



Efficient, Detailed Structural Imaging with GPR Array

This article describes the application of a GPR array for detection and visualization of structural elements in a large area (over 2 m x 9 m).

When investigating a concrete structure, typically cover meters are used to locate rebar and measure concrete cover depth. However, this provides limited structural information and therefore some asset owners choose ground penetrating radar (GPR) as a complementary solution. The drawback of traditional GPR is that it can be time-consuming and the data can be difficult to interpret and can require post-processing e.g. to obtain a 3D visualization.

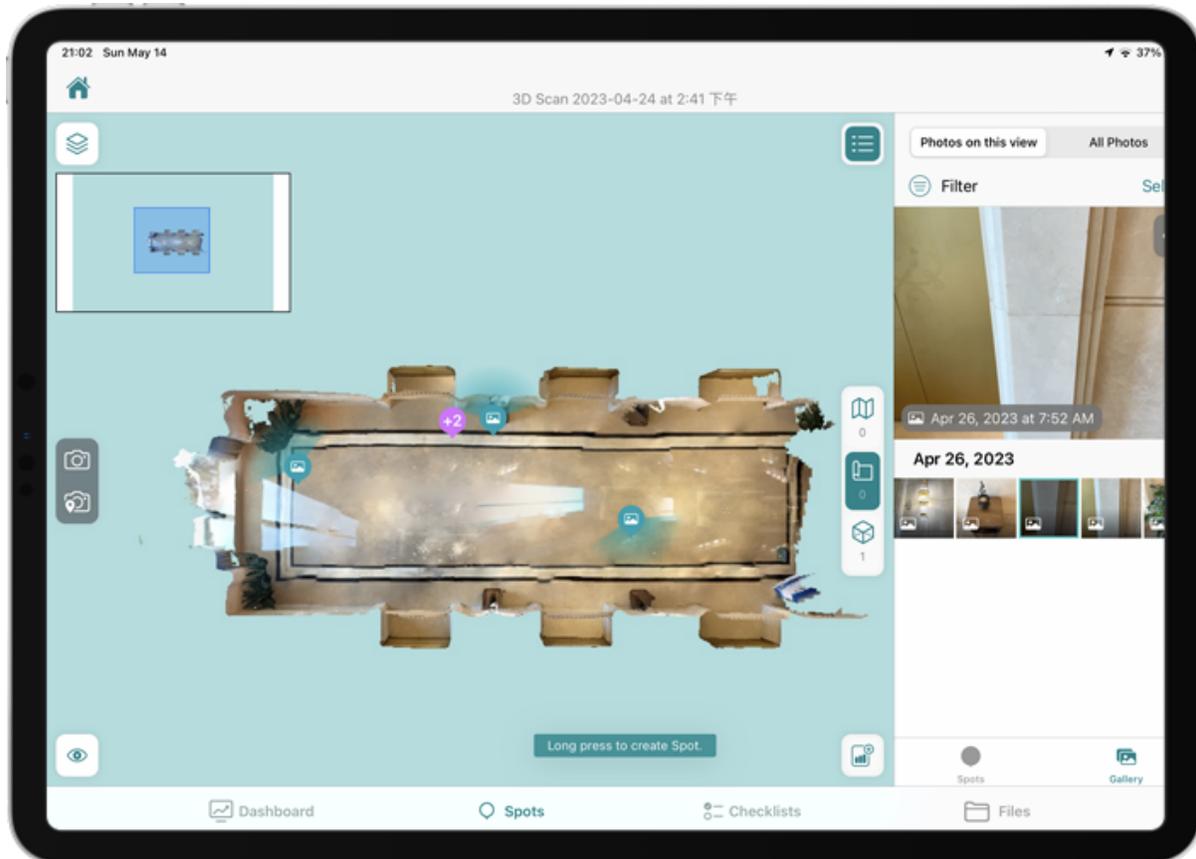
Screening Eagle Technologies' [Proceq_GP8100](#) is a 6-antenna SFCW GPR array that enables very fast scanning of large areas. It was applied in this situation to scan a large indoor area (2.2 m x 9.4 m). This involved 40 line scans to build up a grid, but took one inspector less than 15 minutes to perform.

Visualization of the rebar and other structural elements is available immediately, even while the scan is being performed. Once the scan is complete, a 3D image is available instantaneously without any further steps, and the inspector can slice through the concrete to carefully examine the results at each depth.

In this area scan, several features are observed at different depths including brick joints, a transverse pipeline, rebar mesh, a suspected second pipeline, the second layer of rebar mesh and finally the bottom of the slab (at approximately 40 cm).

The data can be further visualized and processed using the web-based software, [GPR_Insights](#), which is intuitive and powerful. Data is transferred automatically from the GP app to the user's web-based GPR Insights account.

The intelligent inspection platform, [Screening Eagle INSPECT](#), can be used in tandem with Proceq GPR solutions to capture and manage different inspection data. In this application, a LiDAR scan was performed using iPad and INSPECT to capture a 3D representation of the inspected area (above ground level). The Proceq GP8100 data was then tagged to its actual location on this 3D scan, and stored within INSPECT.



caption

This application note is a clear example of the productivity gains that can be enjoyed with a seamless inspection ecosystem that includes both software and hardware.

See more application notes and real customer case studies about GPR and structural imaging on our [Tech Hub](#).