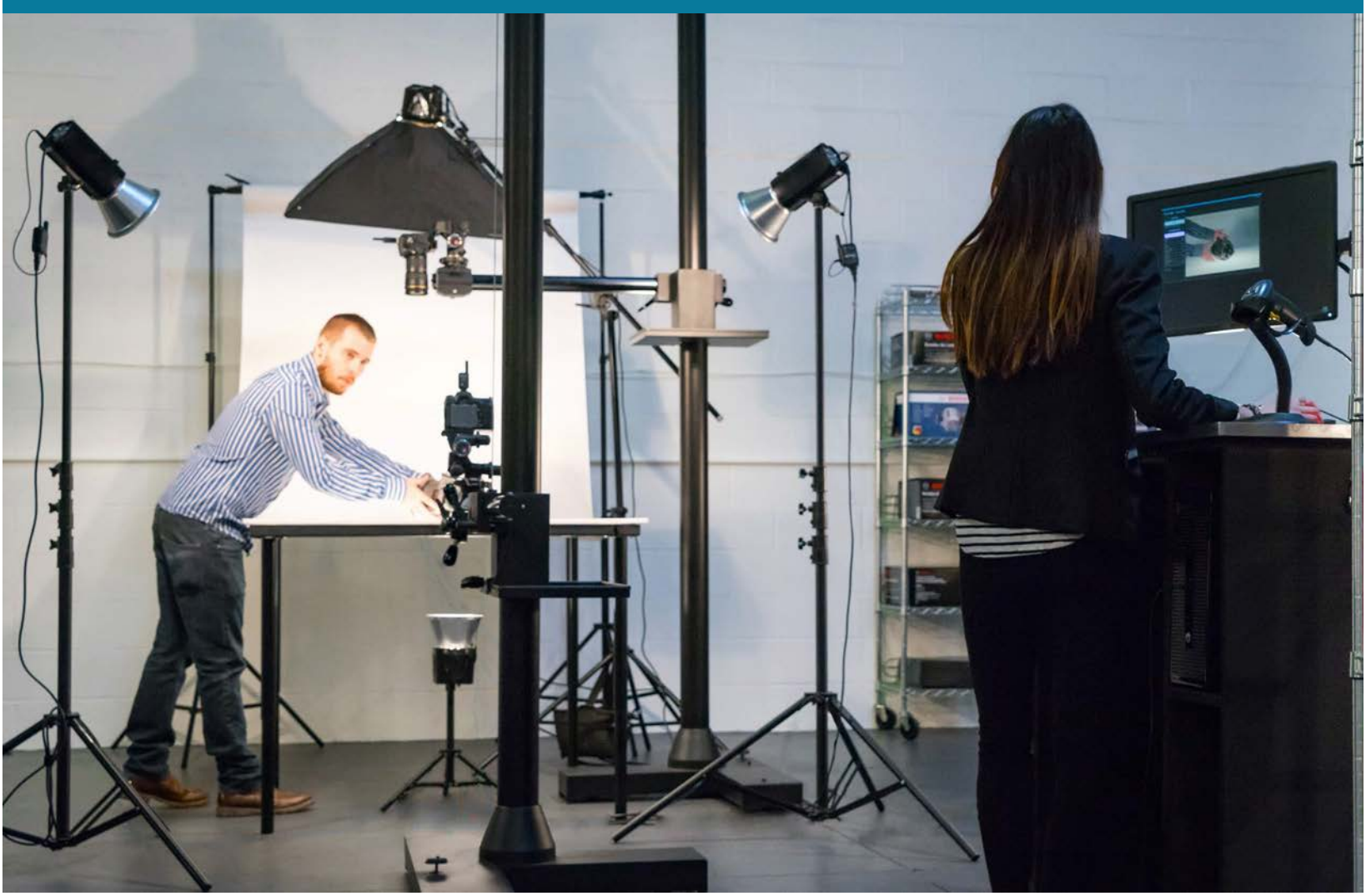
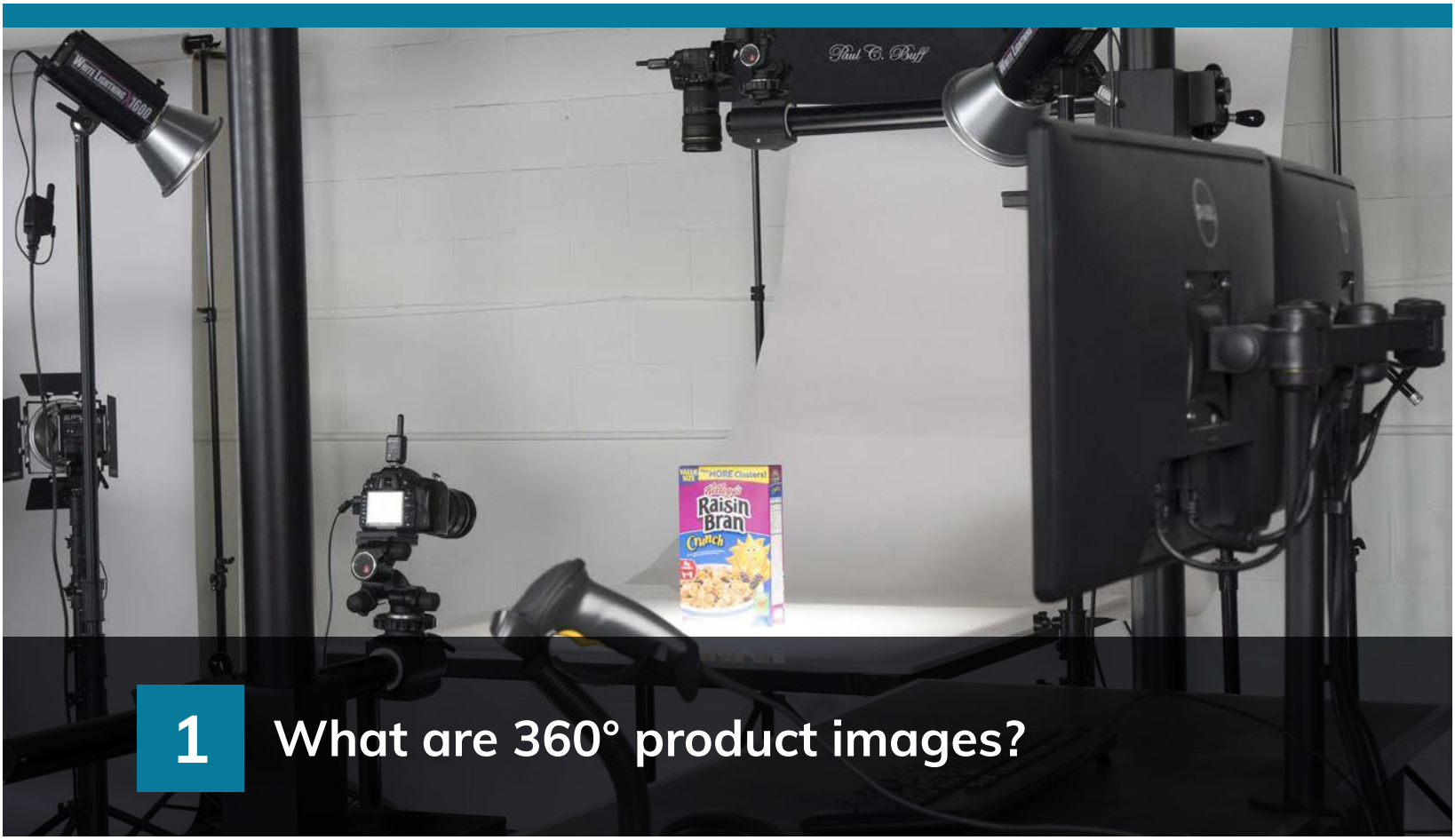
Common 360° Product Imaging Questions Answered





1 What are 360° product images?

This is an obvious place to start in your journey to understanding 360° product images – what exactly are they?

When most people see 360° images on websites, they think that these are complex digital assets that are generated using specialized 3D software or using video technology.

In fact, 360° product images are much simpler.

We all know what a still product image is – an image of a product taken from a specific angle with a camera and lighting setup.

A 360° image is a series of still images of a product (24, 36, 72 etc.) taken in sequence on specialized 360° photography equipment. When the image set is displayed in a 360° image viewer (a software application that resides on the web server and plays in a browser), the consumer can rotate and pan around the image, and zoom into specific areas of interest.

The still images that make up a 360° image are captured on a photography turntable that is controlled by software. The turntable rotates stopping at specified degree intervals, the software tells the camera to take a picture, the software rotates the platform to the next interval, the camera fires, and so on. The 360° image viewer plays the still images in the sequence that they were captured allowing the viewer to display the product as rotating.

Here is the process of capturing a 360° image of a running shoe:

- The running shoe is placed in the center of the photography turntable at the desired angle to the camera.
- In the software that controls the turntable, you enter the number of images you want in the 360° (say 24 images).
- When you click start, image #1 is taken, the turntable rotates 15 degrees (determined by the software - 360° degrees divided by 24 images equals 15 degrees), image #2 is taken, and so on until all 24 images have been captured.
- The software names the individual image files according to the sequence they were taken i.e. product number separated by an underscore and then the image frame sequence number – 123456_01, 123456_02, 123456_03...
- The 360° image viewer plays the images according to their image sequence number (01, 02, 03...), and the product can be rotated, panned, and zoomed into by the consumer.

To sum up, 360° product images are a series of still images photographed, in sequence, on a single axis or plane, on rotating photography platform equipment. When these images are played in a 360° image viewer, the product can be rotated, panned, and zoomed into.

2 How Can 360° product images benefit my business?

The benefits that you get from 360° product images come down to 2 things – 1) they increase revenue through additional sales, and 2) they reduce costs by lowering product returns.

This statement says it all

360° Product Images Help You Sell More of The Right Products.

Let's take a closer look at this statement:

SELL MORE – with 360° product images you will sell more products compared to not having 360° product images. More sales equals more revenue.

RIGHT PRODUCTS – with 360° product images you have a better chance of ensuring that the consumer is buying the product they want and need. When the consumer buys the product they want or need, they do not return it. Lower returns equal reduced costs.

SELL MORE PRODUCTS

Let's face it, businesses will do whatever they can to increase sales. That is the name of the game.

With B2B and / or B2C ecommerce, it is critical that your products stand out from the competition and that, during the buying process, you instill quality and confidence in the eyes of the consumer.

360° product images help you do both.

Stand Out from your Competition

Ecommerce is often characterized by side-by-side product comparison – your products are displayed on web pages next to your competitor's products. In this sales environment, you need to find a way to stand out, to differentiate your products from the other products (that may be very similar).

The key is to get the consumer to click on your product. The next key is to get them to buy your product.

Here is what having 360° images in a ecommerce sales scenario would look like:

- Your product shows up on a page with several similar products.
- Some of the products have no images or poor quality images, some have nice images, and your product has either a rotating 360° image or a high-quality image with a 360° icon (indicating a 360° image).
- Your images and product presentation is better than your competitor's, you get the click.
- The consumer comes to the dedicated product page. There interact with your product, rotating it to see various sides and zooming into details. They can get a good sense of your product.
- You win the sale.

Instill Buyer Confidence

360° product images are more engaging than standard still images. When viewing a product from all angles and zooming in to see detail, buyers get a true sense of product quality, and their confidence in your product is reinforced.

Confidence in the quality of a product goes a long way to winning the sale. 360° product images can play a big role here.

SELL THE RIGHT PRODUCTS

The buying process in the physical world involves seeing, touching, and handling products. This process allows you to know exactly what you are buying, leading to lower return rates.

Obviously, in the ecommerce world, the buying process is very different - there is no seeing, touching, or handling.

Product descriptions, specifications, and customer reviews are helpful in determining if the product is the right one for the buyer's wants or needs, but nothing is more valuable in this process than product images.

High-quality still images are great, and a MUST HAVE when selling online. Nowadays, this goes without saying.

But nothing provides a view of a product like a 360° image. The engagement 360° images provide is as close to the seeing, touching, and handling in the physical buying process as possible.

The ability for a buyer to view a product from all angles and to zoom into specific areas of a product is THE most helpful factor in determining if the product is right for their wants and needs.

In some businesses and industries, a 25% return rate is not uncommon. A significant percentage of these returns is simply because the buyer thought they were purchasing the right product, but once they received the product they realize it is not what they needed or wanted. The costs of processing these returns can be massive.

360° product images will help reduce your product returns significantly, freeing up resources and saving you the huge costs associated with processing these returns.

3 Does my business really need 360° product images?

We know that 360° product images increase sales and reduce returns.

Basic ROI economics supports the fact that if your business realizes higher sales and lower returns with 360° product images, and the additional revenue and cost savings exceed the cost of creating the 360°s, then 360°s makes sense.

But do 360° product images have the same impact on sales and costs for *all* products.

ABSOLUTELY NOT.

360° product images allow the buyer to see products from all angles and zoom into product details. If your products are single dimensional, not detailed, and / or common and known to all buyers, 360° images are not necessary. Still images are what you need, 360° images are not warranted.

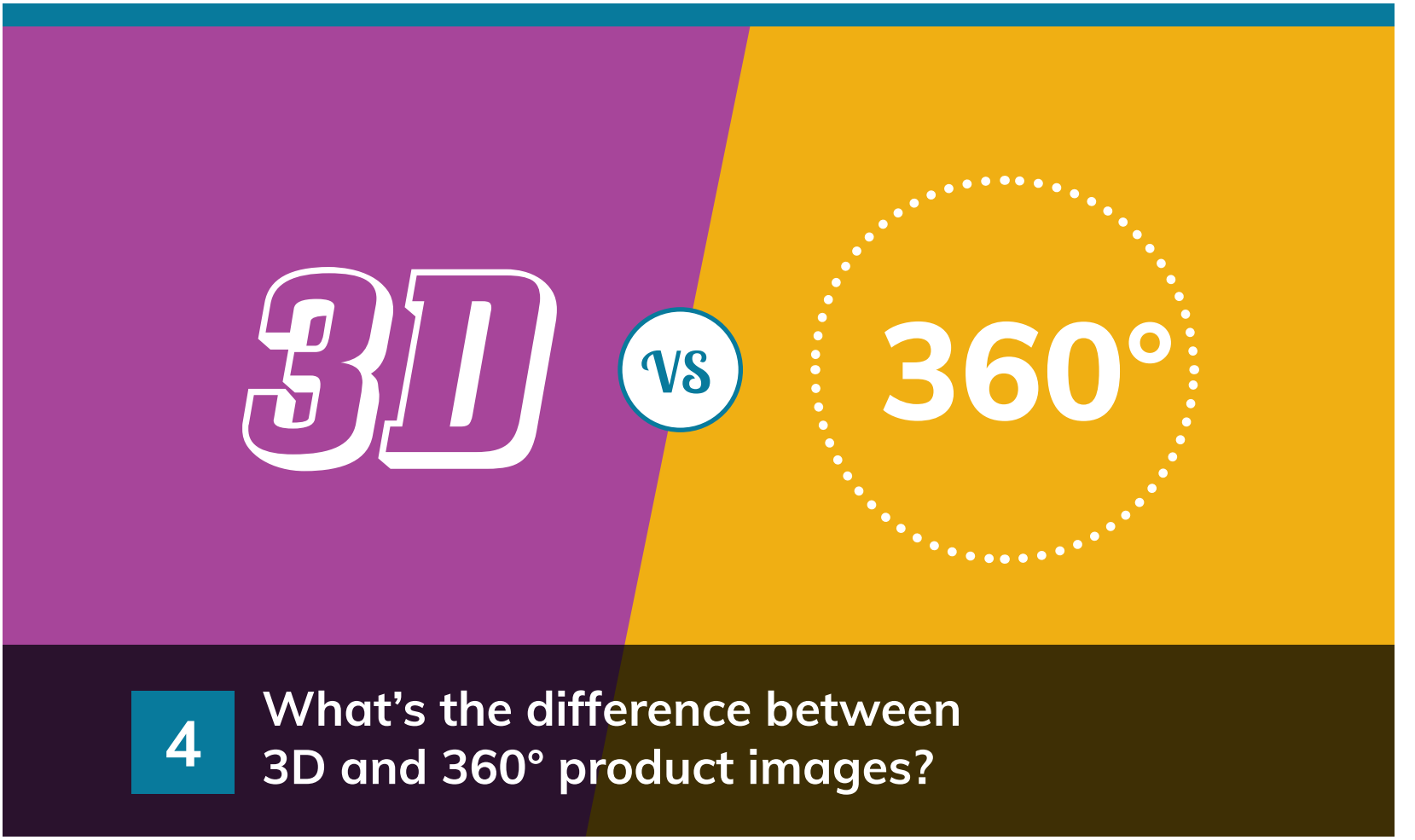
For example, would it be worth the extra cost and effort to create 360° images of towels, or envelopes, or small gaskets for your car. Would the buyer really see and interact with these products more with 360° images as opposed to high-quality still images? The answer is NO. It is a safe to say that you would not sell more envelopes with rotating 360° images compared to still images.

