# Conceptual design of a security gate for the retail market.

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This Bachelor Assignment is executed at the company "Nederlandse apparatenfabriek (=Nedap)", which is a company worldwide with eleven business units (Nedap, n.d.). One of these units is Nedap Retail, which offers products for inventory management and loss prevention to retailers. This conceptual design is made in cooperation with Nedap Retail.

The goal of this bachelor assignment is to provide a conceptual design of a security gate for the retail market. A device which protects articles in the shop against theft is called Electronic Article Surveillance (=EAS) systems.

To design a product which fits in with Nedap is started with an Analysis. One of the things which came forward are the end users. Until now, give the current gates almost no feedback to the end users like the shop assistant but also not to the customers inside the shop. The new designed EAS does give clear feedback to the end users in different colours of light.

Moreover, the retail market is also changing. Self-payment and self-checkout are becoming popular more and more. Further, retailers create an entrance which is more open and change the layout of the shop to lure customers to the shop, because of the heavy competition of the e-commerce (Boome, 2018).
To align with these developments is the new EAS much more compact than the current gates and has it a friendlier look compared with the technical look of the current gates (Figure - 1).

With designing a successor-product, the amount of change in the design and technology must be kept in mind. The literature showed that a product should have enough differences with its predecessor to be new and differential, however, not too much differences such that it will not be recognised (Fukasawa, 2007) (Levien, 2009).
Moreover, the audience recognises the gate in Figure - 1 as a security gate, which protects articles in the shop, so, this gives a deterrence effect to steal articles. For these reasons has a part of the designed EAS resemblance with the current gates of Nedap (Figure - 1).

*Figure - 1; Nedap iL45 Hybrid*

The last point is about the performance. The performance improves significantly if a security system works in pairs instead of alone because the two devices work together in a certain way such that they detect better articles which pass through the two gates. So for that reason, does the designed EAS also have the opportunity to work in pairs.

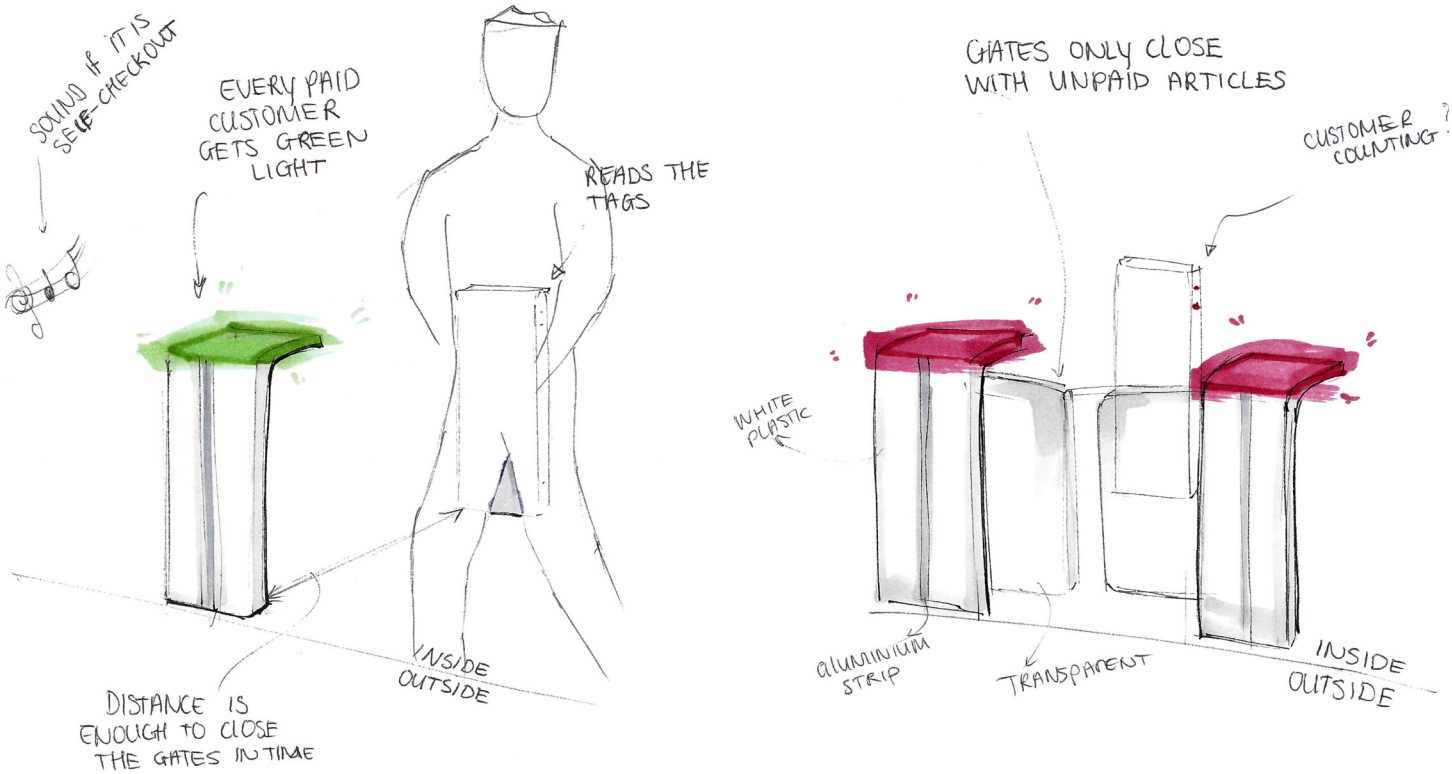


*Figure - 2; Sketches Direction three*

After the Analysis starts the Ideation. During the Ideation, three directions are chosen in which many ideas are made. One of these directions focusses on self-payment and checkout, where the sound and the lights of the current gates is not enough to stop thieves. That is way in this direction physical gates are used, like the gates of a train station (Obbink, 2017). Figure - 2 visualises how a security gate with physical gates would look like.

