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"The design and development of an automated ramp system for ease of accessibility on the railway"

Introduction and Need:

As a personal project, this is a subject that is believed, needs to be addressed in the public's interest. It is to tackle the situation still faced by disabled users on the railways where many are stranded or unable to travel due to the increasing issue of "no staff" or "unavailable equipment" on stations and trains in the UK.

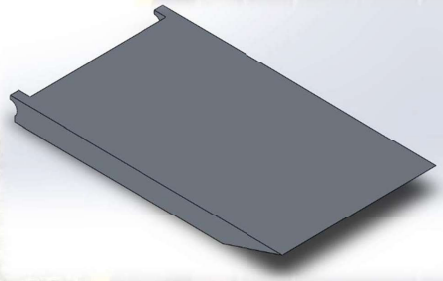
The need for a product like this is becoming a near-desperate requirement for these specific users as it would increase their ability to enjoy the railways like any other users with restriction or fear of being left behind or needs not being met.

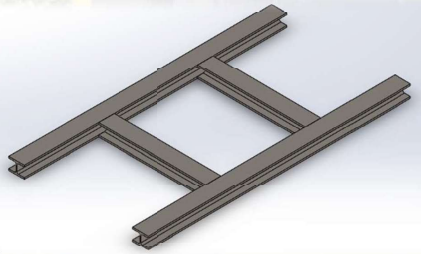
Aim:

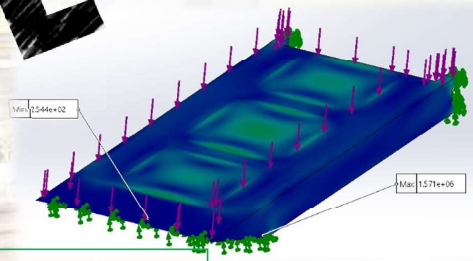
The overall aim of the project is to research, design, develop, prototype, test and evaluate a ramp system which is 'built-in' as a fabrication of the train itself to ease the burden of staff and assist when staff are absent from either the train and/or the station.

Objectives of the project:

- Complete a user survey to understand the requirement and if it is needed
- Researching other ramp designs both in the UK and worldwide, determining differences and similarities and focus on one particular train.
- Designing a ramp, with regards to this knowledge and applying acquired skills to determine operation, scale, shape etc and place under scrutiny.
- Develop a model of the ramp and test against forces, movements etc for suitability and safety.







Results:

The results show that the designed ramp would withstand a very heavy weight and be suitable (statically), however, the validity of the safety is not established due to lacking mathematical calculations.

The design is simple, yet it requires the whole assembly to determine whether or not the design would be suitable for use on the train itself. Furthermore, the ramp's integrity is much to be desired. This would require a definite improvement for future investigations and proves that time may not always be on one's side, considering skill and ability.

Future activities:

- To consider the time scale and skills, tailoring the project for future alteration is a must when considering what can be realistically achieved.
- Explore the ways of the 'automating' control can be applied. Is it by button? Switch? Controlled by passenger or staff on board the train, such as the driver?
- Undertake a post-design user survey and gain feedback from them with regards to the design and possible operation.
- Further develop the model as a whole design rather than a sectional study and calculate in-depth values for added security etc.

Final conclusion:

Due to the undertaking of the project, it has become clear that this topic is demanding and difficult, requiring a lot more time and detail than what was given, respectively. This may be the reasoning behind the lack of development of such a product in the UK and perhaps the failure of this prevision.