On the other hand, if your products are 3 dimensional, complex, expensive, and / or have lots of detail, 360° images will have a big impact on sales.

For example, let's say you sell backpacks. All sides of a backpack have product features and details that the consumer will want to see. If the consumer has a great view of the backpack from all angles and can zoom into all its unique features, they will have confidence in the product and you will increase the odds that they will buy.

There are endless examples of products that will sell more with 360° product images.

A valuable exercise is to analyze your products and determine which are a good fit for 360° images and which are not. The key to this exercise is to think like a consumer, what would they want to see and what would encourage them to buy your products.



4 What's the difference between 3D and 360° product images?

In the first section, we defined 360° product images as:

> *360° product images are a series of still images photographed, in sequence, on a single axis or plane, on a rotating photography platform. When these images are played in a 360° image viewer, the product can be rotated, panned, and zoomed into.*

The turntable turns a single full rotation, the camera captures X number of images (i.e. 24, 36, 72) at specified degree intervals. The resulting image set is a 360° product image. The consumer can view the image and zoom into it only on the plane that it was photographed on.

3D product images have the same definition as 360° product images except for the phrase '*on a single axis or plane*'. 3D product images have '*more than one axis or plane*'.

3D product images are a series of still images photographed, in sequence, on more than one axis or planes, on a rotating photography platform. When these images are played in a 360° image viewer, the product can be rotated, panned, and zoomed into.

For 3D images, the turntable turns a single full rotation, the camera captures X number of images (i.e. 24, 36, 72) at specified degree intervals. The camera then moves over the product X degrees, and captures another set of images, and so on. The resulting image is a 3D product image. The consumer can view the image and zoom into it on the planes that it was photographed on. 3D images allow the consumer to see more product detail.

There are 2 types of 3D images:

HEMISPHERICAL	SPHERICAL
These 3D images have image sets for several planes of only the ONE side of the product i.e. the top. The camera captures one set of 360° images for each plane, and each set is captured at a different angle over the product. The other side of the product is not photographed i.e. the bottom. The consumer can view extensive detail of the one side of the product but nothing on the other side. Typically, hemispherical 3D images have between 3 and 6 planes.	These 3D images have image sets for several planes of the product on both sides i.e. the top and the bottom. The consumer can see all detail of the product from all angles and sides. Spherical images provide the best view of the product from all sides. Typically, spherical 3D images have between 3 and 6 planes per side (so 6 to 12 planes in total).

When you consider multiple planes, on one or both product sides, and many images per plane, the total image count for 3Ds can be very high.

Here is a summary of 360° and 3D images, with some realistic image counts:

24-frame 360° Product Image:

- Image captured every 15 degrees as the product rotates on a single plane
- Total planes: 1
- Total images: 24
- Angles the consumer can view and rotate the product on: 1

36-frame / 3-plane 3D Hemispherical Product Image:

- Image captured every 10 degrees as the product rotates on each plane
- Total planes: 3
- Total images: 108 (3 planes times 36 images)
- Angles the consumer can view and rotate the product on: 3 on one side only

36-frame / 3-plane top side / 3-plane bottom side 3D Spherical Product Image:

- Image captured every 10 degrees as the product rotates on each plane
- Total planes: 6 (3 on top side, 3 on bottom side)
- Total images: 216 (6 planes times 36 images)
- Angles the consumer can view and rotate the product on: 3 on both sides

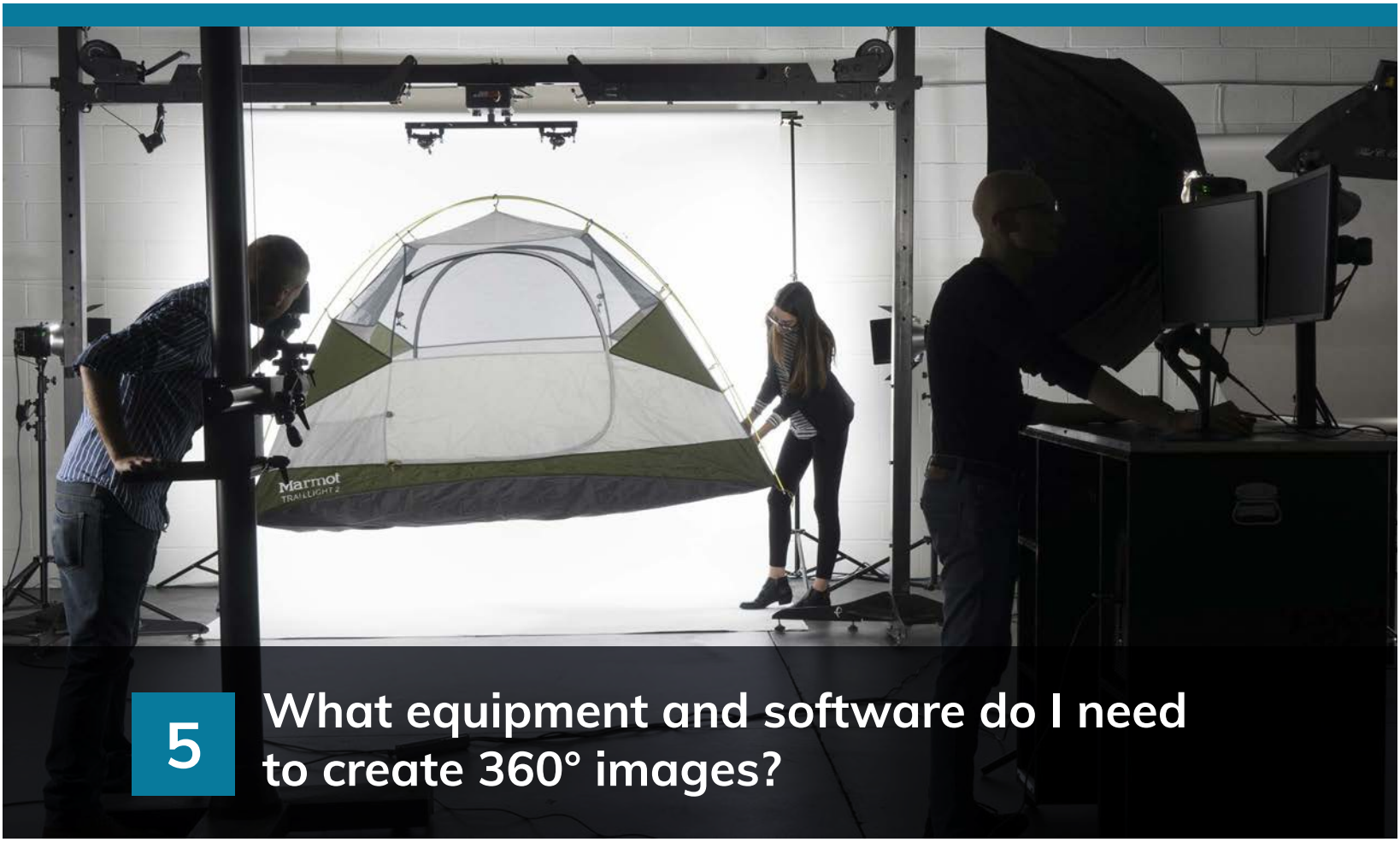
Why create 3D images over 360° images?

For the most part, you would only create 3D images if:

1. **Your product is a good fit for 3D images (lots of detail, expensive etc.).**
   If your products have product features on all sides that are important for the consumer to see during the buying process, then it may be worth it to consider 3D images. It is common to see 3D images for products like phones, shoes, laptops, and electronics. Most of these products are pricey and they have features consumers want to see on all sides.
2. **You think you will sell more products if you provide consumers a better view of your product.**
   Sure, the cost of 3D images is high dues to the complexity of creating them and the sheer number of images involved. But if you sell a lot more products because they are presented as a 3D image, then it will be worth it.

Make sure you think carefully before creating 3D images of your products. They take longer to photograph, and if the individual images frames require editing, the cost is MUCH higher when compared to 360°s.

Selling more product is the most important way to justify the additional cost of 3D images compared to 360° images.



5 What equipment and software do I need to create 360° images?

Producing 360° or 3D images requires specialized equipment in addition to standard photography studio equipment. Here's a high-level look at the equipment you will need to operate your 360° / 3D photography studio effectively.

360° / 3D PHOTOGRAPHY EQUIPMENT

The main piece of equipment you need to produce 360° images is a turntable that rotates at precise degree intervals as the camera's shutter fires. These turntables come in varying widths and weight capacities to accommodate products of different sizes and weights. They also come with software that rotates the turntable, fires the camera shutter, and allows you to adjust your camera settings.

In general, there are two main types of 360° turntable units – enclosed lightboxes and open studios.

Lightbox 360° Studios:

These studios are enclosed cubes with continuous light on all sides and overhead, and a turntable that rotates the product. These lightboxes provide consistent light on the product from all directions. With some systems, the lights can be controlled by software allowing for specific areas of the product to be highlighted. These lightboxes are best for small to medium sized products – around 30" (length or height) and less than 70lbs.

Open 360° Studios:

These studios are designed to be open to your photography studio environment. Open studios require complete lighting setups, either strobe or continuous. You will need lights, stands, and softboxes (depending on the type of lights you go with), in addition to the 360° turntable. You position the lights and stands around the turntable. Open studio platforms come in various sizes and weight capacities allowing you to capture 360° images of large and heavy products.

3D Studios:

If you want to create 3D images you will need a 3D arm that moves over the 360° platform allowing you to capture multiple 360° planes of your products.

There are 2 main types of 3D arms – single-camera and multi-camera.

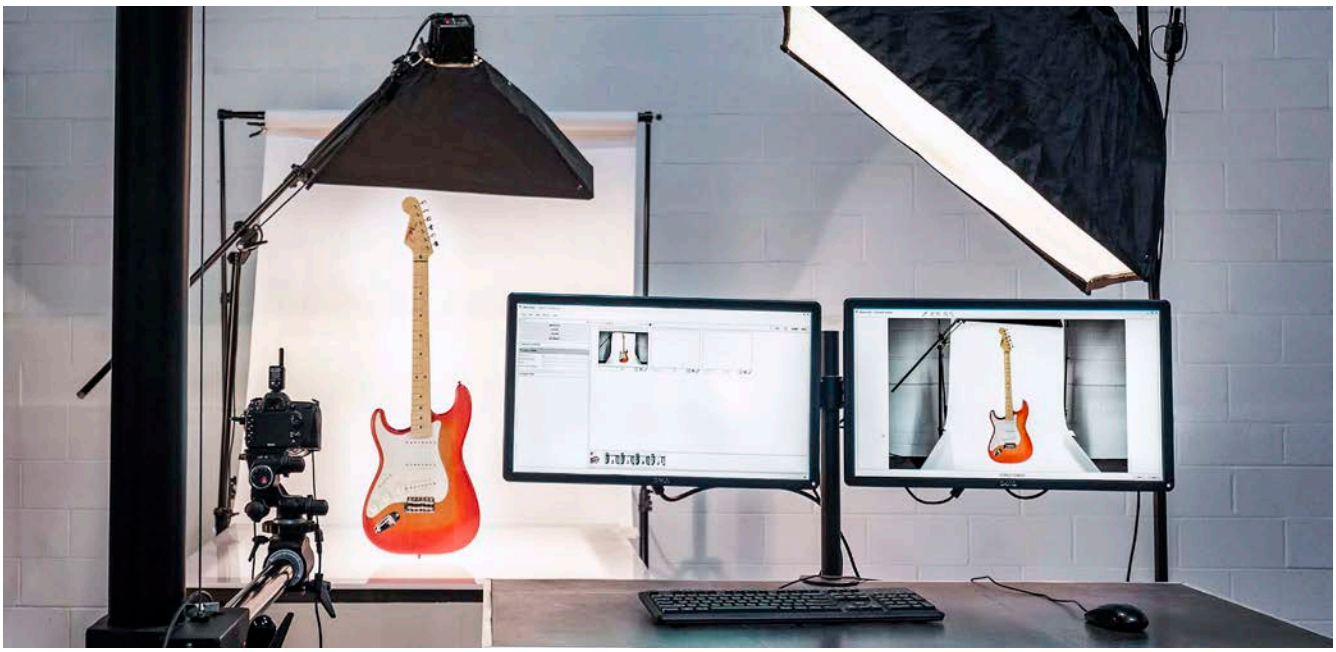
Single-camera 3D Arms:

These 3D arms have a single camera that is fixed to a boom. Controlled by software, this boom moves over the product and adjusts the camera angle to the product. In the software, you define the number of 360° planes you want to capture, the degrees you what the camera to rotate over the product between each plane, how you want the camera angled to the product, and the number of images you want to capture per frame. Once the 360° is initiated, the camera is positioned over the product for the first 360° plane, after the images have been captured it moves over the product to the next position, and captures another set of images. This continues until all the images for all the planes have been captured.

Multi-camera 3D Arms:

These 3D arms have up to 10 cameras mounted on a fixed arch that is positioned over the product. In the software you define the number of planes you want and the number of images per plane. You can define the planes by the camera position and you can adjust the camera positions on the arch manually as required. When the 3D image is started, all cameras fire simultaneously as the product rotates.

STANDARD PHOTOGRAPHY STUDIO EQUIPMENT



Other than the 360° turntable and 3D arm (if you plan on capturing multi-plane 3D images), you will need standard product photography studio equipment including:

Camera and lenses: You will obviously need camera and lenses. Make sure the camera you select works well with the 360° / 3D equipment you purchased, some systems need specific cameras (i.e. Canon). The lenses will be specific to the type of products you will be photographing.

Camera stand and gear head: For high-volume photography, it is recommended that you have a camera stand and a quality gear head that allows you to make fine adjustments to the camera angle.

