

Terrestrial 3D Laser Scanning to Rebuild Son Doong Cave

Vu Nguyen Dang, Phong Minh Nguyen and Binh Thanh Nguyen Thi (Viet Nam)

Key words: Laser scanning; "3d scanning son doong cave"

SUMMARY

Son Dong Cave – The World Most Largest Cave (announced by cave founder at Quang Binh province) was found in 1991 by a local forester named Ho Khanh and then in 2009 an expert caving team from England made a trip in order to re-locate and measure Son Doong cave dimensions. The name “Son Doong Cave” means “Mountain River Cave”.

In 2014 – 20135 a team included Vietnam Television VTV and ANTHI VIETNAM Co., Ltd. made another trip to Son Doong Cave to again measure and redraw the cave in 3D model and also redefine and calculate shape, dimensions, volume by mean of using cutting edge technologies such as 3D laser scanning, high accuracy laser rangefinder, software processing, high definition (HD) recorders for filming and documentation purposes etc.

After 8 days inside the cave, nearly 95% of the cave already scanned by 03 scanners included 01 Leica ScanStation C10, 01 FARO FOCUS3D X330, 01 FARO FOCUS3D 120. High quality and high definition video clips archived by UAV recorders and cameramen. Base on collected set of data, deliverables created for many purposes of application and one of many deliverables is detail statistic numbers, re-build real shape of Son Doong Cave in 3D form, supplied data for researchers.

Total scanned distance was nearly 5,000 meters, the highest point up to 300 meters, the widest point up to 170 meters, detail of the cave reconstructed at high accuracy and detail (even in 3D film to view with simple red-blue glasses). Results of survey also illustrated that modern survey equipment and software may change the way surveyors and cartographers works and it can be really useful in terms of overhaul many difficulties that traditional survey methods may face.

Bring Son Doong Cave to FIG Working Week Helsinki 2017, we would like to officially introduce

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the cave in different way from point of view of survey and mapping and we also want to encourage young surveyors and cartographers think about future, thinking about modern technology and new ideas to implement in many potential applications of life. FIG Working Week Helsinki 2017 delegates and audiences will have a chance to see the cave in advanced before a real trip to be here.

Intended to bring to FIG Working Week Helsinki 2017:

- Son Dong and Hang En caves presentation;
- Son Dong most attractive video clip (terrestrial and UAV taken);
- 3D film to view with red – blue glasses (if available)

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