This project was developed over a period of eight months. At the end of this period it is interesting to see to what extent the project and the used methods have contributed to the goal that was formulated at the start of the process. The goal of the project was to create an integral building design by integrating structural design with acoustical design.

In order to be able to combine structural and acoustical shapes literature research was needed to obtain the extra needed knowledge on acoustical design. This research was used to develop a concept with a favourable shape for structural and acoustical purposes. These concept shapes were further tested using analysis programs for structure and acoustics. The results were analysed to make substantiated choices in the development of the design. This way research was done by designing a multifunctional exhibition hall. During the process design and research were inseparably connected to each other and resulted in a substantiated design. The research focussed on the acoustical part, although the structural element was of equal importance. It resulted in a report in which the acoustics are dominant. If I would perform the project again I would do research on the structural element as well, even though this is more familiar for me, as it would provide a more complete report.

This project was part of the ‘Sustainable design graduation studio’ at the department of Building Technology. The graduation studio uses two lines of approach: design by research and research by design. In this case the goal was a substantiated design and in order to reach this goal research was necessary. So the used methodical line of approach corresponds with the research by design. The goal in the report was not an aim for sustainability, but for structural and acoustical integration. This was deliberately chosen so I would not lose my focus during the project. If there would have been more time I would like to add a climate chapter, but this would have led to a less complete structural and acoustic design.

The chosen theme for the graduation project was an integral building design with a focus on structural design. When the assignment became more defined, the focus of the design was on the acoustical aspects as well as the structural aspects. This led to an interesting design and process. At first the goal was to create an integral building design by which is meant that a structural, climate and facade design was created at the end of the process. At the end of the process an integral building design was delivered with a different approach. In the final product an integral design means there is thought about the production, transportation, building process and the final building design and detailing.

In order to make decisions about the building requirements and the preconditions an existing location in the Netherlands was chosen. However this design could be used on more locations. The main benefit is the reduction of volume, which means there is less air which needs to be conditioned when the hall is not used or only a part of the total floor area is needed. This could be a sustainable solution to reduce the climate demands for a similar hall. Another benefit is the elimination of the need for adding extra material to reach optimal acoustical properties. And the optimisation for acoustical functions means the usage rate of the hall can be increased. These three benefits could reduce costs of an exhibition hall, however an analysis of costs has not been made at this time.

Overall the used approach was successful and resulted in an interesting and successful design in terms of structural and acoustical design. In order to appeal to a wider social context solutions for climate design should be included as well as an analysis of building costs and possible solutions to reduce these costs. Because only literature studies and computer analysis were used to substantiate the design it is not completely reliable. More complicated calculated analysis and tests with mock-ups would make it more reliable. Also some of the used values are assumptions. Next time I would approach an acoustic lab to do some physical research to get more feeling with the subject.
Because the focus and restrictions of the research project where defined by myself, I experienced the graduation process as an opportunity to gain more knowledge on my areas of interest. Therefore it was also a very educational and enjoyable process that did not fail hold my interest. It was very educational to be able to go into more depth with a research based design. Therefore it lived up to my expectations.