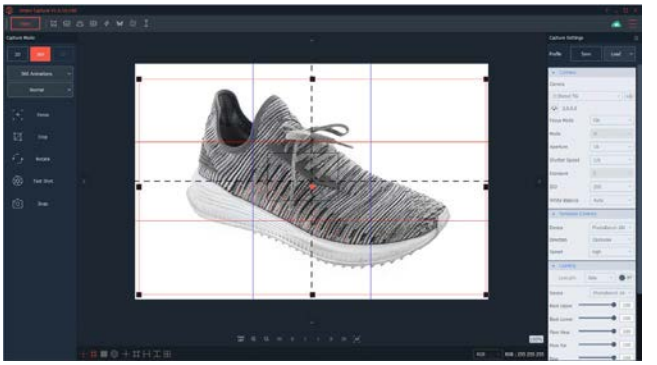
Lighting: Most 360° studios will operate effectively with either strobe and continuous lights, depending on your preference. You will need stands and softboxes for the lights.

Computer and monitors: You will need a computer to operate your 360° studio software as well as the software you will be using in your photography workflows (i.e. Photoshop, Lightroom, Capture One, Excel, Access, photography management software, camera control software). You will need to tether your camera and 360° turntable to your computer. For maximum productivity, it is best to have two monitors so you can have view production software on one screen and camera control and editing software on the other.

SOFTWARE

The following software applications will help you operate your studio productively:

Turntable and camera:



All 360° turntable equipment manufacturers provide software with their equipment. This software can be basic or feature-rich.

At the base level, this software allows you to define the number of image frames you want per plane and the number of planes in the 360° / 3D image set. When you initiate the rotation, the software will tell the camera to take a picture every time the turntable stops. It will do the math on the degrees that the turntable will turn between images. For example, if you define 24-frame 360°s, the software will trigger the camera to take the first picture, the turntable will rotate 15 degrees (360° degrees divided by 24 images), stop, the camera will take another picture, and so on.

More advanced features available from some 360° equipment manufacturers includes setting the time intervals between images (to allow the product to completely steady before an image is taken), adjusting the camera settings, output formats to a viewer, image tagging, ghosting, and more.

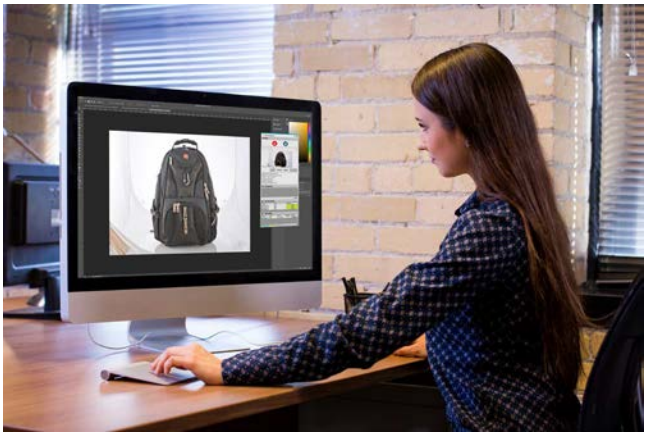
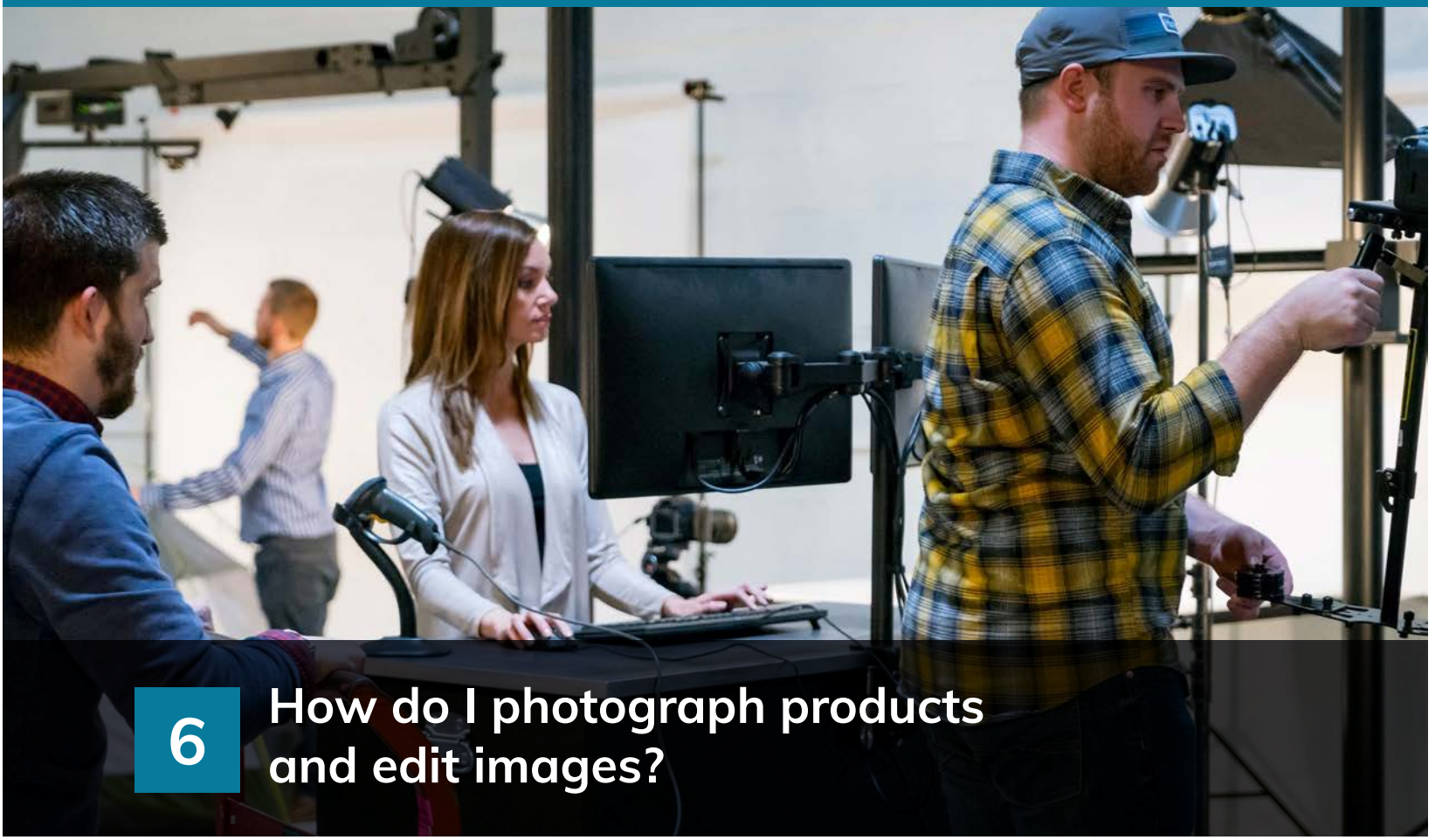


Image editing and organizing:

It is common to integrate image editing and organization software into your production workflow. The most popular applications for this are Adobe Lightroom and Capture One. With these tools you can perform mass edit functions on full sets of 360° images, automatic renaming, file and folder organization, and output options.

Photography and image production management:

Without management and workflow software, the process of capturing 360°s of hundreds or thousands of products over the course of a project can become a maze of files and folders and involve a significant time naming images and managing product numbers. Photography and image production management software streamlines the product photography process eliminating repetitive and error-prone tasks like file renaming, copying files between folders, and tracking products. This management software allows projects to be centralized and images to be QAed as they are produced.



6 How do I photograph products and edit images?

Product photography and image editing techniques are eBooks in themselves, but here is a high-level overview of 360° photography and image editing.

360° PHOTOGRAPHY

The first step (and arguably most important) in the 360° product photography process is preparing your product for photography and positioning it on the turntable.

This is a critical step because once you start the 360° spin you cannot stop it, nor can you touch the product or the lights. If the 360° image is not what you were looking for, you need to start the process again. This can get very time-consuming.

Preparing your product for photography involving cleaning and assembling it as required.

When the product is ready for photography, you need to center the product on the turntable, so it rotates without any wobble at all, as smooth and natural as possible.

Next you want to make sure that the product is oriented towards the camera at the angle you think will look best as the product rotates. This takes some testing before you will be ready to initiate the spin. If you get the positioning right, you will create a 360° that shows your product in the best light.

There are 3 main approaches to positioning your product before the spin is started. Throughout your project you will use all 3 approaches as your products vary.

As-it-lays

This is the easiest and fastest way to position your products. Simply place the product in the center of the turntable, angle it towards the camera so the first image is exactly how you want it, and start the spin. No fancy propping or suspending required. This approach only works if your products balance nicely on their own at the angle you want the product to rotate.

Propped

If your products do not lay naturally on the turntable at the angle you want, you will have to prop them. There are endless ways to prop products, but the main goal is to use props that position the product at the angle you want, AND the props do not obscure any part of the product as it rotates. This can be challenging. The process usually involves compromising on the product angle to the camera so that no props cover any part of the product.

Suspended

If your products do not balance naturally on their own and they cannot be propped (i.e. too awkward or large, hard to balance, the props obscure the product), they will need to be suspended. Suspending involves using line to hang the product from an overhead 360° system and positioning it towards the camera. If your products are too heavy or large, or they have specific 'hard-to-control' characteristics, suspending may be too difficult to be a viable option. In general, suspending products for 360° imaging is very challenging, time-consuming, and costly. Use this approach sparingly!

IMAGE EDITING

Some 360° images come out of the camera looking pretty good, almost white background, and the 360° looks consistent as it rotates. For these 360° images, editing each individual image frame is not necessary. Many smaller products shot in a lightbox can look good straight from the camera.

For some 360° images, image editing is unavoidable. Examples of 360°s that require editing include: when the product was propped or suspended, when the product was large and photographed in an open studio, when the 360° equipment appears in the image backgrounds, when the image frames are inconsistent from frame-to-frame.

From a high-level, image editing tasks fall into 3 categories – background, consistency, and cropping.

Background

If the image backgrounds vary from image to image, the product will not look good as it rotates in the viewer.

In some cases when the backgrounds are OK but could use a bit of editing. Software like Lightroom allows you to do some basic background adjustments to the images as a set. This can save the time it would take to fully edit each image frame.

Often the backgrounds are to messy or too far from white to use a tool like Lightroom. Here the images would need to be fully edited using Photoshop. The product in the image will be clipped out and the background turned to 100% white. Although this creates a 360° image with a consistent background as the product rotates in the viewer, it can be costly as each frame needs to be processed by an editor.

Consistency

Most products are not consistent and uniform on all sides, they have different angles, characteristics, and colors. When the product rotates on the turntable it catches light from different angles causing glares, flares, and reflections. This makes the images in the image set (i.e. 24, 36, 72 images) inconsistent from each other.

Inconsistent images can be mitigated during the product and lighting setup process, but because of the nature of 360° product photography, it cannot be avoided in many cases.

When images in a 360° set are inconsistent they will need to be edited in Photoshop. The goal of this editing would be to make the images in the image set look as consistent as possible to each other. This involves opening all the images (as a set) in Photoshop and performing various editing techniques.

Cropping

For the 360° to display correctly in the viewer, every frame in the 360° must be the identical in pixel height and width. If the frames are different, as the images plays in the viewer, the product will appear to jump around.

After the 360° rotation is completed and the images are available for editing in software like Lightroom, select all the images in the image set, and crop them so there is enough, but not too much, white space around the product in each frame. It is important that this is done with ALL the images in the set, so each image is the identical height and width.

7 What is a 360° image viewer, and do I need one?

> ***"A 360° product viewer is a software application that plays in a browser and allows the buyer / consumer to interact with the product by rotating and panning to view it from multiple angles, and to zoom into areas of interest. HTML code on the webpage loads the viewer and the viewer loads the individual image frames. Both the viewer and the images reside on the web server. The viewer has functionality and settings that control how the 360° image is displayed and how the buyer / consumer can interact with the product."***

There are many 360° viewers on the market. Some are light-weight, with few features and customizations and play on limited devices, whereas others are full featured and can be customized to match the look-and-feel of your site and the functionality you want your site visitors to have, and they play on all browsers and devices.

Let's break down this 360° image viewer definition further.

A software application that plays in a browser

Consumers will be accessing your 360° images on websites through their computers, tablets, and mobile devices using various web browsers (Chrome, Firefox, Edge etc.). These browsers load the image viewer when the 360° image is clicked on by the consumer or when the page loads (depending on how you have the page's HTML is coded).

The ultimate goal is to maximize the ROI on your 360° image investment (get as many sales as possible!). To do this you need your 360° images to play on all devices and browsers, which means you need a viewer that has cross platform and browser capabilities. Keep this in mind when you are sourcing image viewers.

Image viewer application and images reside on the web server

The 360° viewer application resides on your web server along with all your website files. When you create a 360° / 3D image, the individual image frames, correctly formatted and named according to the requirements of the 360° image viewer you are using, are uploaded to the server in a specified folder. When a consumer clicks on your 360° product image, or the web page loads, the HTML code on the page initiates the viewer, and the viewer displays the appropriate 360° image files.

Image viewer functionality and visitor interaction

Viewers control what the consumer can do with the product, and how the viewer and product are presented to the consumer. Common features include panning and zooming into the product, rotating the product with toolbar or mouse controls, and drilling into hot spots for displaying still images and textual content. In some viewers you can adjust the look and feel, as well as what the consumer can do in the viewer.

DO YOU REALLY NEED A VIEWER?

If you are going to display 360° images on your website, you need a viewer. If you are not displaying images on your website and only sending them to your resellers and partners, then you may not need a viewer.

For some businesses, like manufacturers, their resellers and marketplaces are requesting / demanding 360° images. These partners do not need the viewer sent with the images, they have their own viewer, they just need the image frames. If this describes your business, you may not need a viewer because you are not actually displaying 360°s on your website.

When shopping around for a viewer, consider its functionality, how customizable it is, and which devices and browsers it can play on.

Functionality

Image viewers offer all kinds of functionality including:

- Toolbar controls for play, pause, rotate left, rotate right, zoom, full screen, pan, and 3D rotate (if your products were photographed on more than one plane).
- Mouse controls to rotate, zoom, and pan.
- Hot spots placed on specific locations on the product – when you hover over or click the hotspots images or text appears, the text can be formatted and include hyperlinks.

