Can you use the iPhone/iPad for your Engineering projects?

With all of the new technologies emerging, the landscape can look confusing for most. Even those seasoned with LiDAR find themselves questioning the lower cost options. There have now been many studies and to save time, we have compiled some of the results.

We have included the sources at the end of this for more detailed information of data capture, registration procedures, etc. The purpose of this is to Recap and only show conclusions.

CLOUD TO CLOUD COMPARISON

(1) Terrestrial Scanner vs. iPhone 12pro vs. Photogrammetry for a Maximum space of 5m x 5m
Using terrestrial data as the reference with a registration Mean Scan Distribution Error of 2.28mm.
The iPhone 12Pro and Polycam App had 62% of its points fall within 25.4mm of the terrestrial scan data.
Recap Photo using 700 images had 78% of points fall within 25.4mm of the terrestrial scan data.
Pix4D and 700 images had 90% of its points fall within 25.4mm of the terrestrial scan data.

It is important to note that while 62% of the points from the iPhone 12 pro fall within 25.4mm, There is a large spike outside of the 63.5mm range. These points would be considered trimming errors and boundary errors and could be cleaned to zero to accurately match.

The iPhone's lidar capturing capability is powerful, accurate to a couple cm, and offers the investigator the quickest method of 3D data acquisition. However, it must be noted that each capture of the scene is variable depending on the care taken by the user and accuracy can exceed 10% so it is a good idea to have secondary checks and measurements. We would not recommend for projects larger than 2m x 2m x 2m or for commercial use. See the comparison chart below for 3D Scanner comparisons.

REFERENCE

(1)ACCURACY COMPARISONS OF IPHONE 12 PRO LIDAR OUTPUTS by ROBERT NEWTON GILLIHAN B.A., B.B.A., New Mexico State University, 2000 B.A., Art Institute of Colorado, 2008