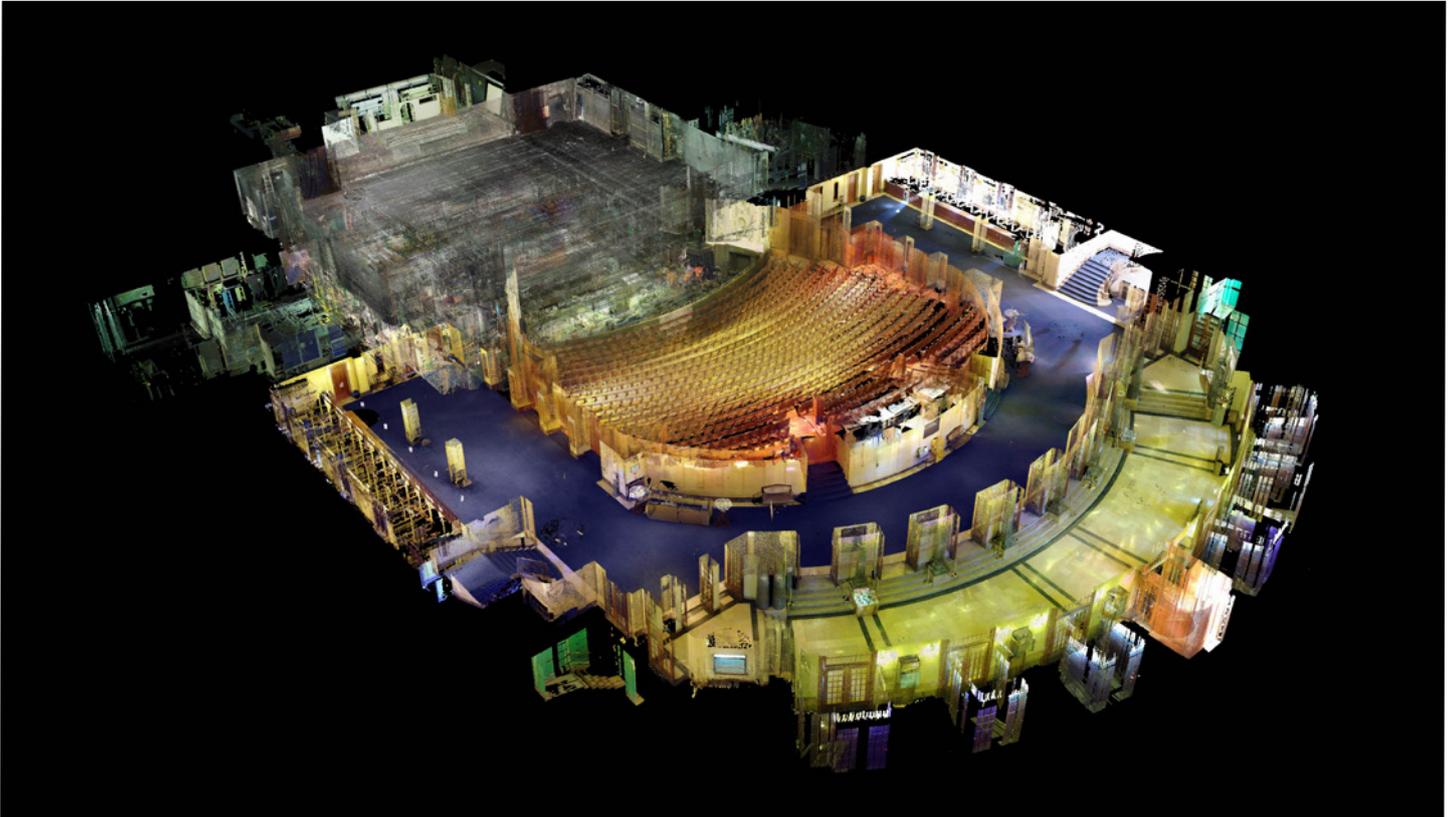


# User Story

## 3D Laser Scanning & Visualization

**FARO**



*The interior of the opera was captured using the FARO Focus<sup>3D</sup> X130.*

## Aerial show through the Stuttgart opera lasers The FARO scanners deliver spectacular visuals

**CONSTRUCTION / MEASUREMENT** *With the help of the FARO Focus3D X130, 3D Laser Scanning & Visualization enables a virtual journey through the Stuttgart opera house.*

Using a laser scanner from FARO, the Berlin designer and film maker Steffen Sommer has comprehensively digitised the Stuttgart opera house inside and out. Thanks to the mobile hardware and a powerful software package, the data capture for the complex project was already complete and ready for further processing after three day and three night shifts.

For a few months now, there has been a new link on the website of the Stuttgart opera house which offers a three and a half minute virtual journey through the building. Accompanied by Beethoven's Symphony number 5 in C minor, the viewer approaches the building in a gliding

flight, circles it at the upper floors and abruptly dives through a domed roof into the interior of the building. The flying eye breaks through doors and walls, floats over the rows of seating in the auditorium and flies through the crystal chandeliers which hang from the high ceilings in the foyer. Finally, it dives into the floor of the stage and enters the technical part of the opera house which is not accessible to visitors.