Customization

Most viewers allow you to customize it to match your branding and website, and to offer a unique experience to your consumers. Here are some common customizations:

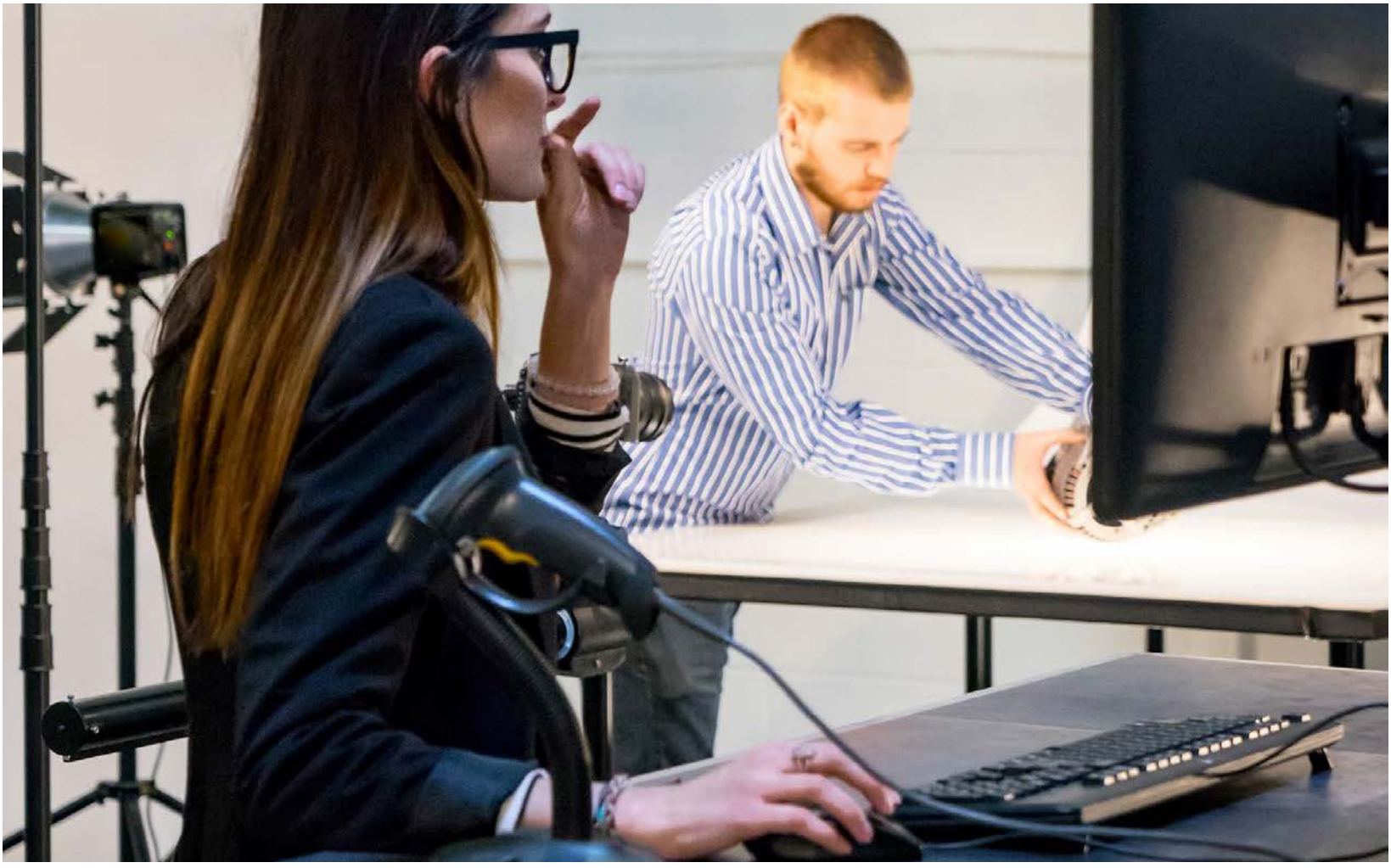
- **Viewer size** - the size of the viewer, in pixel height and width, as it appears on your website.
- **Viewer controls** - how the controls appear on the viewer - using your own custom designed icons and aligning controls on the left, right, or center.
- **Multiple image sets** – include a low resolution image set for fast initial loading on the web page, and a high resolution set for zooming into product details.
- **Hot spots** – add hot spots to specific areas on the product, when a consumer hovers over the hot spots they can see still images and or text pop-ups.
- **Skins** – select different skins for the viewer to match the look and feel of your website and brand e.g. toolbar color, border color.
- **Maximum zoom** – control the percentage that the consumer can zoom into the product, for example, maximum 600% zoom.
- **Rotation** – customizations include how fast the product rotates, whether the product rotates when the webpage first loads, if so how many rotations, and what direction it rotates.

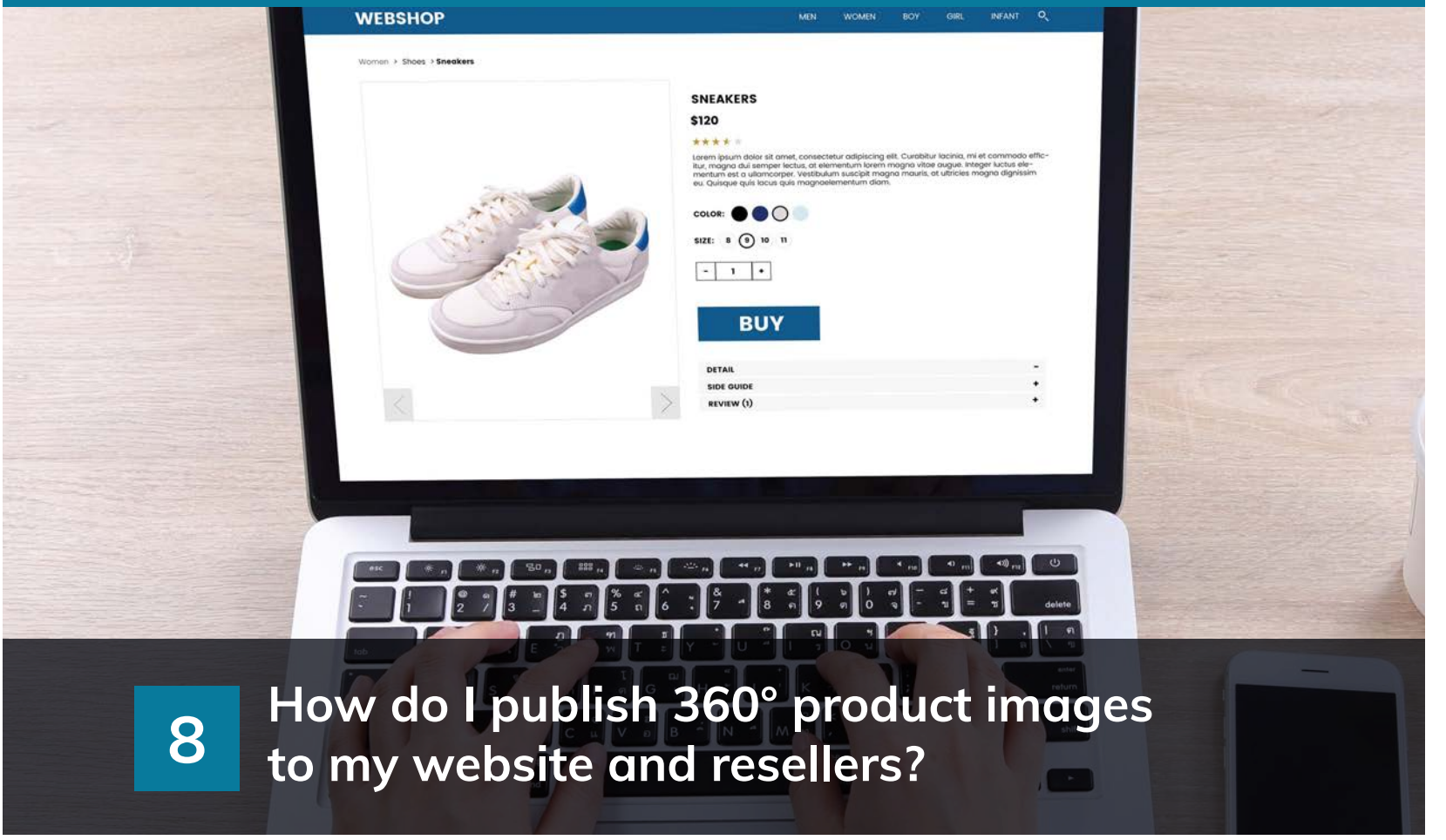
Compatibility

The investment into 360° product images is considerable. You want to get the most out of this investment. Therefore, the key goal is to allow your consumers an interactive buying experience regardless of the browsers, platform, or device they are using.

When selecting a viewer, play close attention it its limitations with respect to browsers and devices. Some viewers will play on everything with full functionality, some will play on some devices with full functionality but limited functionality on others, and some will not play at all on specific devices or browsers.

For example, a Flash-based viewer may play with full functionality on browsers that support Flash, but only limited functionality on non-Flash supporting devices and browsers. In this case the viewer will play in HTML5 mode, and likely with limited functionality.





8 How do I publish 360° product images to my website and resellers?

The main purpose for creating 360° images is to increase sales in your ecommerce channels.

These channels may include your own ecommerce sites, your resellers or customers sites, and B2B or B2C ecommerce marketplace sites.

To generate these sales, you need to get your 360° images into these channels as efficiently as possible.

Here is a breakdown of the process of distributing your 360°s into your sales channels.

YOUR WEBSITE

In the previous section we discussed that if you want to display 360°s on your website you must have image viewer software.

To recap, here is the technical description of how 360° images are displayed on your webpage:

The viewer resides on your webserver. The HTML code on the webpage references the location of the 360° image files and the look, feel, and function of the viewer. When the 360° image is clicked by a site visitor, the viewer will play the 360° image and the visitor can engage with the image using the viewer's controls (rotate, pan, zoom etc.).

After you have photographed and edited your 360° images, here are the steps to display them on your website:

1. Review and select 360° image viewer software.
2. Install the viewer on your webserver.
3. Write HTML code that defines how the viewer will be presented to your site visitors - colors, borders, height and width, position of controls and controls available for visitors to use, how the viewer loads on the page, initial rotation behavior of the 360° image, and other customizations.
4. Format the 360° image frames for each product according to how you want them presented to the visitor. This could involve formatting one or more image sets for fast load times and product zoom. Image formatting includes the image type (i.e. jpg), the Quality Setting (i.e. High), the file naming convention (i.e. 123456_01, 123456_02...) and the height and width in pixels.
5. Upload your images to your web server.
6. In the HTML code on each product page, define the location of the image files.

Pay special attention to the formatting of the image frames, your viewer may have a specific requirement for this formatting.

- **Image Dimensions:** Most viewers will allow you to add HTML code that defines the size of the frame the viewer will display in i.e. 800 pixels x 600 pixels. The viewer may have some constraints regarding the height and width of the frame that the 360°s display in.
- **Image Naming:** There could be a specific naming convention for the images i.e. for product number 12345, the image files would be named 12345_01, 12345_02, 12345_03, ..., 12345_24. This file naming tells the viewer the sequence that the images should display or play in the viewer.
- **Image Sets:** Some viewers require 2 sets of image files. One image set is loaded initially when the 360° image is clicked by a webpage visitor. These images are formatted to a lower Quality Setting in Photoshop resulting in a small file size for fast loading on the webpage (so visitors are not waiting). At this lower Quality Setting the images look good to the human eye and the file size is much smaller when compared to images at a High Quality Setting. The second set of images are formatted to High Quality Setting. They load in the background. These image frames are higher resolution and are displayed when the visitor zooms into the 360° image.

YOUR RESELLERS AND MARKETPLACES

If you sell your products through reseller channels and various B2B or B2C marketplaces you will need to format and send your 360°s to these channel partners.

In almost all cases, your resellers and marketplaces will have their own image viewer. This means that you do not need to send viewer files along with the image frames, only the images formatted to your partner's specifications.

Most partners will ask for the image frames at the largest height and width dimension and at the Maximum or High Quality Setting, they will down size the image frames according to their needs.

Check with each reseller and marketplace to determine how they want 360° images formatted and sent to them. Here are some common image specifications:

IMAGE SPECIFICATIONS	
File type	JPG or PNG.
File dimensions	The largest file size possible, your partners will resize them as necessary.
Image Quality Setting	Maximum or High Quality Setting if they require only one set of images, if more than one set, the second set would be Medium or Low Quality Setting.
Background	Close to white as possible or 100% white (all image frames must be edited).
File naming	Some derivation of product number, image frame number, and plane number (in the case of 3D images).
Zip file naming	Zip file for each 360° / 3D image, the zip file named for the product number and the 360° type (360° or 3D).
Data file	Most partners will ask for a spreadsheet detailing the 360°s you are sending them – file name, product number, whether the file is single or multi plane, number of images and planes in each set.

do-it-yourself

VS

outsource

9 Which is best for my business – do-it-yourself or outsource?

Of all the decisions you will make regarding 360° images, producing the images in-house with your DIY studio **OR** outsourcing to a service provider is by far the biggest.

Before making this decision, there are several questions to ask including:

- Do I have the ***expertise*** to operate and manage a DIY photography studio?
- Does my business have the ***capacity*** to efficiently operate a studio?
- Do I have the ***budget*** to set up and operate an in-house studio?
- How ***productive*** will my DIY studio have to be to meet my timelines?
- How difficult will my ***products*** be to 360° or 3D?
- Should I ***focus*** my resources on product photography or on growing my business?
- Do I have the organizational ***buy-in*** to set up a studio in my facility?
- What are the ***benefits*** to outsourcing product photography?
- ...

The DIY vs. outsource debate is common when it comes to still image production, but less so when it comes to 360° / 3D imaging. Setting up a still imaging studio costs much less and requires less specialized resources compared to a 360° / 3D studio.

Before you make the decision to go DIY, consider these 5 items:

1. **Resources required.**
2. **Studio set-up and operating costs.**
3. **Your products.**
4. **The productivity you require to meet your timelines.**
5. **The benefits of outsourcing.**

1 RESOURCES REQUIRED

To operate your DIY studio efficiently you will need photographers, photography assistants, warehouse support, and project management.

The assistants do not need a lot of skill or experience and are therefore not difficult to hire and train. The warehouse staff are already working in your business. The resource that will be managing the project will likely be an existing staff member i.e. marketing or digital asset manager.

That leaves the product photographer. A much trickier hire!

A product photography has a unique set of skills. They need to have expertise taking images of products of all shapes, sizes, and characteristics. They need to have expertise lighting products with both continuous and strobe lights. They need to understand the intricacies of product photography production workflows. And they need to have advanced skills with image editing and management software.

In addition to these skills and experience, the photographer you hire for your 360° / 3D project needs to have experience with 360° and 3D equipment and photography.

Put all this together and it is easy to see why hiring the right product photographer is no easy task!

Take your time recruiting and hiring the product photographer. Make sure they have the skill set and experience that you require. Their impact on the success of your 360° imaging projects is significant.

2 STUDIO SET-UP AND OPERATING COSTS

To set up your 360° photography studio you will need all the standard product photography equipment like lights, stands, softboxes, camera stand, camera and lenses, and computer equipment.

In addition to this standard studio equipment, you will obviously need 360° and possible 3D equipment if you plan on producing multiplane hemispherical and spherical images.

360° and 3D equipment consists of specialized turntables, camera arms, and for some setups, multiple cameras and lenses. There are several manufacturers of 360° equipment, from entry level to high-end, and several mid to high-end manufacturers of 3D equipment.

Equipment for 360° images can range from $5,000 for a basic entry-level system to $35,000 or more for more advanced systems.

If you are looking to do hemispherical or spherical images, your total costs for 3D equipment can range from $20,000 to $50,000.

Clearly the investment in 360° and 3D equipment is substantial. It is important to carefully determine if you need 360° equipment or 360° and 3D equipment, and then begin sourcing manufacturers.

3 YOUR PRODUCTS

The characteristics of your products are also a very important consideration when weighing the pros and cons of a DIY studio.

If your products are basic – light, small-ish, nothing too difficult about 360° or 3D imaging them - a DIY studio is worth considering.

If your products are more complex – larger, heavier, require suspending – then doing it yourself in-house could be a big challenge and outsourcing to a quality service provider may be the wise choice.

