

[Volume XXXVIII-5/W16](#)

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXVIII-5/W16, 377-385, 2011
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XXXVIII-5-W16/377/2011/
doi: 10.5194/isprsarchives-XXXVIII-5-W16-377-2011
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COMPARING TIME-OF-FLIGHT AND PHASE-SHIFT. THE SURVEY OF THE ROYAL PANTHEON IN THE BASILICA OF SAN ISIDORO (LEÓN)

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Keywords: Scanner comparison, accuracy, inspection, polychromies, translucency, apparent micro-relief

Abstract. The appearance of the Terrestrial Laser Scanners or 3D Scanners in Heritage recording has been relatively recent and it is submitted to a constant evolution determined mainly by the big technological advance in fields like Optics, Signal Processing, Electronics and Computer Science. As they have become popular so suddenly, it is essential to study the behavior of these evolving devices in a variety of scenarios to support an accurate assessment of their capabilities.

Until two years ago, TOF (time-of-flight) and PS (phase-shift) technologies could hardly be considered side by side comparable, at least under equal terms and requirements. The first enables much longer ranges, while the latter dominated the short distances producing more accurate data with very high acquisition rates. Today, in a sort of convergent career, the scope of phase-shift technology has grown to near 200 meters and the time-of-flight team have been increasing their speed to figures as 100,000 points per second. In this article we expose the results of the comparison between the data delivered by two scanners based on the two related technologies that categorize today's both long and medium-range scanners. The two have been opposed face to face in the survey of the so called "the Sistine Chapel of the Spanish Romanesque" during the same day, and under the same environmental conditions, using equivalent capture settings.

But now that as we noted these technologies can fight in the same arena, can we claim to be able to produce similar results whatever which one we choose? The answer is "no" or a "conditioned yes" at least. Let's leave numbers and nominal specifications behind and see what else makes them behave so differently.

[Conference Paper](#) (PDF, 2969 KB)

Citation: San José Alonso, J. I., Martínez Rubio, J., Fernández Martín, J. J., and García Fernández, J.: COMPARING TIME-OF-FLIGHT AND PHASE-SHIFT. THE SURVEY OF THE ROYAL PANTHEON IN THE BASILICA OF SAN ISIDORO (LEÓN), Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXVIII-5/W16, 377-385, doi: 10.5194/isprsarchives-XXXVIII-5-W16-377-2011, 2011.

