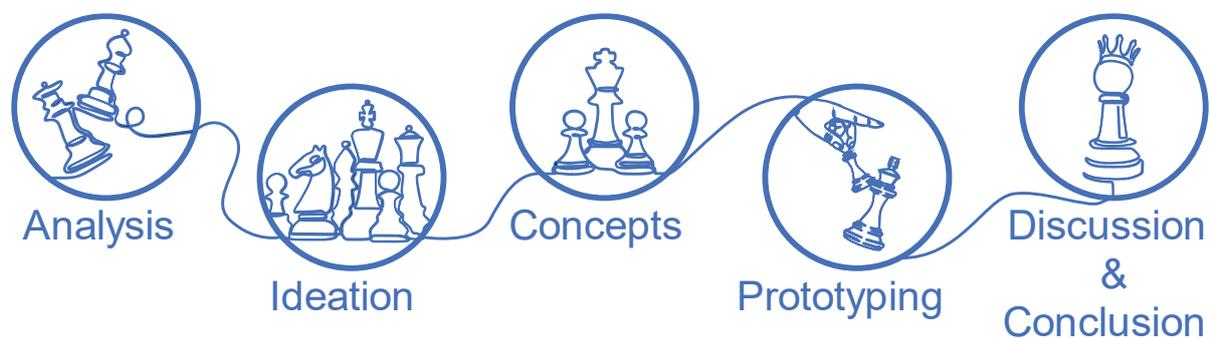


# Autonomously moving chess pieces

Tijs van Zeijts | S2014815 | 25 August 2021

Bachelor Thesis for Industrial Design Engineering, at the University of Twente

DGT is the frontrunner in chess technology. DGT develops, produces, markets and sells a complete range of chess products, like chess clocks, electronic chess pieces & boards and chess computers. DGT is market leader in this product segment and sells their products in 100+ countries. Their innovative ideas keep the chess world engaged with the latest technologies, and their product line is always upgraded to ensure that they stay on top of the market. This bachelor assignment was made for DGT, in cooperation with DGT. They guided the process and provided input that is really valuable from a company's perspective. Their market knowledge and real world application knowledge helped shape this assignment.



The first step is to get a good analysis of the problem. The main stakeholders and the market. It is important to determine the full spectrum of these problems, and analyse them to determine the priorities of this product. A market research was conducted to research the current market. Interviews were conducted to get direct information from potential customers. A stakeholder analysis was performed to determine all stakeholder for the new product.

After the analysis, requirements needed to be made. An extensive requirement specification was made to determine the basic, extensive and overall requirements. The requirements were made on the user level, mechanical level, and gameplay level. They were assigned a value with the MoSCoW method.

After the requirements were made, the ideation phase was done. This phase created a multitude of solutions for the given problem. Multiple areas were explored and elaborated on. All kinds of possible ideas were brainstormed and thought of.

Out of this ideation, four concepts were developed. These concepts were looked at more in depth on a mechanical, user interface and overall design perspective. The concepts were thorough and detailed explained and drawn. The concepts are compared to the requirements to determine the best possible concepts. A choice of the concepts will be made, based upon the requirements. Two of the most suitable concepts will be used for further prototyping. The prototypes are made to create proof of concepts.

During the prototyping the two chosen concepts were looked at on a basic mechanical level. The concepts were not proven mechanical concepts yet, so it was a need to determine if they were even eligible for the assignment.

After building a few iterations on both prototypes, it was determined that one concept was not feasible to further develop, and the other concept was feasible to further develop.

The final deliverable after this bachelor project is a set of recommendations that DGT could use to continue developing this project. And next steps are described if DGT wishes to continue with this project.