Also, creating hemispherical and spherical 3D images add to the complexity of your project. If you need 3D images, outsourcing might be the best way to go.

There is a circumstance where your products are difficult but outsourcing in not an option. For example, if your products are very large or very heavy. Shipping these parts to a service provider's studio would be cost prohibitive. If this is the case, you have 2 options 1) DIY, or 2) have the outsourced studio provide onsite 360° photography services at your place of business. Some of the larger studios will offer onsite 360° imaging services.

4 REQUIRED PRODUCTIVITY

360° and 3D product photography can get complex in a hurry depending on your products and the image types required. For this reason, daily / monthly production rates from 360° studios are much lower than production rates from still studios.

When weighing the pros and cons of DIY vs outsourcing, consider your business' demand for 360° images and determine how easy or difficult it will be for your DIY studio to satisfy this demand.

For example, if your business has determined that, over the coming 12 months, 10,000 products require 360° or 3D images. To satisfy this demand, you will need to create ~800 images per month or ~50 per day, everyday. If you will be creating a mix of 360°s and 3Ds, 50 images a day will be more difficult. If this daily production requirement is attainable with a DIY setup, then DIY is for you. If not, you should be looking into outsourcing.

5 BENEFITS TO OUTSOURCING

There are many benefits to outsourcing including:

Minimal effort	Your role in the 360° image creation process is minimal – ship your products to the outsourced studio, approve the sample images, review final images, and arrange for the product's return shipping.
Focus on your business	The studio does all the photography and image production, you focus your resources on growing your business.
Production guarantees	Service providers are in the business of meeting customer's deadlines. They have the equipment, resources, and experience to ramp up to meet your production requirements.
No equipment investment	You do not have to risk capital investing in 360° / 3D equipment.
No resource investment	You do not have to invest time and money into recruiting and managing photography and studio resources.
Lower risk	All the risks with DIY go away – investment, resource, production, quality, ROI etc.
Produce all types of images	Larger service providers can produce 360° and 3D images for all types of products - sizes and weights - and all image requirements – 360° and multi-plane 3D images.
Save money	Often, in the final calculation, outsourcing 360° image production is cheaper than doing it in-house, and with a lot less risk.

There you have it, lots to consider when weighing the pros and cons to DIY vs outsourcing. In the end this is a business decision and every business is different.

10 How much should I budget for 360° product images?

The cost of your 360° image production will vary considerably based on the following 4 factors:

1. Whether you are setting up a DIY in-house studio or outsourcing to a service provider.
2. Your products – their weight, size, and ease of handling, and whether they need to be propped or suspending prior to photography.
3. The type of images – 360° or 3D images.
4. The type of image backgrounds – close to white background where no editing is required or 100% white background where all image frames are fully edited.

Let's dig deeper into each one of these to illustrate how they impact your overall cost.

1 DIY VS OUTSOURCE

The cost structure for producing 360° images with a DIY studio is very different than the cost structure for outsourced. Here is a detailed look at both.

DIY in-house

Plan for the following costs when setting up a DIY studio:

- **Photography** – You will need to hire a skilled and experienced 360° / 3D photographer.
- **Photographer assistance** – To maximize studio efficiency, you need to hire an assistant for the photographer to clean and ready products for photography and unpack and repack products.
- **Management** – You will need someone to manage the project. They will be responsible for supervising the studio staff, determining which products need images, organizing the warehouse staff to pick, deliver, and return products to inventory, and other project management tasks.
- **Picking, delivering, and returning products** – The products will need to be pulled from inventory and delivered to the studio area, and returned to inventory once the photography is completed. Warehouse staff will need to handle these tasks.
- **Image editing** – If your products are propped, suspended, or the background is not acceptable straight from the camera, the image frames will need to be edited. You will need to hire image editors or outsource to a service provider.
- **Researching equipment vendors** – You will need to invest time researching and purchasing 360°, 3D, and standard photography studio equipment. Sourcing photography and studio equipment is straightforward. Researching and sourcing 360° and 3D equipment takes much more time due to its complexity and cost. You need to factor in the time and cost researching and meeting equipment vendors before making your final decisions.
- **Purchase equipment** – Once you have made your equipment decisions, you will need to arrange for purchasing the equipment from vendors. This takes time and involves POs and approvals.
- **Recruiting, hiring, and training resources** – Obviously you will need resources to operate your studio, photograph your products, and edit the images. There is an investment in time and money to recruit, hire, and train these resources.

The table below illustrates the monthly costs for setting up and operating a DIY studio, and the total for the initial investment. These are approximate numbers based on 3 key assumptions:

- The products not being too big and heavy.
- The products balance on the 360° platform (they do not require propping or suspending).
- All images are edited to a 100% white background.

360° Image Production - DIY			
	Products	Month Costs	Equipment Costs
Photography		$4,500	
Photography Assisting		$2,500	
Managing / Supervising		$2,500	
Product Delivery to / from Studio		$1,500	
Image Editing		$15,000	
Equipment Research, Procurement, & Setup			$3,000
360° equipment			$15,000
3D equipment			$20,000
Standard photography & studio equipment			$15,000
Recruiting, hiring, & training			$3,000
Number of products imaged / month	800		
Cost / 360° Image	$32.50		
Total Investment - Equipment, Setup, & Resources	$56,000		

In the table above, the average daily production is 50 products. This is standard for producing 360°s of basic products. If you are producing 3D images and your products are tricky to balance, your production could be as low as 500 / month, and the cost per 360° will increase to over $50.

Notes:

- If your products are difficult to image - they need propping or suspending - daily production will be lower, increasing the cost per 360°.
- If you capture more than 24 images per 360° plane, your image editing costs will be higher, increasing the cost per 360°.
- If you required complex 3D images, the number of images you produce daily will decrease, increasing the cost per 360°.

Outsource to a Service Provider

The cost structure for outsourcing to a service provider is more straightforward than with DIY.

The services provider will need to know the details of your products, the 360° / 3D images you require, how you want the images edited, and how your products will come and go from the studio.

- **Your products** – They will need to understand more about your products – their weight, size, and special characteristics. This will help determine how the products will be positioned on the 360° turntable and whether propping, suspending, and image editing will be required. They would also need to know how many products you have that require 360° and 3D images.
- **Your images** – They will need to know how many of your total products require 360° images and how many require 3D images. If you need 3D images, on average how many planes would you need per 3D image. Lastly, it is important to tell the service provider how many images frames you need per 360° plane.
- **Your image backgrounds** – The service provider needs to understand if you want the image backgrounds to be close-to-white (straight from the camera) or 100% white. As well, do you require the image frames to be edited in specific ways i.e. retouching product imperfections or removing product numbers and labels from the images.
- **Your project** – Lastly, you will need to tell the studio what your project deadlines are, how will you be shipping your products to the studio, and how do you need them returned.

Once the studio understands your products, images, backgrounds, and project specifics, they will be able to quote you a price per 360° and 3D. From there the total cost of your project is easily calculated.

The table below illustrates the cost for outsourcing a basic project – products are not too big and heavy, they balance nicely on the 360° platform, and they are edited to a 100% white background.

360° Image Production - Outsourcing	
# of Products	800
Cost / 360° Image	$25
Cost for Shipping - To / From	$4,000
Total Project Cost	$24,000
Average Cost / 360° Image	$30.00

2 PRODUCTS

The characteristics of your products has a big impact on daily production and cost. Simple products that are easy to handle and balance well without propping or suspending can be photographed consistently and quickly – 60 to 80 per day. Difficult products that are heavy or large and require propping or suspending can be much more time-consuming to photograph – 25 to 50 per day.

When you budget for 360° product image production, consider your products and how difficult they will be to photograph. If you outsource, the service provider will factor the product difficulty into the project timelines and the cost per image.

The table below illustrates the cost per 360° at different monthly production levels, comparing the cost of DIY and outsourcing.

	Images Produced Monthly	DIY		Outsource		
		Monthly Costs	Cost / 360° Image	Shipping Costs	Price / 360° Image	Total Cost / 360° Image
Average monthly resources - photographer, assistant, warehouse help, image editors, project manager		$20,000				
Monthly Production - Products	800		$25.00	$4,000	$25.00	$30.00
	600		$33.33	$4,000	$30.00	$36.67
	400		$50.00	$4,000	$45.00	$55.00

3 IMAGES

Your image requirements impact the cost of producing 360° and 3D images in two ways:

1. **Production:** One you start a spin you have to wait until that spin is done before you start the next spin. The more images in your spin the longer it will take to complete. If you have products that require a lot of image frames per 360° and / or each spin includes multiple planes (hemispherical or spherical), you will be able to produce less in a day, and therefore the cost per 360° / 3D will be higher.
2. **Image editing:** If the 360° / 3D image frames need editing, the more images in the spin the higher the cost.

The table below lists the number of images in a 360° / 3D with 24, 36, 72, and 144 image frames and up to 6 planes.

Total Images / 360° & 3D Images						
	# of Planes					
	1	2	3	4	5	6
# of Images / Plane						
24	24	48	72	96	120	144
36	36	72	108	144	180	216
72	72	144	216	288	360°	432
144	144	288	432	576	720	864

You can see that if you are doing a full spherical 3D with 3 planes on each side, the overall image count grows substantially. These spins will take more time to complete, and therefore you will get less done in a day, and the editing costs will be higher.

4 IMAGE BACKGROUNDS

If the image frames of the 360° or 3D need to be edited, it will represent the single largest cost item in the 360° production process. The reason being, the image count in 360° and 3D images can get very high (as was demonstrated in the last section).

The more image frames in each 360° plane and the more planes in the hemispherical or spherical image, the more images that will need to be edited.

There is basic image editing – clip out the product and turn the background to white – and more advanced editing – includes white backgrounds and retouching each image.

If advanced editing is required, the cost of editing will be even higher.

In almost all cases, if your product does not balance naturally on the 360° platform at the angle to the camera that you want, the product will need propping or suspending. These props and / or suspending lines will need to be removed in post production from all image frames.

The cost of image editing varies based on how the images are edited – with your in-house editors or outsourcing to a service provider (this is common for 360°s).

The easiest way to estimate the cost of image editing in your budget is consider 3 factors:

1. The number of image frames in the 360°.
2. The number of planes in the hemispherical or spherical image (3D).
3. Whether you edit the images with your editors or you outsource to a service provider.

In the last section, the number of image frames is listed for 24, 36, 72 and 144 360° images with between 1 and 6 planes.

The image cost tables below assume a cost of $0.40 / image frame if outsourced, and $0.80 / image if the editing is done in-house with your image editors (this is based on paying editors $20 / hour, and each editor editing 200 images / day).

The table below illustrates the cost per 360° or 3D image if you edit these images in-house with your image editors at an average cost of $0.80 / image.

DIY / In-house Editors						
	# of Planes					
	1	2	3	4	5	6
# of Images / Plane						
24	$19.20	$38.40	$57.60	$76.80	$96.00	$115.20
36	$28.80	$57.60	$86.40	$115.20	$144.00	$172.80
72	$57.60	$115.20	$172.80	$230.40	$288.00	$345.60
144	$115.20	$230.40	$345.60	$460.80	$576.00	$691.20

The table below illustrates the cost per 360° or 3D image if you outsource image editing to a service provider at an average cost of $0.40 / image.

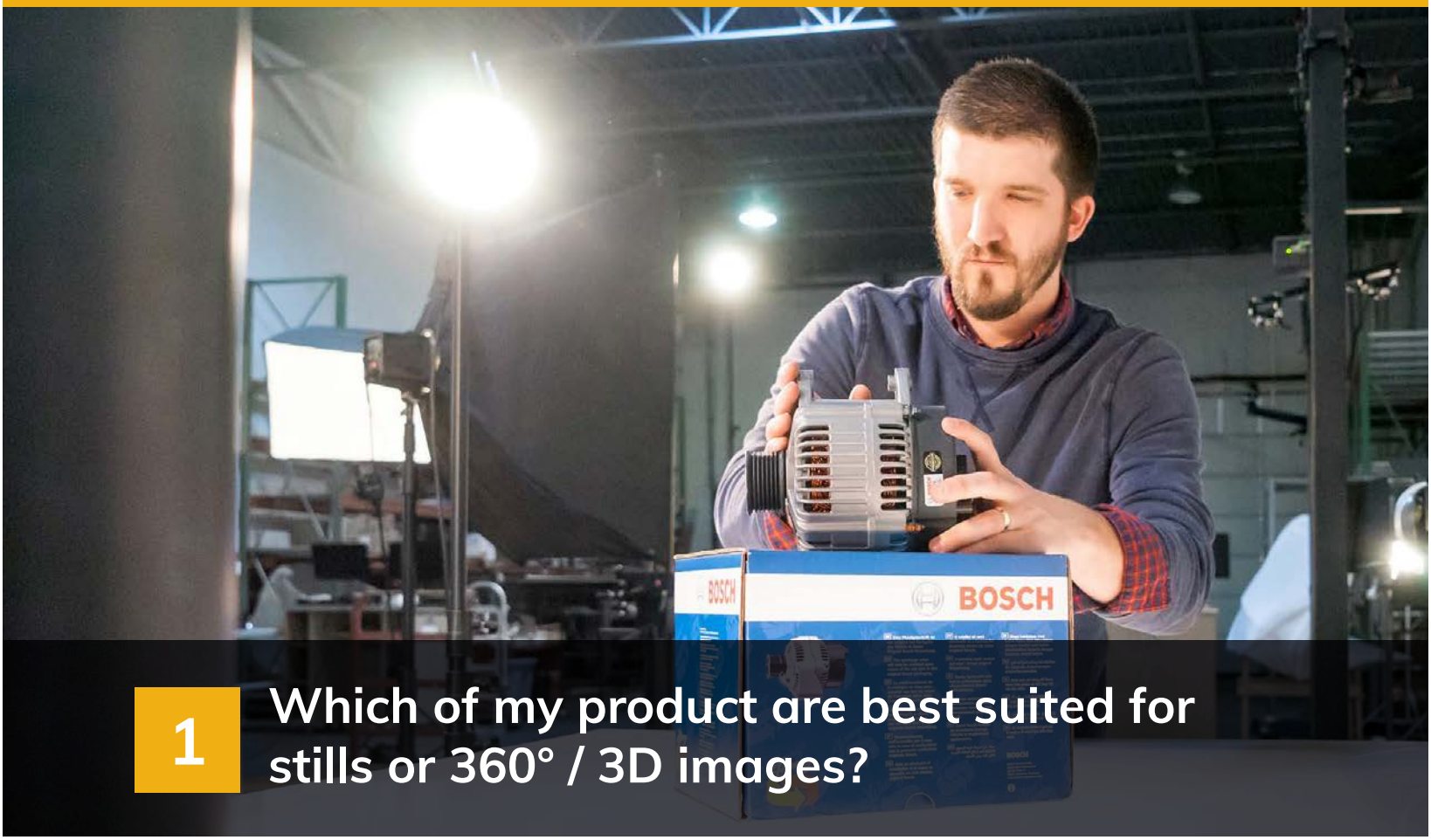
Outsourced						
	# of Planes					
	1	2	3	4	5	6
# of Images / Plane						
24	$9.60	$19.20	$28.80	$38.40	$48.00	$57.60
36	$14.40	$28.80	$43.20	$57.60	$72.00	$86.40
72	$28.80	$57.60	$86.40	$115.20	$144.00	$172.80
144	$57.60	$115.20	$172.80	$230.40	$288.00	$345.60

12

Questions to Ask Yourself *Before* Committing to 360°s

There are lots of questions that you and your team need to answer before committing to the investment in 360° and 3D images.

