

DESIGNING A CONCEPTUAL FLYING-V INTERIOR WITH VR USER TESTS

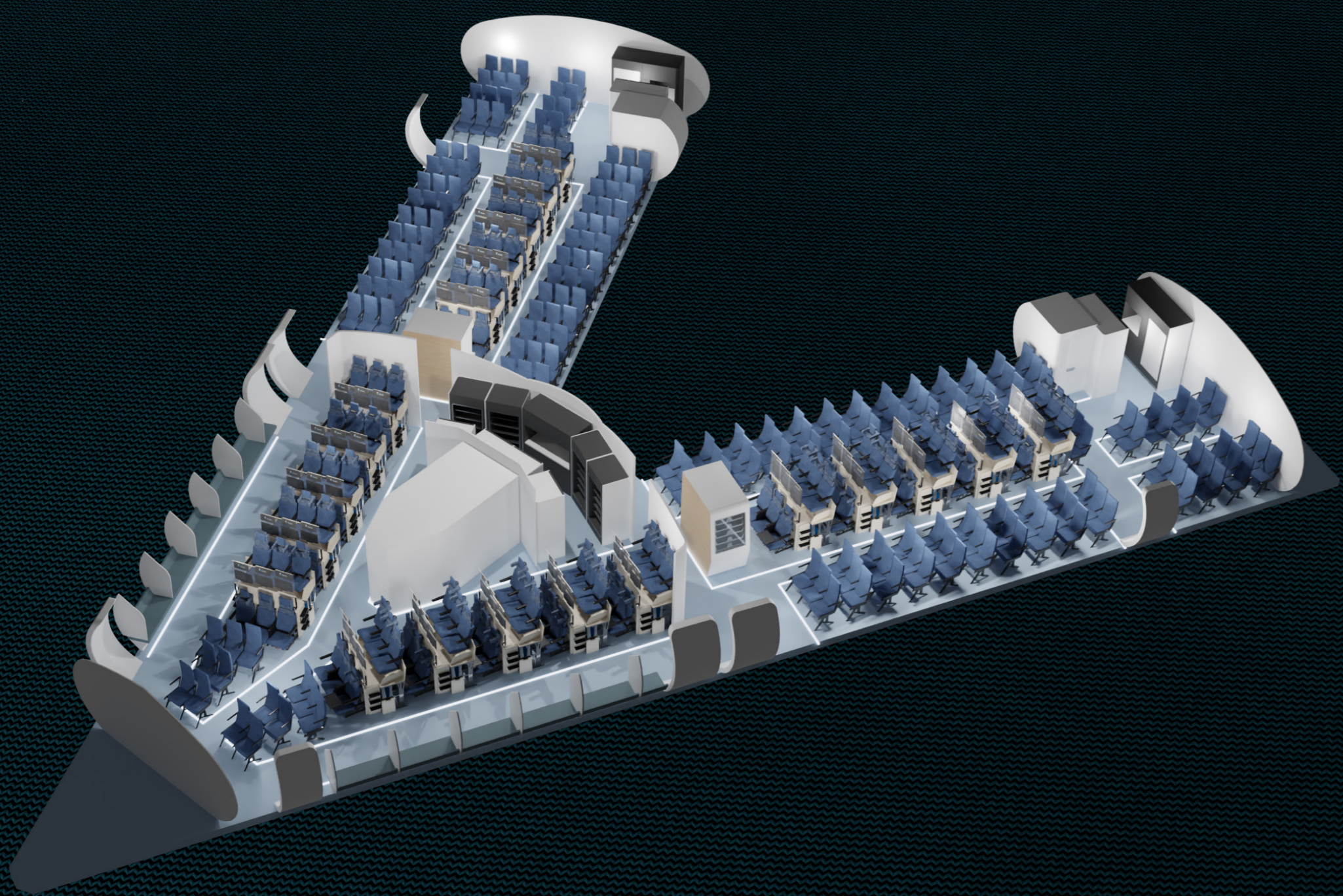


The redesigned Chaise Longue in the Flying-V

Abstract

During the redesign of the interior of the Flying-V, especially the Chaise Longue, it is investigated how Virtual Reality (VR) can be used within the design process as an evaluation tool. Can test subjects use VR to provide feedback on conceptual designs? And what are the pros and cons? While these questions are being explored, the results of the testing in VR will be used to redesign the Chaise Longue and combine it with results from other graduate students to create a total configuration of the Flying-V.

During the project, two tests have been done. The first test was to explore VR, and to learn about how to create a proper test for product evaluation in VR. This test has been done partly in Ras al-Khaimah (UAE) and in Delft (NL) with employees from KLM. The second test was to test a preliminary redesign of the Chaise Longue. The results of this test were used to create the Chaise Longue shown on this poster.



The final configuration of the Flying-V with the redesigned Chaise Longue. The configuration is based on the MSc.thesis of Lisa Wamelink (2021). The galley & self-service galley is designed by Tinie Lam (2020).

Conclusion

Chaise Longue

The Final Concept of the Chaise Longue provides space for passengers to lie down, have ample legroom and enjoy their journey in comfort. Attention has been paid to the openness of the concept so that people feel as confined as possible and that the staff has an overview of the cabin. Passengers can feel at home in a cabin where they can walk around and sit on a sofa by the window when they need it (Wamelink, 2021), or go to the self-service galley when they need a snack (Lam, 2020). But they can also watch a favorite movie lying down, such as at home on the couch.

VR

Virtual Reality can be used well in user tests with conceptual models, subject to certain conditions. For example, the controls of the VR must be easy to use for all users, otherwise the VR will distract from the test. It works to leave the controllers down and let the people move physically. In this way, the test subjects gave more feedback on the model. It therefore works well to use a headset that is not attached to a wire, such as the Oculus Quest 2. The test subjects can then move without hindrance. An additional advantage is that no laptop or PC is required, so that the headset can be used anywhere (such as trade fairs, conferences or outdoors).

The interactions added in the first test added little to the test other than entertainment for the users, although it took a lot of time to create. It must be examined per test whether interactions can add something to the end result.

The 3D models adopted from previous graduates proved to cause many problems in VR due to the large number of vertices they contain. That is why almost all models were made again so that there was more control over the number of vertices. This also applies to Solidworks models. The mesh exported from Solidworks turned out to be unsuitable for putting directly into VR. It contained too many vertices, or the mesh was constructed differently, creating artifacts when texturing.

What struck me is that not everyone is enthusiastic about setting up a VR headset. People indicated that it could also be seen on the screen, and therefore did not want to try the VR. It worked on the second test not to turn on the screen anymore. Others saw the reactions of the person with VR, but not what the person saw. Those who were curious also wanted to try VR.

VR can work well to take people into conceptual ideas that are hard to imagine. Building VR requires some knowledge, but it fits well with an Industrial Design background, because there is already knowledge about modeling in software like Solidworks. VR can be as complex as you want it to be, but a simple 3D model can already work to evaluate basic ergonomic aspects, and it's even more immersive if it's in the intended environment.



A user testing the VR model during the Arab Aviation Summit in Ras al-Khaimah