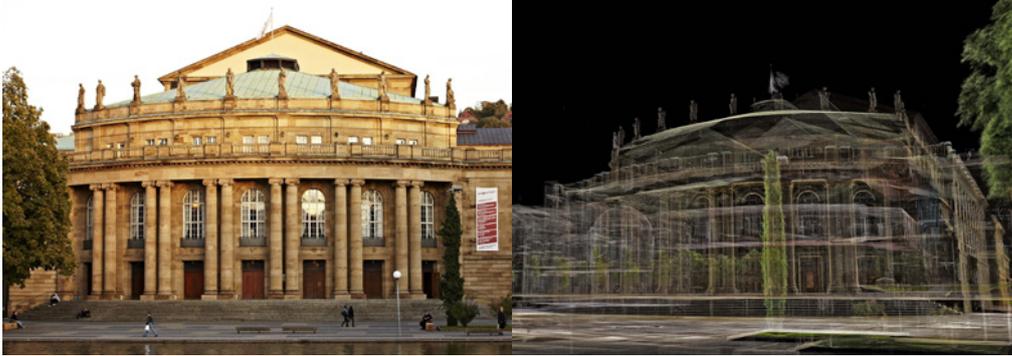
The extraordinary video was created over the past year under the direction of Steffen Sommer, founder and manager of the Berlin company 3D Laser Scanning & Visualization. His core tool was a 3D laser scanner from the measurement

specialists FARO. Using this model, Sommer was able to conclude the exterior shots after just three days. He needed another three night shifts for the aerial show through the interior of the opera house.

Despite the wide range of his work, Steffen Sommer is not accustomed to making quick decisions. This was also the case when it came to his first laser scanner. He first took a close look at the market and ultimately chose FARO. In 2015, he took part in a conference by the 3D measurement technology specialists in his native town of Böblingen and had the opportunity to exchange information with other participants

# Laser Scanning & Visualization

www.sommer.is



The Stuttgart opera in reality and digitally captured using the FARO Focus3D X130.

and FARO employees. He had then made up his mind to buy the Focus<sup>3D</sup>X130 model. It was the combination of price, image quality and portability which convinced him.

The subject of 3D scanning was new territory for those in charge at the Stuttgart opera, but they had clear expectations nevertheless: the captured data was to be converted into film and used for marketing purposes. Steffen Sommer got to work. When scanning the building and its immediate environment, it was the mobility and the speedy setup of the scanner which were advantageous. Sommer was pleased that this part of the work did not take up much time, as he needed this time for moving between the different scanning positions. This particularly concerned the work on the roof where he was only allowed to move while being secured with a harness and accompanied by a member of staff from the opera.

The fact that the site around the opera could not be fully cordoned off was also problematic. The organisational outlay for this would have been too great. The scans therefore took place with public access, i.e. during normal operation. The relevant areas could only be cordoned off for short periods of time, and the data capture had to be completed within this time window. "I estimate that the actual scanning took about seventeen minutes," said Sommer. "All in all, fast enough to have the whole building on the computer in three days."

Sommer needed to do three night shifts from 23:00 till 07:00, as outside of this time window, the opera house is in constant use. In addition to the actual performances, there are rehearsals, scenery is assembled and dismantled, the technology needs maintenance and the cleaning squad invade. It's only by around midnight that everything becomes quiet and Steffen Sommer is able to move around the empty hallways, auditoriums and stairways in peace. At around 5 kg, the minimal weight of the scanner was immensely beneficial.

Steffen Sommer is happy with more than just the hardware; the included software also facilitated his work. The programming package "SCENE" records, visualises and processes all the scan data. During the in-situ scanning, the programming package also takes on C2C registration work which previously had to be done manually using reference spheres. "I reckon that I am able to save around a third of the

total time of the setup," estimates Sommer. Steffen Sommer was given free reign to design the film as he wished. Ultimately, there were different versions of between 30 seconds and six minutes. The opera finally opted for the version as described above. The collected data was also able to play a role in the further renovation work planned for the opera. The scans helped to simulate changes in the building and reproduce example renovation processes. Steffen Sommer's data would be a link between planning and implementation.

In future, Sommer plans to be loyal to FARO and takes a keen interest in the further development of the hardware and software – whether it be for the FARO 3D conference a few months ago or in direct contact with the FARO developers.

## – FOUR GOOD REASONS –

Steffen Sommer, founder and head of 3D Laser Scanning & Visualization

- 1 Speedy mobile use is possible even for complicated scan positions without further ado
- 2 The laser scanner is so compact that it will fit in your hand luggage.
- 3 By using FARO laser scanners, I save a significant number of man hours – ROI at its best.
- 4 The laser class 1 enables non-hazardous scanning in public spaces.



[WWW.FARO.COM/LASERTRACKER](http://WWW.FARO.COM/LASERTRACKER)

## 3D LASER SCANNING & VISUALIZATION

Steffen Sommer studied visual communication/graphic design and communication studies. He lives in Berlin and worked as a designer, copywriter and film maker. In 2015, his focus shifted to 3D laser scanning. Equipped with professional specialist technology, it is possible to scan and visualise any type of room. Particular attention is paid to the exploration and investigation of new possibilities which accompany this very new technology. The areas of application which are reached by this are wide ranging and include, for example, cinematic conversions of scan data, virtual reality and 3D printing.

[WWW.SOMMER.IS](http://WWW.SOMMER.IS)

## SUMMARY

3D Laser Scanning & Visualization uses the FARO laser scanner Focus<sup>3D</sup> X130 for the fast and comprehensive capture of the opera in Stuttgart.