Answer these 12 questions and you will have a good sense of what products need 360° or 3D images, how much image editing you will need, whether DIY or outsource is the best fit for your business, and how much you will need to budget for the image production.



1 Which of my product are best suited for stills or 360° / 3D images?

This is the first place to start – your products.

Take a good look at your product categories and decide which ones are best suited for still images and which will benefit from 360° images.

At this point do not bother with the analysis of whether the products should be 360° or 3D, you will make this decision next.

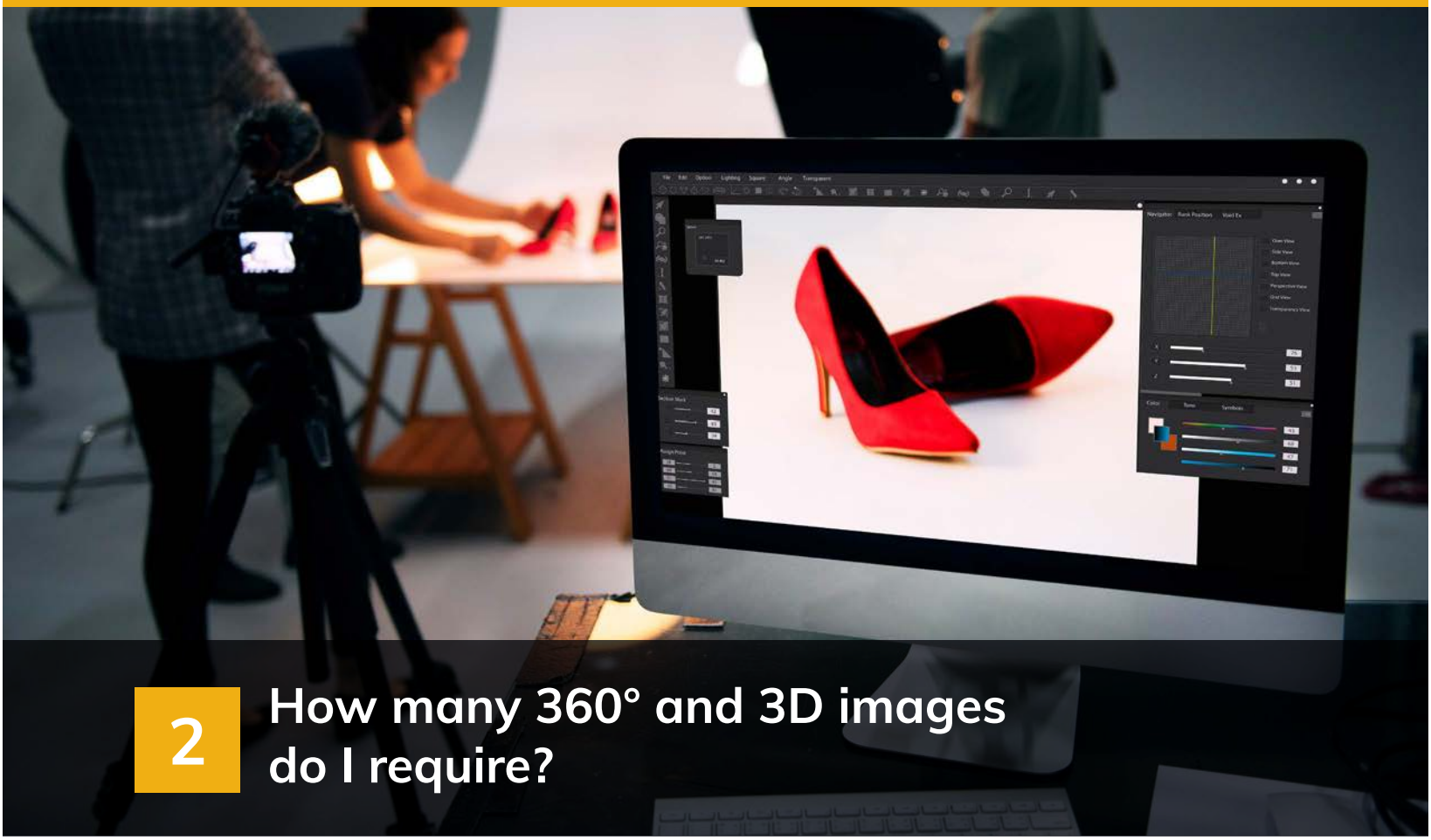
It is important to invest time in this analysis. It will help answer budget, timeline, and logistic questions later.

- **Budget** – still images are less costly to produce than 360° or 3D images. And why spend the extra time and money creating a 360° when still images are more than good enough. Knowing which products need still or 360° / 3D images will make your budgeting easier and more accurate.
- **Timelines** – 360° / 3D image production takes longer than still image production. Categorizing your products as stills and 360°s, you will be able to determine a timeline for the project.
- **Logistics** – understanding the still / 360° breakdown will allow you to plan your project logistics better i.e. in-house or outsource for some or all, equipment and personnel needed.

The process of grouping your products into still and 360°, and 3D images should involve everyone that has knowledge and insight into how your products sell and how your customers buy. Sales, marketing, and production / engineering should be involved.

When you go through this exercise, keep your buyer firmly in mind. How would they want to see your products during the buying process? What type of images would entice them to buy?

Once you have considered all your products, group them by those that require stills and those that require 360°s.



2 How many 360° and 3D images do I require?

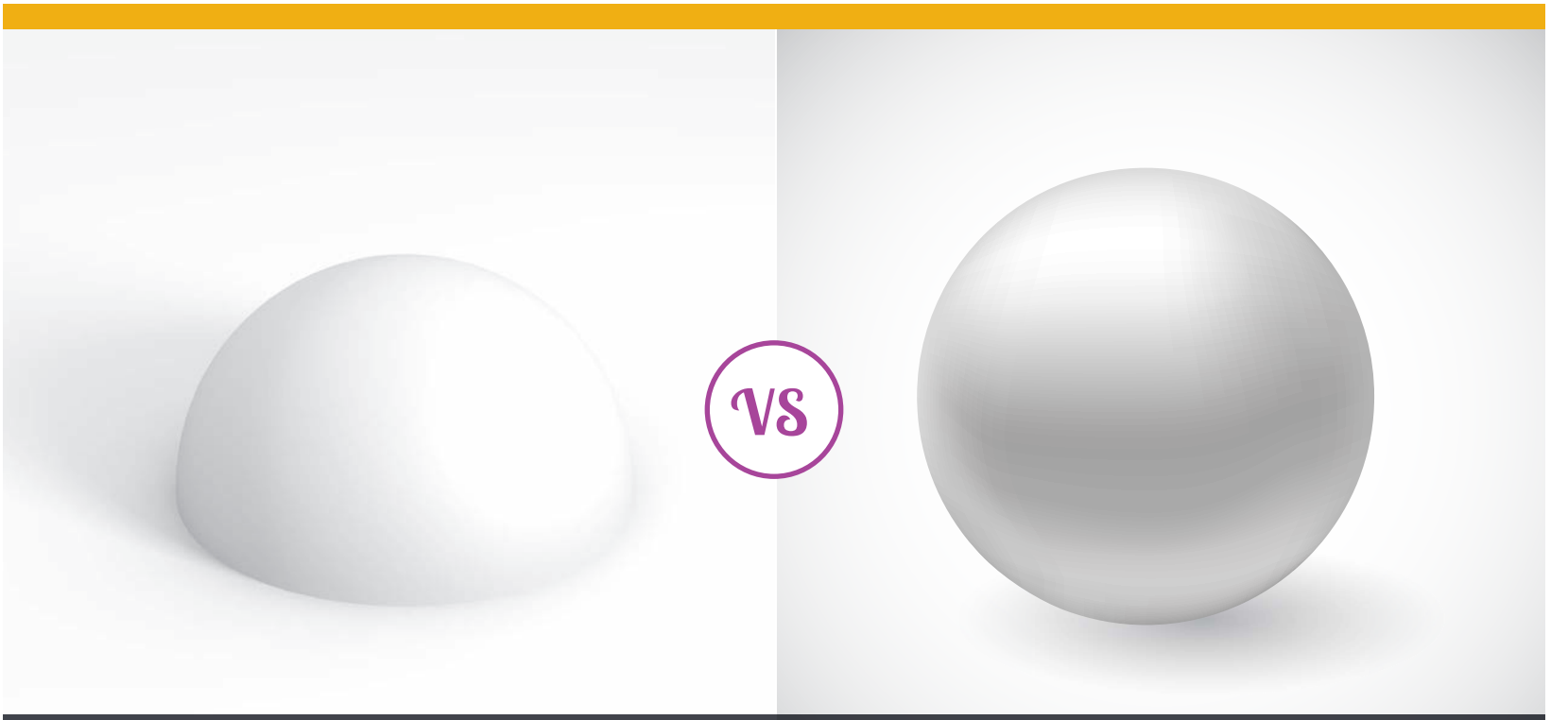
Now that you have analyzed your products and grouped them as stills and 360°s, it is time to determine which products in the 360° group should have 3D images.

A word of caution with 3D images. They involve multiple 360° planes *and* the individual image frames in these planes will likely require editing. This means that the cost of 3D images can be much greater than 360° images. Make sure your reasons for putting products in the 3D group are sound i.e. helps the buyer make a better buying decision.

Once you have reviewed all the products in the 360° image group, you will end up with 2 groups –products that require 360° images and products that require 3D images.

Total up all the products in the 360° group and the 3D group.

Now you have a good sense of the scope of your product imaging project – how many still, 360°, and 3D images you need to produce. This will be key when it comes to budgeting, establishing timelines, and operational logistics.



3 Which products require hemispherical and spherical images?

In question #2, you determined which products you feel require 3D images.

The next step is to review this product list and decide which products should have hemispherical images and which should have spherical images.

For most products, hemispherical images will be enough. For these images you capture multiple 360° planes of one side of the product, often referred to as the northern hemisphere i.e. the top side of the product.

Hemispherical 3D images are more challenging to capture than 360° images because they require more setup time, and, in most cases, the image frames will require editing.

Spherical 3D images involve capturing multiple 360° images on the top side (northern hemisphere) of the product, flipping the product, centering it exactly how it was for the top side, and capturing multiple 360° images on the bottom side (southern hemisphere).

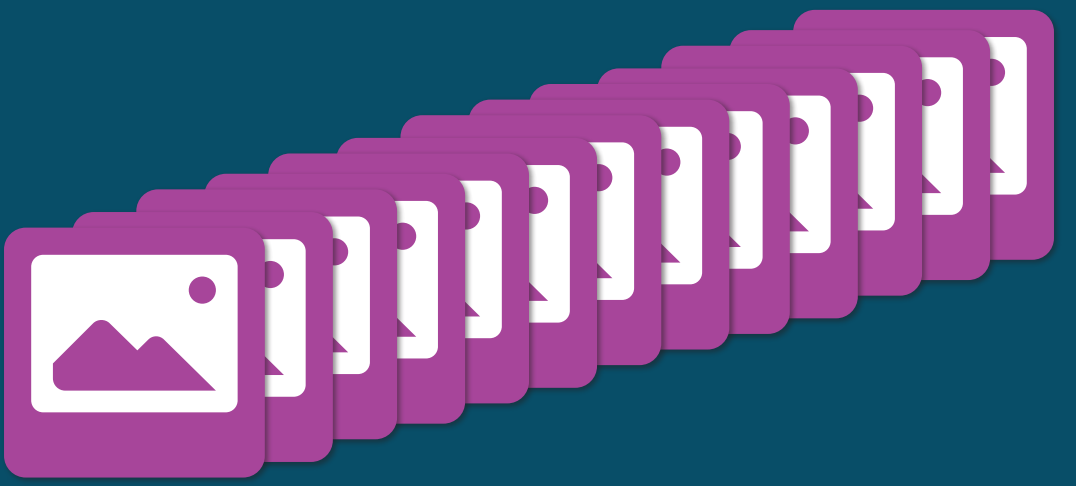
Spherical 3D images are more challenging than hemispherical 3D images because they involve the flip, centering after the flip, and if a prop is involved, matching the exact position and angle as with the top / northern side. In addition, as with hemispherical images, the individual image frames will need editing (and there could be hundreds of them!).

Because spherical images are challenging, time-consuming, and costly, think carefully about which products need spherical images, and which ones will be good with hemispherical images.

When deciding if a product should have a hemispherical or spherical image, ask yourself these questions:

- Are most of the important features of the product on one side? If so, hemispherical is best.
- Are there important product features that would impact sales on both sides of the product? If so spherical is best.

Final note on spherical image - if the product needs both sides photographed BUT it requires tricky / complex propping, reconsider spherical, the setup time and editing time will make it extremely costly and the resulting image will not be as good as you would like.



4 How many frames do I need for each plane in my 360°s and 3Ds?

The more image frames that are in a 360° the smoother it will appear when rotating in the viewer. For example, a 36-frame 360° image rotates somewhat smoother in the viewer than a 24-frame 360°, a 72-frame 360° rotates much smoother than a 36 or 24-frame 360°.

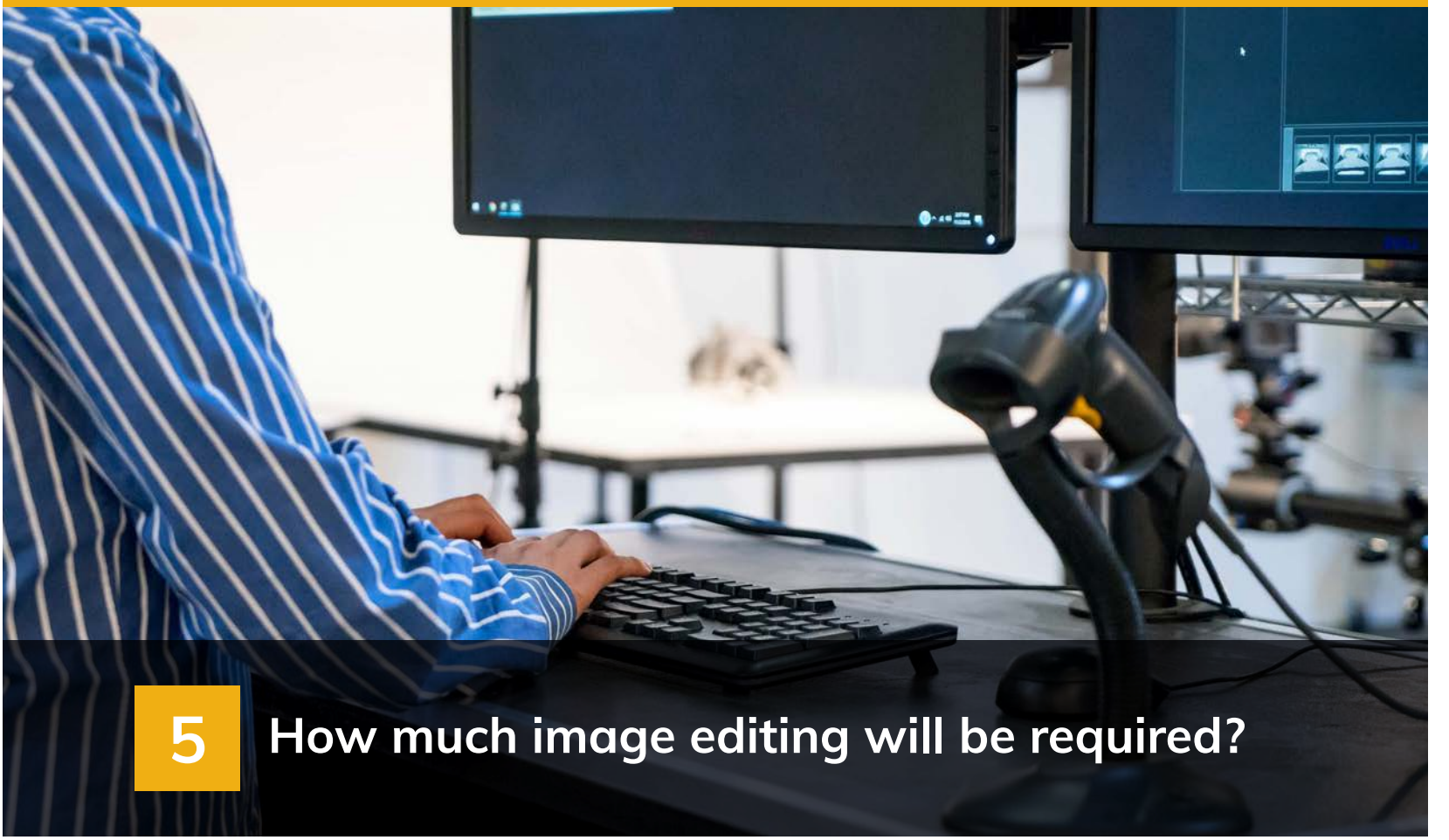
But how smooth do you really need your 360°s to appear in the viewer?

