## Introduction

Sorting machines are used everywhere: Last month, a sorting system has been built that efficiently and accurately sorts onions for breeding purposes. Banks, casinos and theme parks use them to sort banknotes. Postal services process mail with the help of a mail sorter. For this project, we, !@#$, !@#$, and !@#$, !@#$, !@#$, !@#$ design and build such a sorting machine as well.

The purpose of this presentation is to give you an overview of the sorting machine that we’re currently building (for Embedded Systems), specifically the what, how, and why. First, we’re going to talk about the machine specification. Next, we’re going to tell you about our machine design, that is, the use-cases, user constraints, safety properties and some sketches of the progress. Then we’re going to mention the decisions that we made with regard to designing the machine. Finally, we will wrap this up with the group process/conclusion/future plans.

## Specification

As I mentioned earlier, we’re building a machine. This machine separates black and white discs using black/white detector, and delivers the discs to their belonging/specified/determined trays. The machine is required to have at least one conveyor belt. We understand that this should be a standard requirement from an industrial perspective, because it gives the light detector enough time – generally, conveyor belts are slow -to process the colour of the disks. However, in our situation, there is both a fast colour detection and fast separation mechanism present, so this makes the conveyor belt the slowest element in the sorting machine. We think that other methods would have been more efficient in increasing the speed of the sorting process, in which a number of discs are sorted within a period of time. Since the requirement is to have a conveyor belt, and we take our project seriously, we will be using the conveyor belt in a sensible way: to transport the discs.

## Use-cases

Use-cases are usage scenarios of the machine. We are using use-cases to make the high level specification more specific and to check if we met the requirements.

## Example

One of our use-cases is the starting of the machine. The brief description is that the operator starts the machine, machine parts go to their initial state and the machine starts sorting process. If this use-case is successful the machine starts the sorting process. As a precondition the machine has to be in its initial state; otherwise, it will not start the sorting process. To trigger this use-case the user has to press the start button on the machine. The steps of this use-case are that the machine puts the devices in their initial state and the machine starts the sorting process.

This may sound all very silly and repetitive, but that’s how use-cases have to be specified.