



TCD can help designers and clients visualise some elaborate ideas

Going commercial

What began as a personal project to try and save time on home theatre designs has grown into an award-winning solution that is taking its first steps into the commercial cinema market



TCD founder Guy Singleton

SOMETIMES THE BEST IDEAS ARE SPARKED BY THE heaviest defeats. The determination not to be in that position of disappointment again can lead to the inspiration to find a better way to do things. Many companies in our industry started out this way and The Cinema Designer (TCD) is one of the newest members of that club.

'What drove me to do this was a few years ago I put in a quote for a job that I thought we would win and we lost the job to someone who quoted a lot less for a system that wouldn't have worked,' says TCD founder, Guy Singleton. While losing out on the contract was a disappointment, it was the time spent to create the design that was the major issue. It can take weeks to create technically correct cinema designs, and clients will only choose one option, meaning that huge amounts of time are spent creating designs that will never come to fruition. To challenge this, Mr Singleton embarked on a quest to reduce this design time to minutes.

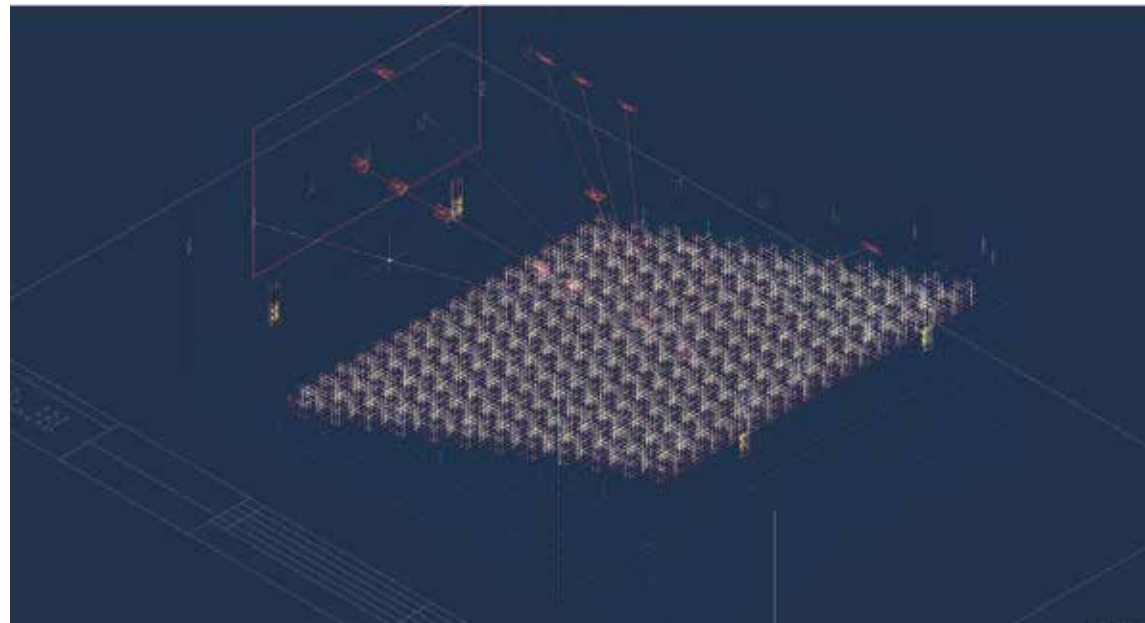
Following some challenging early days, TCD was born. 'I started writing this about four years ago for myself, working on it during evenings and at weekends,' recalls Mr Singleton. 'I built it for me and then somebody saw it, thought it was awesome, and said I should do something with it.'

The cloud-based design tool was designed to be a quick way for installers and dealers to create dedicated residential cinema or media room designs, support documents and aesthetic renders. To do this, the software creates a 3D CAD drawing for any room and works out the mathematics associated with technically correct cinema designs. It uses data from a variety of loudspeaker, amplifier, acoustic material and projector manufacturers to ensure the final design meets the required specifications of the client.

'It actually looks pretty simple, but the coefficient maths is pretty challenging,' smiles Mr Singleton. 'We have an algorithm that takes the width and length of the listening area, the distance to the side and back walls and the ceiling height to calculate the polar coordinates for all of the loudspeakers and give you the x, y and z axes for all of them so you know exactly where they go. To do that manually is

pretty challenging. It saves days' worth of work with a few clicks.'

This, alongside information for other components of the room, such as the projector, screen, seating and acoustic material, is then added to the system. 'With all the data you have entered, it builds the room for you in 3D CAD in about 30 seconds,' explains Mr Singleton. 'Because you are doing it in 3D CAD, you get four isometrics, four elevations and a top plan. All of the views you need, you can print them to CAD within a few moments. It will also allow you to select what the room looks like and then see a visualisation of that. You know that all of the coordinates for all of the loudspeakers are good, you know that everything is according to where the manufacturer says it should go, even how the loudspeakers are towed and pitched. You can export it as a PDF and send it to your clients. It talks about why the room is built the way it was, what the



The 3D CAD of a 204-seat Dolby Atmos commercial theatre

considerations were, what the volume of the room is, the distance for the seating positions. We've taken screen grabs of every elevation, plus an isometric, plus all the seating angles, polar coordinates, fields of view and viewing angles. It takes weeks to do something like this manually.'