The best way to answer this is to look at it from your customer's perspective. What product images would they want to see? What images will impact the most during the buying process? What would encourage them to buy your product?

For most products, a 24-frame 360° image will be enough – it rotates nicely in the viewer, the customer should not be bothered by any choppiness as it rotates, and the file size is reasonable for fast page loading and distribution to your resellers. The extra time and cost to create 360°s with more frames would not be necessary.

Having said that, some products would benefit from more image frames per 360° i.e. high-priced products, products with a lot of detail.

A general rule, if you do not need a smoother image than you get from 24 frames per 360°, and if more frames would not help sell more products, stick with 24 images per plane.



5 How much image editing will be required?

Editing each image frame in the 360° or 3D image is the most time-consuming and costly part of the 360° / 3D production process. Each image frame needs to be individually opened in Photoshop, the background removed, the product toughed up, and other 'editing' tasks (this can be a long list).

When is editing required?

In some cases, where the product is a consistent color and tone on all sides, and it fits well on the 360° platform without the studio, platform, or equipment showing in the background, a close-to-white background can be achieved straight from the camera. These 360°s look pretty good without editing the image frames.

In other cases, when the product rotates, the lights cause the individual images frames to look different from the ones before or the ones after – some frames are perfect, some frames are a bit blown out, some frames have glares or reflections. If the image frames are not edited, the 360° will not look good as it rotates. The only way to bring up the quality of the 360° is to have the image frames edited.

As a rule, whenever a product is propped or suspended during the pre-photography setup process, all image frames will need to be edited to remove the props and /or suspension lines.

It is possible to analyze your products to determine which will need editing. Separate then into those that will need propping, suspending, and are shinny and reflective. The problem with this task, and why it is not recommended, is that you don't truly know what will have to be done to a product to get it ready for 360° or 3D imaging until you have it at the studio ready for photography. You also will not know how the image frames look until you see the 360° or 3D image rotating on a monitor screen.

In short, predicting which product 360° images will be OK without editing and which will require editing is difficult prior to photography. Once you have positioned the products and captured 360°s of them, the 360°s that need editing will be obvious.

For budgetary and timeline purposes, and to avoid a ton of speculative work prior to photography, I would use a 60/40 rule – 60% of the 360° images will require editing and 40% will not.

6 Which product viewer should I use?

Before you answer this question, make sure you really need a viewer (not every business does, but most do!).

If you plan on displaying 360° images on your website(s) you must have a viewer – it is the only way your 360°s will show online.

If the main reason you are producing 360°s is to send them to your customers and resellers (i.e. you are a manufacturer) you may not need a viewer as your resellers will have their own viewer and therefore will only require the image frames sent to them.

Regardless of your business – retailer / e-tailer, distributor, or manufacturer – you more than likely need your own viewer.

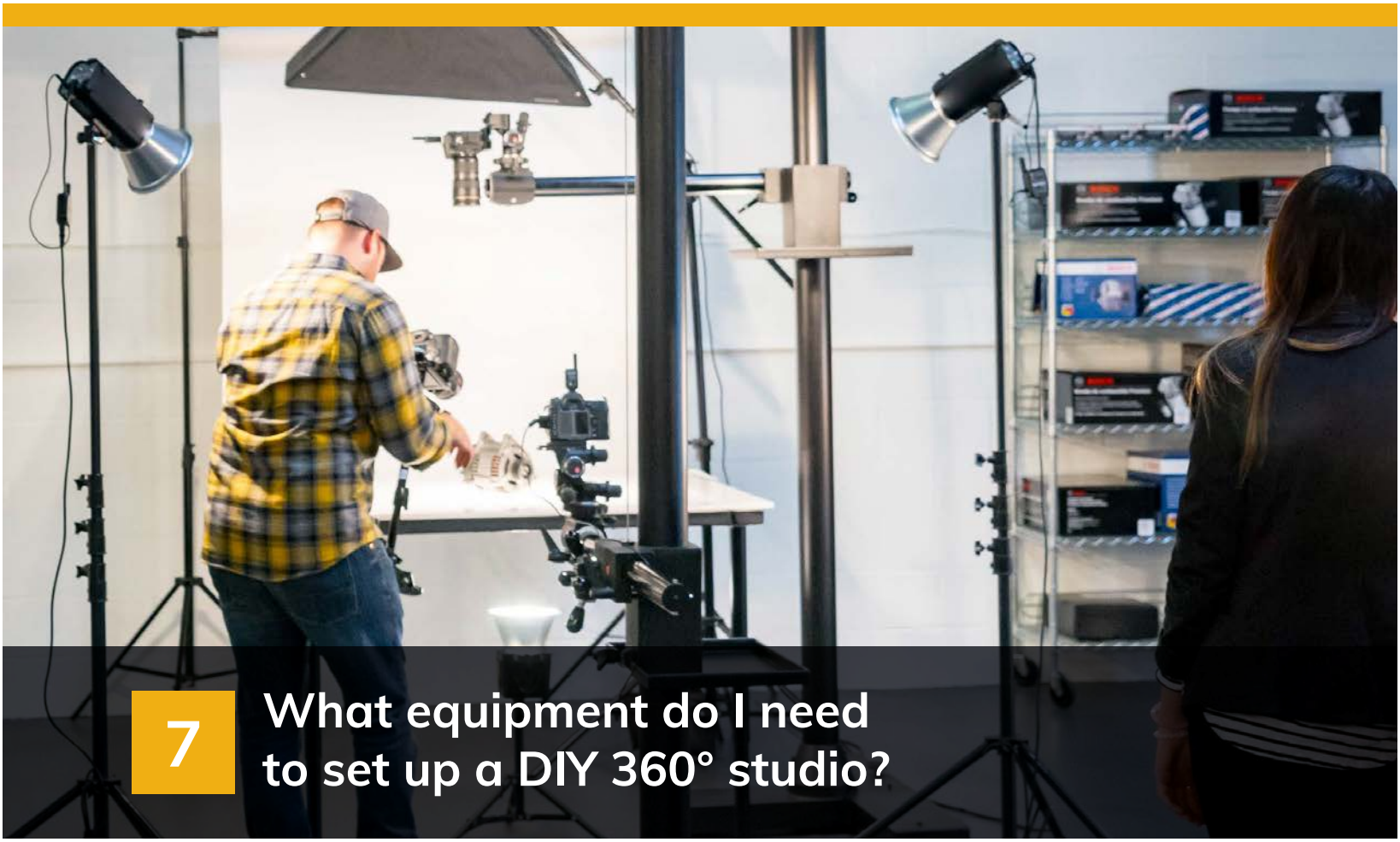
There are many viewers on the market. Some have limited functionality, some are feature-rich, some play on only specific devises and browsers, some play on pretty much everything.

Look for a viewer with strong functionality and that can play on everything and everywhere. After all, you are investing significantly in 360° images, you want potential customers to view and interact with them regardless of the device they are on or the browser they are using.

We do not get into reviewing or mentioning viewers in this eBook, but the best way to search for potential viewers is to search online.

Look for a viewer that:

- Has HTML5 capabilities – this will allow you 360° / 3D images to play on almost any device and browser.
- Is customizable – so you can change the look of it to match your brand, website, and how you want your customers to interact with the images.
- Can play both 360° and 3D images.
- Loads fast on the page.
- Provides flexibility on the extent that the customer can zoom into the product.



7 What equipment do I need to set up a DIY 360° studio?

The first series of questions focused on defining the scope of your product photography project.

- How many still, 360°, hemispherical 3D, and spherical 3D images you need.
- How much image editing do you think you will need to do.

This information not only defines the type of images you will need to produce and how much editing will be required, it tells you what equipment you need.

When you are planning on setting up an in-house DIY photography studio, you need to get equipment that covers all your needs. Still photography equipment is different than 360° equipment, which is different than 3D imaging equipment.

The extent of image editing you forecast will dictate how many image editing stations you will need.

Here is a very high-level description of typical image production equipment required based on the image production you estimate.

Still Images

- Standard photography table
- Strobe lights, stands, and softboxes
- Camera and lenses
- Camera stand and gearhead
- Computer and software

360° Images

- 360° photography platform
  - This can be an open turntable or an enclosed lightbox
- Strobe or continuous lights, stands, and softboxes
- Camera and lenses
- Camera stand and gearhead
- Computer and software

3D Images

- Everything required for 360° images
- 3D imaging arm
  - This can be an arm that articulates over the product at programmable angles with a single camera or a stationary arm with multiple cameras set at specific degrees and angles over the product

Image Editing

- Desk and chair
- Computer for intensive image editing
- Multiple monitors and a monitor calibrator
- Image editing software – Photoshop is the industry standard

These lists give you a very high-level view of the equipment you may need based on the type of images you will be producing.

It is important to note that if you need still images as well as 360° and / or 3D images, you can get away with having one studio – a 360° or 3D studio that you can also capture still images on. This is the best way to go and not difficult to setup. This approach will save you money purchasing equipment, space in your warehouse, and resources to operate the studio.

From the list of products, image types, and an estimate on the image editing required, you can come up with a list of equipment you need. From this list you can create a budget.

8 What resources do I have / need to operate my DIY / in-house studio?

If you are going to do your product photography in-house you must put together a team of resources with the expertise to produce high-quality product images in the timelines set out in your project scope.

These resources will either come from your existing staff or you will need to hire them.

Here is a list of resources you may need to consider:

- **Photographers** – make sure they have product photography experience, preferably experience with 360° and 3D photography. This is BY FAR your most important resource, and the one that is hardest to find.
- **Photographer assistants** – these resources help prepare products for photography, and package them up after photography is completed. This could be an existing employee that is familiar with your products.

- **Image editors** – they should be advanced users of Photoshop and have extensive experience editing product images. They have a big impact on image quality and therefore are very important resources.
- **Project managers** – for most in-house photography programs, project managers come from the marketing or digital asset management departments.
- **Warehouse support staff** – products will need to be pulled from inventory, brought to the photography studio, and returned to inventory or packaging after photography. Typically exiting warehouse staff handle this.

The team required to operate your DIY studio depends on several factors including:

- **Your products** (their size, weight, work required to get them 'photography ready')
- **Your timelines** - the daily production rates required (the higher the production required the more resources it will take to meet that production).

9 Do I have adequate space to operate my DIY studio?

The space required to operate your in-house photography studio efficiently depends on many of your answers to the previous questions.

The **image types** you require - still, 360°, and 3D images – will dictate the equipment you need.

The **equipment** you need will impact the space you require to operate this equipment efficiently.

The **production rates** required to meet your timelines affect the equipment you need, and the space required to operate the equipment. For example, you may realize that to meet the daily production rates defined in your project scope, you need two 360° studios and one 3D studio. You need to plan space accordingly.

When you are planning the space you need for your DIY studio, you should consider more than the footprint of the photography station itself (the table, lights, stands, computer etc.). You will need space to stage the products to be photographed and store them after photography before they are picked up and returned to inventory by the warehouse staff.

You should also consider where you will do the image editing. There are several approaches here.

You could have these 'editing' stations right beside the photography (pros and cons to this approach) or in an office or different location somewhere. You could also outsource the image editing process completely (which means no space required).

A general rule of thumb is that for a photography studio (excluding editing stations) to operate efficiently, 300 or more square feet is required.

10 What services providers can I outsource my 360° image production to?

Your options for outsourcing to a service provider depends on the scope of your project.

If your project involves mainly still images, the quantity is low, and the production timelines are flexible, there are several outsource avenues like small local or remote photography studios that should be able to handle straightforward product photography projects.

When it comes to large scale, high-volume still and 360° and / or 3D imaging projects, your selection for outsourcing is more limited.

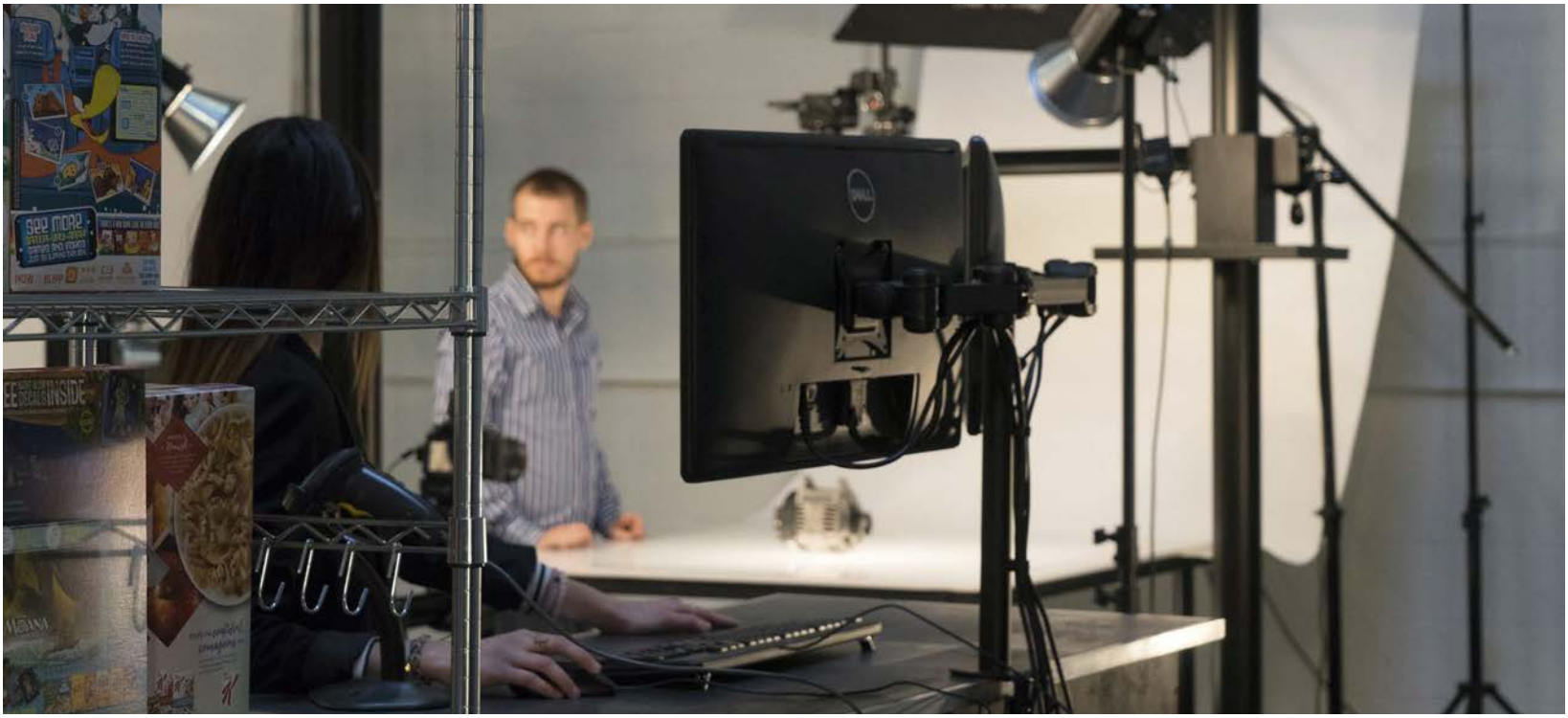
There are not too many photography studios that can handle large scale still imaging projects with high daily production rate requirements.

