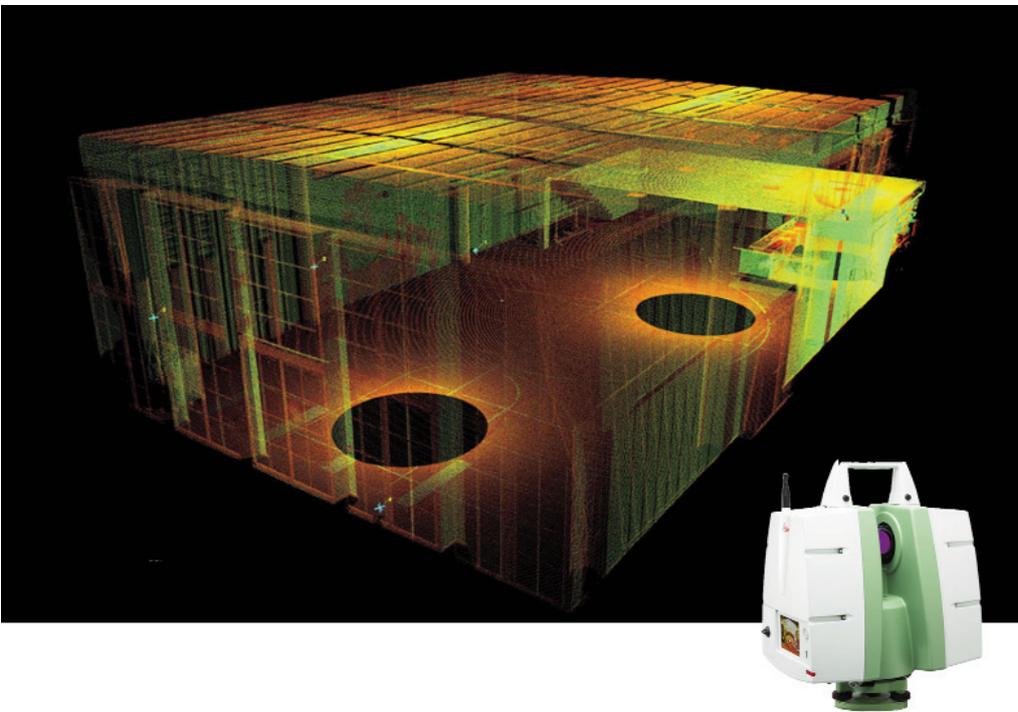


Leica Geosystems **TruStory**

3D Laser Scanning in Room Acoustics



Every room has different acoustics determined by its construction and room geometry. Listeners auditory impressions are based on the objective human sense of hearing.

It is often difficult to capture the spatial geometry of existing rooms with asymmetric room geometry to scale. Until now, the effectiveness of auralization (the aural and visual representation of a room's acoustic parameters) to model the acoustics of asymmetric rooms has been limited and inaccuracies in the results were expected. 3D laser scanning was proposed as a solution for auralization. This project involves implementation of the combined survey method in a real environment. It can be applied to all room geometries.

System Requirements

This project required a surveying system that could carry out the measurements in an efficient manner, i.e. within the shortest possible time. Ideally it should automatically recognize different room structures. Software compatibility with the necessary data processing steps is also very important. This should allow for an optimized workflow with a minimum number of setup points. This is all the more critical when the available time frames are short. The room should also be captured photographically to allow features and structures to be accurately assigned on the computer. This minimizes additional work and is a decisive advantage, particularly for surveys carried out abroad. Other applications must be able to use the project and it must be archived electronically.



■ Company

Martin Felder
Construction Physics and Acoustics

■ Challenge

Accuracy check of different model data for auralization

■ Project period

2009-2010

■ St.Gallen/Switzerland



■ Project summary

Instruments

- Leica ScanStation C10

■ Software

- Leica Cyclone REGISTER & MODEL
- Auralization program

■ Objective

- Accuracy analysis of various model systems based on evaluation criteria
- Compatibility comparison of the software programs used
- Comparison of software-generated results with measured results