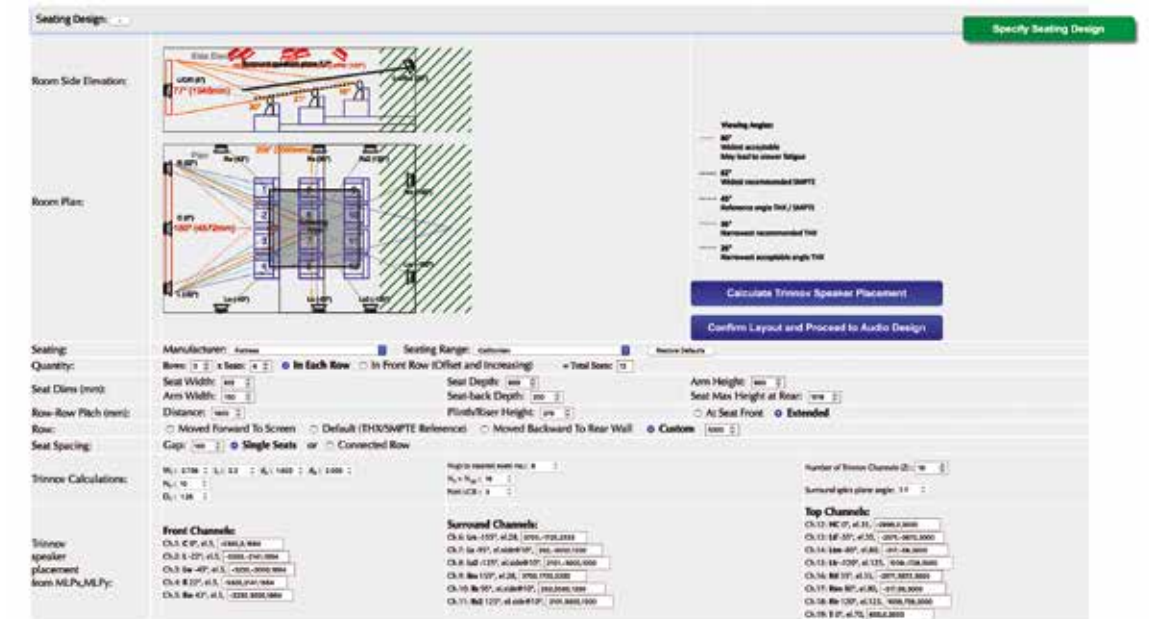
Understandably the solution has garnered a lot of attention since its launch. And with many of the manufacturers on its database working across both the residential and commercial sphere, requests were soon being made for the software to be upscaled to handle larger rooms and speaker placement for 3D audio applications such as Dolby Atmos. However, this was not a simple process.

'It was lots and lots of subtle little things that we had to look at to do the big rooms,' explains Mr Singleton. 'We had to build a polar to Cartesian coordinate converter that changes the polar coordinates of smaller rooms into the Cartesian coordinates that you would use for larger spaces. It uses trigonometry to work out what the hypotenuse is, what the angle is and then it converts that to two Cartesian coordinates, which are how far along and how far up as compared to sitting and firing polar coordinates from something. Otherwise you could end up with a height channel on the wall whereas you really want it on the ceiling. It allows everything to track with the correct azimuth and tow.'

'The second thing was creating the capability to handle tiered seating,' he continues. 'We had to look at everything from polar response graphs to off-axis response and acoustical insertion points for the loudspeakers.'

The move has also seen specifications from a variety of new loudspeaker manufacturers added to TCD's database. 'We've been talking to people about their bigger, horn-loaded, much more professional systems,' notes Mr Singleton. 'It's trying to address that commercial application aspect and, with this data, we are in a much better position to cover that commercial sphere.'

Mr Singleton is keen that the commercial addition to TCD does not cause confusion for his users. 'I deal with people in the commercial sphere, I understand that it is very complex and they don't want to sift through a database of nonsense.



The screen shot of a high render channel count immersive audio design

I want a database that is filtered so that they're not confused by products and brands that are not applicable,' he reasons. 'So with one button click, users can filter the database for just the professional ranges from the various speaker or projector manufacturers. That will make it a much more professionally driven commercial database.'

With the solution now able to handle the added complexities of large-scale theatre design, Mr Singleton is quick to point to the potential benefits TCD can bring to a new marketplace, most notably in time savings. 'Because I have been doing this a long time, I knew what a problem it was for me,' he reflects. 'When you are doing 5.1 or 7.1 it's easy. When you're doing 32 channels of discretely rendered audio, most people wouldn't

know where to put those channels, they wouldn't even know what to do with them.'

'The barrier to business for most people is the complexities of the design,' he continues. 'I can do a design in a minute-and-a-half. I could run five designs using different manufacturers, different loudspeaker brands, different screens and projectors and present those to the client. If we get the job, that's brilliant, and if we don't I've only wasted 30 minutes.'

This has always been the key goal for TCD. Clients will make subjective choices but, with tools like TCD, missing out on a contract doesn't have to be so painful.

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