Similarly, there are not too many photography studios that are set up for all types of 360° and 3D photography and image production. The odds of one of these studios being in your city is slim to none. You would need to plan on shipping your products to the service provider.

Other than finding a studio that can accommodate your image requirements (360° and 3D), you will also need to find a provider that can accommodate your specific products. If your products are large or heavy the studio would need to have 360° equipment that can handle these types of products. If your products need suspending, the service provider would need to have equipment that can suspend products while capturing 360° images (not all studios have this type of equipment).

When sourcing service providers to outsource your 360° / 3D photography project vet them to ensure that they can accommodate:

1. **Your imaging requirements**
2. **Your deadlines**
3. **Your products**



11 How much do I need to budget for my 360° product photography project?

There are many factors to consider when creating your 360° product photography budget including the type of images you need, the characteristics of your products, the resources you need for your project, the equipment you need to purchase, and shipping products to a service provider's studio.

Although these factors are important, the approach you take to produce the images – DIY or outsourced – is by far the most important factor to consider.

Let's look at sample budgets for both DIY and outsourced.

DIY / IN-HOUSE SAMPLE BUDGET

When you are budgeting for a DIY / in-house project, the most important things to consider are:

- The total number of images, by type, that need to be produced – this will tell you what you need to invest in equipment.
- How long – in days or months – the images will take to produce – this will tell you how long you need to pay your resources.

Here are some broad guidelines on the cost of resources:

Photographer **$25 - $30 / hour**	Some photographers will ask for a day rate, some will work for less than $25, and some may ask for more than $30 – it all depends on their skills and experience and the location. If your project is long-term, you can consider hiring a full-time photographer for $3,500 to $5,000 / month – this will vary based on their expertise.
Photographer Assistant **$12 - $16 / hour**	These resources do not require experience, are not too costly, and can be budgeted as needed.
Image Editor **$18 - $20 / hour**	Image editing for 360°s is your most expensive budget line item (assuming all the image frames require editing). This will vary depending on your local workforce. If your project is long-term, hiring full-time editors may be more economical - $2,500 to $3,500 / month is reasonable. You could outsource the editing to overseas editing houses or a service provider. The cost per image will range greatly from $0.25 to $1.00.
Warehouse Helper **$12 - $20 / hour**	These resources are warehouse staff and already on the payroll. Budget around $16 / hour and up.
Project Manager **$30 - $50 / hour**	This resource is also usually on staff (i.e. digital asset management, marketing manager). The project will be added to their responsibilities.

Here is a sample budget for a project that is estimated to be 2,000 products, average 40 products / day photographed, 360° and 3D images, average 36 frames / product, all images - 72,000 total – to be fully edited, project duration is 50 days:

ITEM	PRICE
EQUIPMENT	
360° (platform or lightbox)	$15,000
3D (articulating arm)	$20,000
Studio (lights, stands, camera, lenses etc.)	$15,000
RESOURCES	
Photographer (@ $25 / hour) – 1 resource	$10,000
Photography Assistant (@ $14 / hour) – 1 resource	$5,500
Image editors (@ $20 / hour) – 7 resources	$57,500
Warehouse staff (@ $18 / hour) – 1.5+ hour per day	$1,500
Project Manager (@ $40 / hour) – 1.5+ hours per day	$3,000
TOTAL - EQUIPMENT	**$50,000**
TOTAL - RESOURCES	**$77,500**
TOTAL PROJECT COST / 360° IMAGE (not including equipment)	**$38.75**

OUTSOURCED

The cost structure for outsourcing to a service provider is very different than with DIY.

With outsourcing, you do not need to hire resources or manage all project details.

You need warehouse staff to prepare your product for shipping and to return them to inventory once they are ship back from the service provider.

You need a project manager to communicate throughout the project with the service provider regarding logistics, image quality and product issues. The project manager will also be responsible for reviewing images as they are produced.

Warehouse Helper **$12 - $20 / hour**	These resources are warehouse staff and already on the payroll. Budget around $16 / hour and up.
Project Manager **$30 - $50 / hour**	This resource is also usually on staff (i.e. digital asset management, marketing manager). The project will be added to their responsibilities.

Let's look at the same example as we did with the DIY scenario - 2,000 products, average 60 products / day photographed, 360° and 3D images, average 36 frames / product, all images - 72,000 total – to be fully edited, project duration approximately 35 days. Note that the daily production rate is 60 when outsourcing and 40 when DIY. This is due to the service providers experience, operational workflows, and expertise.

ITEM	PRICE
EQUIPMENT – no equipment required	N/A
SHIPPING – to and from the providers studio	$5,000
RESOURCES	
Warehouse staff (@ $18 / hour) – 30 hours total	$600
Project Manager (@ $40 / hour) – 1.5+ hours per day	$2,100
360° / 3D IMAGE PRODUCTION – average / image $38.00	$76,000
TOTAL - EQUIPMENT	**N/A**
TOTAL - SHIPPING	**$5,000**
TOTAL - RESOURCES	**$2,600**
TOTAL – 360° / 3D IMAGE PRODUCTION	**$76,000**
TOTAL PROJECT COST / 360° IMAGE	**$41.80**

When you compare the DIY to Outsourced approach, the difference is approximately $3 / 360° image. Not much when you consider that with outsourcing the project is done faster, you don't need to hire and manage a team of resources, you don't need to purchase expensive equipment, and you can focus on growing your business without worry about product photography.

12 What timelines do I need to meet?

Product images, both still and 360°, are used by your ecommerce, sales, and marketing departments. Each one of these groups will have different timelines for when they need the images. After you have consulted with them, determine when you need to have the product imaging completed.

When you are working with a service provider, they are designed to accommodate your product, images, and timeline needs.

But when it comes to timelines and DIY product photography, there is more to consider.

Here is the process to come up with a DIY timeline:

- Factor in time to source your equipment, set up your studio, and hire and train your resources. To be safe, plan on at least 4 weeks.
- Earlier you determined 1) the number of products that need photography, and 2) the products that need still, 360°, and 3D images. From these numbers, estimate the average daily production rates you think you can achieve for each image type.
- Take the total number of images, factor in the expected daily production rates, and come up with a date when you think the project will be completed.

Always add a buffer, Murphy's Law plays havoc with product imaging project – what can go wrong will go wrong - plan accordingly!

The quality of your equipment and resources as well as the characteristics of your products (size, weight etc.) will impact production rates considerably.

Here are some general production guidelines for DIY studios – these will help you plan your timelines.

Image Type	Product Type	Daily Image Production
Still Images	Products (standard)	150
Still Images	Products (moderately difficult)	120
Still Images	Products (challenging)	80
360° Images	Products (no propping or suspending, not heavy or large)	60
360° Images	Products (propping required, moderate size and weight)	50
360° Images	Products (suspending required, moderately difficult)	30
3D Images	Products (no propping or suspending, not spherical)	50
3D Images	Products (propping required, not spherical)	40
3D Images	Products (spherical)	30

With your image types, and the number of images required for each type, you should be able to take these VERY GENERAL daily production rates and come up with the number of days your project will take to complete and hence a project end date.

GLOSSARY

22

22 Terms You *Need* to Know

360° / 3D Product Photography

360° product photography is a process of capturing a series of still images, at specified degree intervals, on specialized equipment that rotates the product on one or more planes / axis. The images are edited and formatted according to the specifications of the 360° viewer they will play in. The buyer / consumer interacts with the viewer to rotate the product and zoom into areas of interest.

360° Product Image

A 360° product image is a series of still image frames of a product, captured by a single camera in sequence, at specified degree intervals, using 360° product photography equipment, while the product is rotating on a single plane or axis. When the images are played in viewer software, the buyer / consumer can rotate the product along the plane / axis that it was photographed on.

3D Product Image

A 3D product image is a series of still image frames of a product, captured by one or more cameras in sequence, at specified degree intervals, using 3D product photography equipment, while the product is rotating on more than one plane or axis. 3D images can be hemispherical or a spherical (definition below). When the images are played in viewer software, the buyer / consumer can rotate the product along all planes that it was photographed on.

Image Frame

An image frame is a single image of a product captured at a specific degree on a plane or axis with the camera set at a specific angle to the product. A 360° product image can have as few as 8 image frames and as many as 360°.

Plane

A plane or axis refers to a single rotation of the product on the 360° photography table. For each plane, the camera is set at a specific angle to the product and a specified number of image frames are captured as the product rotates. 360° images have a single plane, 3D images have multiple planes.

Hemispherical Images

A hemispherical image is a 3D image comprised of a series of 360° images of a product that were captured on more than one plane of one side of the product. With hemispherical images, the product is not flipped, and the other side photographed.

Spherical Images

A spherical image is a 3D image comprised of a series of 360° images of a product that were captured on more than one plane of the top and bottom side of the product. With spherical images, the images on multiple planes on the first side are captured, the product is flipped and positioned, and the images on the multiple planes of the second side are captured.

Northern Hemisphere

The side, area, or half of the product that is photographed first is referred to as the northern hemisphere. For example, if you capture a set of images on 4 planes, these 4 planes would represent a 3D image of the product's northern hemisphere.

Southern Hemisphere

The side, area, or half of the product that is photographed after the northern hemisphere (the first side, area, or half of the product) is referred to as the southern hemisphere. For example, after you have captured the images for the planes of the product's northern hemisphere, you flip the product over, position it on the platform, and capture the images for the planes of the product's southern hemisphere.

360° Image Viewer Software

A 360° product viewer is a software application that plays in a browser and allows the buyer / consumer to interact with the product by rotating and panning to view it from multiple angles, and to zoom into areas of interest. HTML code on the webpage loads the viewer and the viewer loads the individual image frames. Both the viewer and the images reside on the web server. The viewer has functionality and settings that control how the 360° image is displayed and how the buyer / consumer can interact with the product.

360° Equipment Software

360° or 3D equipment comes with proprietary software that operates the camera and 360° platform. The number of image frames per plane and the number of planes (for 3D images) are entered in the software prior to rotating the product. The software moves the platform at the specified degree intervals and fires the camera shutter. It does this for each image frame on each 360° plane. In the case of 3D images with a single-camera arm, once all the images from the first plane are complete the software will move the 3D arm to the next position over the product to capture the image frames for the next plane, and so on. In the case of 3D images with multiple cameras on a stationary arm, the software will rotate the product on the platform at specified intervals and fire all cameras simultaneously at each interval. Some 360° equipment software also has functionality to adjust camera settings and to edit and format images.

Product Angle

The product angle is the angle that the product is positioned on the 360° photography platform as it faces the camera.

Camera Angle

The camera angle is the angle, in degrees, that the camera is positioned when the images are captured.

Image File Name

The name for the image frames is defined in the 360° equipment software prior to capturing the 360° or 3D image frames. For example, image naming convention may be defined as: the product number with a '_' followed by the image sequence number (i.e. 123456_01, 123456_02, 123456_03).

Image Resolution

The image resolution is the height and width in pixels of the image i.e. 6000 pixels x 4000 pixels.

Image File Size

The image file size is measured in either KBs or MBs. 360° and 3D images are made up of many individual image frames. The size of the 360° or 3D image is the total of the size of all the individual image frames. The total file size of all the image frames can become substantial depending on the quality settings of each image frame (see definition below) and the number of image frames in the 360° or 3D image. For example, a 3D image with 5 planes, 36 images / frame, each image file size averaging 500KBs, will have a total image count of 180 and a total file size of 90MBs.

Image Quality Setting

Image Quality is a setting in Adobe Photoshop that allows you to set the level of quality for the image. The settings are low, medium, high, and maximum. The Image Quality setting has a significant impact on the file size of the image frame and therefore the overall 360° / 3D image file size. For example, an image set at High quality setting is 38% as large as the same image set at Maximum quality. The quality difference between an image set at Maximum compared to an image set at High is imperceptible by the human eye. It is recommended that to facilitate fast load times (see definition below), images should not be saved at a Quality Setting higher than High.

Load Time

Load time refers to the time it takes for the 360° or 3D image to load in a browser for the consumer to view. The larger the individual image files are, and hence the larger the overall size of the 360° or 3D file, the longer it will take to load in the browser. Some viewers require 2 sets of images, a low and high resolution set. The viewer will load the lower resolution image set first allowing the consumer to interact with the image as quickly as possible. The higher resolution images are loaded immediately in the background ready for when the consumer chooses to zoom into the product (zooming requires high resolution images).

Product Propping

When a product does not balance on the 360° platform naturally at the angle you want it to be facing the camera, the product will need to be propped. Propping involves placing props like putty or plexi blocks under the product so it balances and is positioned at the desired angle to the camera.

Product Suspending

When propping does not allow the product to be positioned at the desired angle to the camera (due to product characteristics, weight, or size), the product will need to be suspended. Product suspension involves using various types of line or wire to hang the product from an overhead apparatus. This apparatus will need to rotate at the intervals defined in the 360° photography software. Suspending products requires specialized 360° equipment and is extremely challenging and time-consuming.

Image Editing

Images that have undesirable shadows, uneven backgrounds, blown out areas, reflective glares, or visible props or suspension lines, will require editing. If the image frames are not edited the 360° image will look inconsistent when it rotates in the viewer and will give the consumer a poor impression of your product. Editing the image frames typically involves creating a clipping path around the product, turning the background to white, and retouching the image to account for imperfections, visible props and suspension lines, and glares. The editing is usually done in Adobe Photoshop.

Image Background

For 360° or 3D images, the background is usually referred to as ‘straight out of the camera’, which means the images are not edited at all, or ‘edited’ which means each image frame goes through a formal editing process to remove shadows, create a white background, and retouch the images as per quality requirements.

Visual SKUs

www.visualskus.com

HEAD OFFICE

100 Exchange Drive, Suite 5
Brampton, Ontario, Canada
L6S 0C8

US OFFICE

26395 Northline Commerce Drive, Suite 602
Taylor, Michigan, USA
48180

1-888-447-0918

success@visualskus.com