ToPa 3D

THE RIGHT TOOLS

FOR THE JOB

When choosing the right tools for a capture or documentation project there are a few items you may want to consider when you're executing reality capture.

In this eBook we are going to cover these considerations and help you to make the right tool selection for your next project.

QUESTIONS TO ASK ABOUT THE ENVIRONMENT:

Is it wet? is it raining outside? or is it dry or extremely hot? Is it indoors or outdoors? Is there repeating geometry of the subject matter? Is the area to be captured very large and open, or small and confined? These factors can determine whether you use 3D laser scanning or photogrammetry.

For example, Photogrammetry uses a sequence of photos to reconstruct a 3D representation of a place or object while 3D laser scanning by its very nature uses an emitted light source (a laser) which, depending on the wavelength of the laser, may not be able to return information off of water or wet areas.

Therefore, it's essential to know your equipment operating parameters and to understand that your environment can have adverse effects on your data.

# ACCURACY, PRECISION AND OTHER LINGO.

Sara McCubbins, a chemistry educator says it well;

"Accuracy refers to how close a measurement is to its standard or known value. Precision refers to how close two or more measurements are to each other, regardless of whether those measurements are accurate or not. It is possible for measurements to be precise but not accurate"

Defining whether the final reality capture image or model is going to be simply a visual representation of reality, whether it will have measurable characteristics, or perhaps both, should drive the decision on what type of reality capture technology you'll be using for the project.

Simply defining what a client means by the terms and proposed scope of work they are using can ensure the best possible reality capture product.

Speaking the same lingo will ensure that you're on track with meeting the expectations of your client.
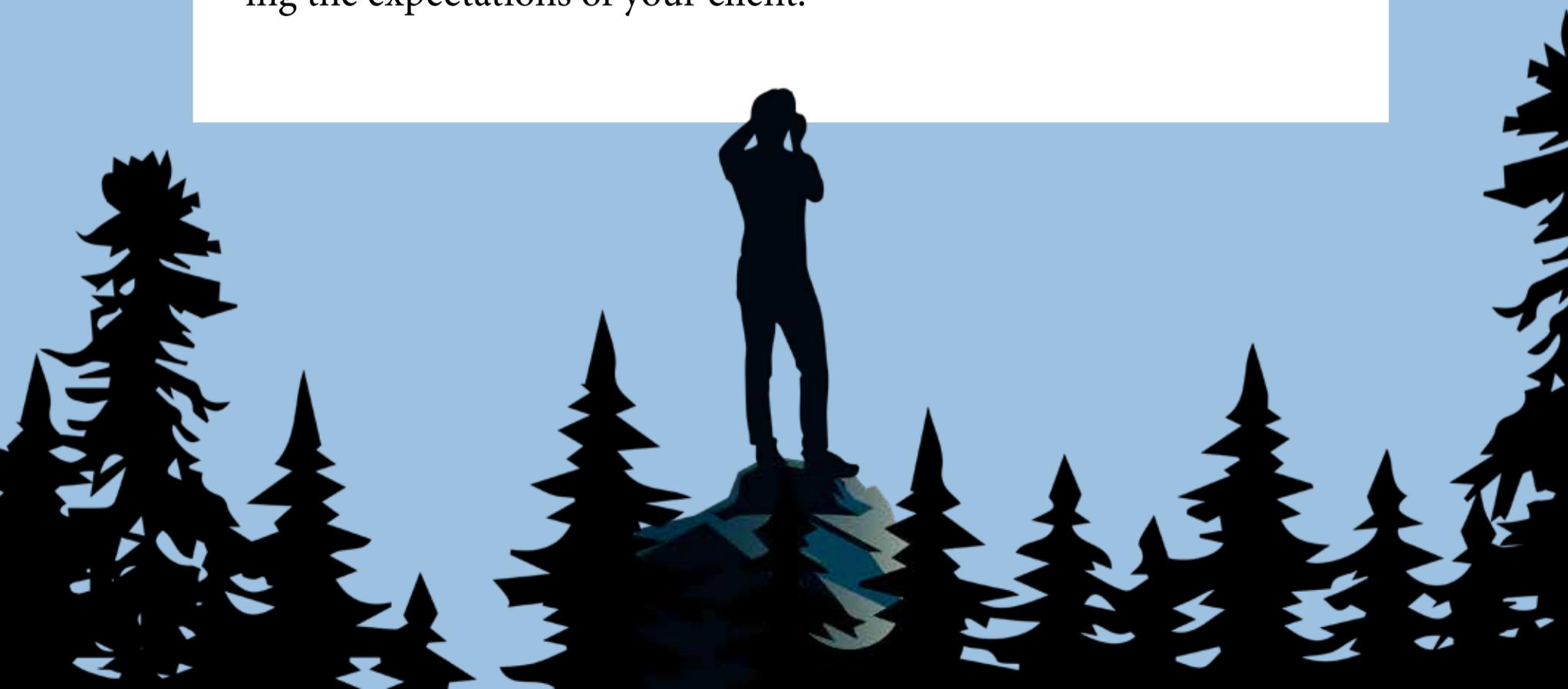
MULTIPLE RETURNS:
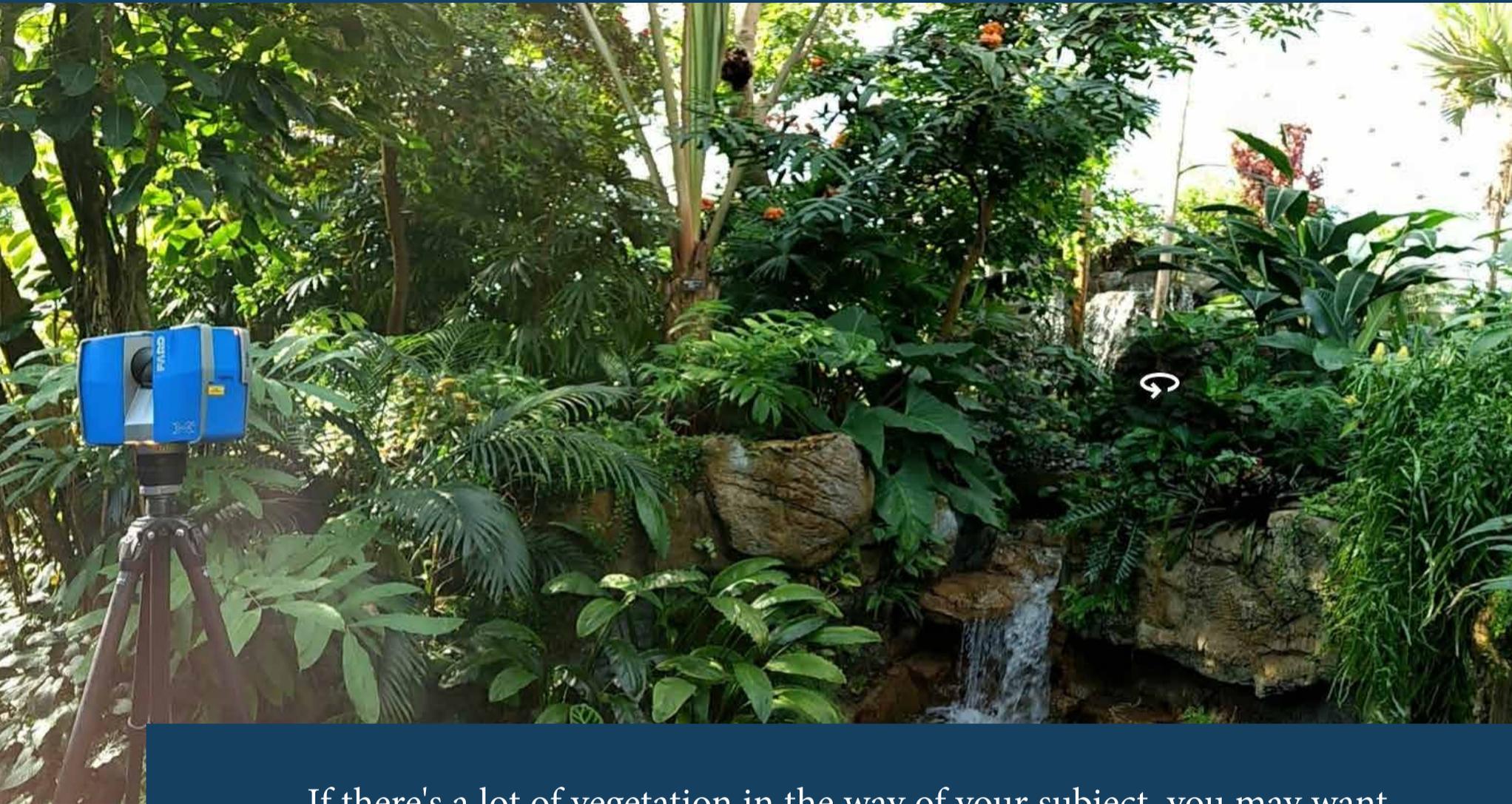
If there's a lot of vegetation in the way of your subject, you may want to be using LiDAR (Light Detection and Ranging) which will give you the ability to penetrate vegetation and at least return some information about your subject, regardless of shadows or the wind blowing the leaves, causing blur or poor images.