Yet, this direction is not chosen in the end, because it does not fit with Nedap Retail.

The other two directions are also elaborated, and these are more interesting for Nedap. Both directions have some advantages but also some disadvantages, so they are combined with each other which is the Final Concept. These two directions and the Final Concept cannot be discussed in terms of confidentiality.

However, a part of the Final can be revealed.

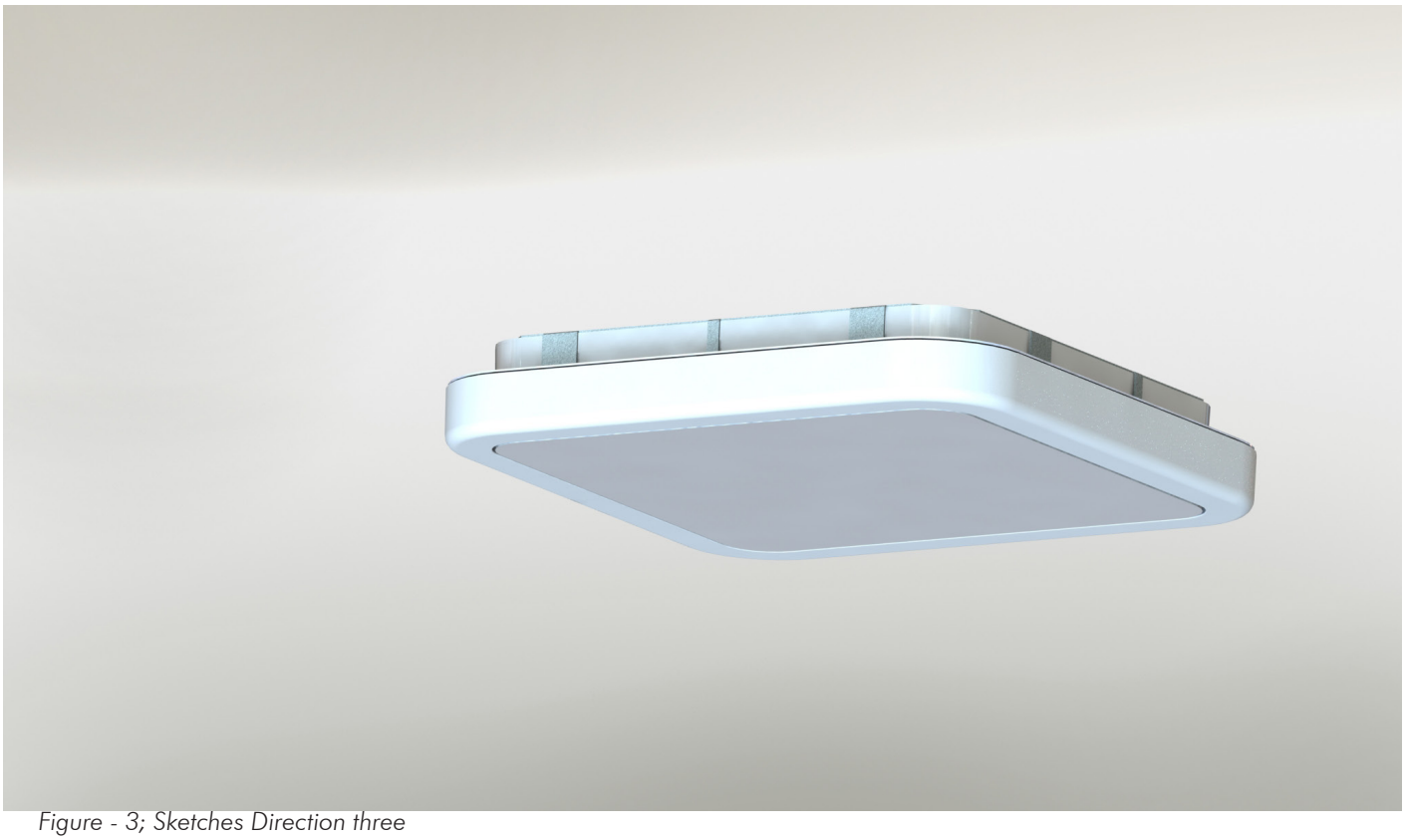

*Figure - 3; Sketches Direction three*

Figure - 3 shows that part. Also this device satisfy some of the requirements from the Analysis, namely, the white edge around the device, visualised in (FIGURE), lights up totally green if a customer passes, where the payment went right, and the edge lights up red if the payment went right or if somebody tries to steal something.
Furthermore, the EAS is compact and has a friendly look which suits the current demands of the retail market.

In the conclusion, the Final Concept is compared with the foundings of the Analysis. Because of the combination of the two concepts, which is mentioned earlier, all of the findings of the Analysis are met.

The future development of this conceptual design contains optimisation of the EAS with a view to the certification of the product. Also, calculations must be done to guarantee enough stability of the product. Besides, the opinion of retailers should be asked about the new EAS to find out if the current EAS indeed is recognizable in the new EAS and if the new EAS is compact and nice-looking enough.

Boome, E. t. (2018, April 25). Vragen over Koper. (E. v. Adrichem, Interviewer)
Fukasawa, N. (2007). Naota Fukasawa. London: Phaidon Press.
Levien, R. (2009, March 26). Personal communication. (T. Parsons, Interviewer)
Nedap. (n.d.). About Nedap. Retrieved from Nedap: https://nedap.com/en/nedap/