

# Elevator Pitch

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## 1 Abstract

The bogie of a rail vehicle is the structure responsible of its movement and supporting the weight of the carbody. It is also responsible of the opposition forces needed to keep the train stable and helps avoiding non desired movements. It usually carries an electric engine.

This project was focused on vibroacoustic transmission coming from the rail – wheel interaction. This transmission happens through the bogie and the bogie structure. This is the only vibroacoustic transmission that has been taken into account in this project, and only between the carbody and the rail – wheel interaction.

The bogie of a real vehicle of the company was fully modelled using the software Altair Hyperworks so the behaviour of as a result of the transmission of structural noise could be characterized and predicted with more accuracy. This model was simulated, analysed and compared with the real-life tests and results, with the objective of obtaining a better representation of it.

The development of this project has led to a higher knowledge in terms of structural noise, finite element modelling and has allowed the designers and simulation software experts to introduce several improvements in the rail material design and its features. It has also helped a lot in terms of finite element modelling in the company, introducing also several new methodologies to obtain better results in less time.

The presentation of this project that will be done for the Communication Skills subject will cover only some general parts of this project. For the final presentation, these general parts will be explained again and some more specific methodologies or details will be also covered. Some possible topics to be covered in the final presentation are: Optimization, Sensitivity Analysis, Correlation, etc.