This tool might be advantageous when producing a topographic map.

But with photogrammetry, the result may not offer the resolution or level of detail you need for the subject you are attempting to capture.

Photos of vegetation can often result in a mesh model that results in putty-like, globular shapes, unless you have a large number of photos in ideal non-windy conditions from multiple vantage points.

Even so, laser technology is typically best to obtain geometric data through small openings in vegetation.

SPEED OF DATA COLLECTION
AND PROCESSING

This is often a critical factor when choosing the right tool for a reality capture project.

Does the client need a quick turn-around or do they need data that is highly accurate?

Some reality capture instruments can produce results very quickly in the field and some are much slower in the way they collect data.

Generally speaking, the slower the instrument and post-processing workflow, the higher the level of precision it can deliver.

In contrast, photogrammetric or mobile laser scanning workflows for example are faster, but at the cost of measurable precision.

Depending on the project, consider blending multiple technologies together, using fast reality capture instruments for the large areas and slower instruments and workflows for the areas that are the most critical for precision.

VISUALIZATION

⌄

Projects might entail simply representing beauty, visual accuracy, or photorealism.

Producing data for visualization may require a high level of accuracy to replicate the environment for the sake of producing an animation or rendering that tells a story, or engages people in a specific way to deliver a message that is memorable and clearly understood.

How do we receive, visualize, or generally use Reality Capture data? What will the data be used for and what software will be used to achieve this goal?

It's important to consider how the client will receive large Reality Capture datasets, and to cater to them as much as possible.

So, consider converting the data into a usable format that will work best for them.

CONCLUSION

Do you have questions about what tools to use for your company?

At Topa 3D we are here to help with all of your reality capture needs!

info@topa3d.com · 503-333-0314