Last changes to the project

Hello everyone and welcome back!

Unfortunately we reach the last chapter of the blog. In this part we will tell you about the project in all its updates and changes.

We will talk about the change of the pack material, then the application of RFID and finally the size of the packaging.

Aluminum: safety and resistance

The material of our packaging has changed. The exclusion of PET is due to the fact that any polymeric material is not 100% disinfectable. This small detail compromises the use of the material because we can not guarantee a 100% reusable container safe from allergens, microorganisms and chemical products.

We have therefore considered glass, an elegant, quality and completely safe material. However, we decided to exclude it because it is an expensive, fragile and heavy material, not suitable for a system that requires a continuous movement of the packaging.

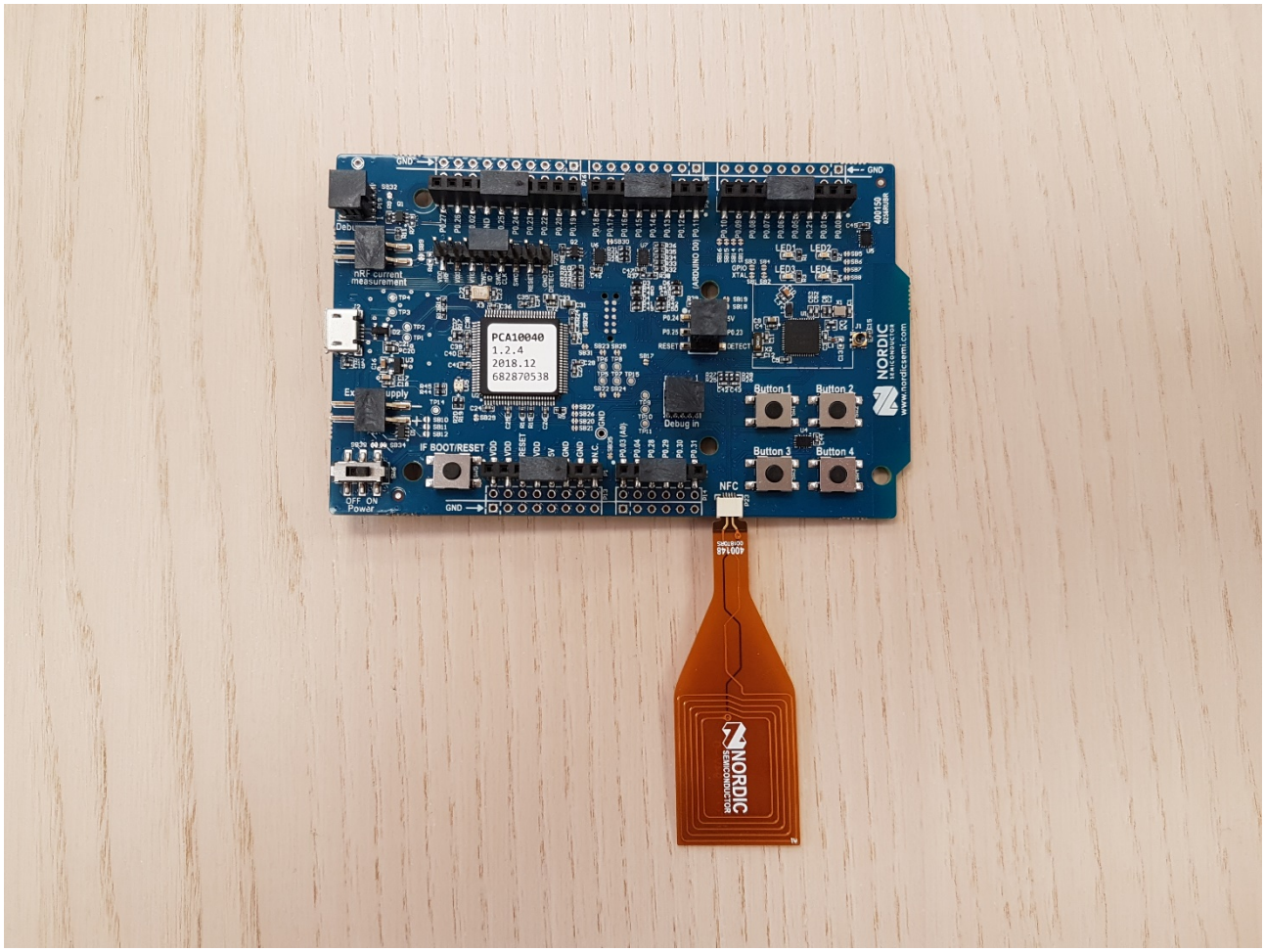
The choice then fell on aluminum, a lightweight material with high mechanical performance and completely safe in terms of contact with food and disinfection. The aluminum gives elegance to the packaging and makes it innovative moving away from the common plastic and glass containers. The sustainable aspect is confirmed by the total recyclability of the metal for an infinite number of times. Despite the absence of transparency, the metallic and smooth surface allows to manually write the name of the content, going to enhance the container and recalling the craftsmanship of the traditions. In addition, the flexographic printing technique allows you to customize the graphics as you like without using any additional inks that compromise the recycling.

Moved RFID

We needed the RFID tag to contain the information related to the product, then communicated to the customer or the bellhop through the smartphone. After some reasoning, we decided to move the tag from the packaging to the box that contains the orders of each person.

The tag no longer contains information related to the single food, but to the single order. We made this decision for different reasons: practicality, reuse and change of material in the pack. The tag traces the position of the box communicating with appropriate readers positioned in strategic points of the logistic route. These readers communicate online in real time which tags are in the vicinity, allowing anyone, from the X-Center to the user, to know where the tape is located. The readers positioned on the truck also have the GPS, in order to transmit the position of each purchase. The buyer will no longer have to use the smartphone every time to see the information on the product, but will use a code on the packaging to view online everything he needs, from ingredients to recipes, from the expiration date to suggestions in the kitchen.

The RFID then changes technology, passing from the NFC to the HF, in order to communicate at medium / long distance. The problem of RFID interference with metals is solved with specific tags that communicate without problems even in proximity to aluminum.



NFC tag used as a prototype for system operation

Packaging and boxes dimensions

The introduction of the box allows you to have an easily transportable container where to store all the packaging of a purchase. In this way there is an orderly management both in preparatory mode, in the logistic phase and in the home phase, where the consumer can use the box to store the used containers, waiting for the next delivery to make a returnable vacuum. Each box has a fixed code that allows the delivery man to deliver it without uncertainty.

The cassette is made of reusable plastic material, 3D printed at CLIK thanks to the printers and filaments offered by Conrad. The not excessive dimensions measure about 40x30cm, since the target we address is a close circle of people who pay attention to certain ethical and environmental values, at a price that is not sustainable for everyone. The cassettes

contain modular packs. The long side of each pack measures the short side of the adjacent pack, while the other two sides are one half of the other. This modularity allows you to customize each purchase based on the size of the food purchased. To give stability to the containers inside the box, especially if the box is not full, we have created convex half spheres on the base of the box that fit together with the half concave spheres of the base of the pack. The cassettes have shapes and dimensions that allow them to be stacked one above the other to facilitate transport and in the case of a very large expense.

That’s all (?)

This was the last chapter of our blog. Despite the presence of details yet to be defined, the project has been outlined in all its facets. We are very satisfied with the work we have done and we are convinced that it is a project with great potential.

We would like to thank the sponsors Conrad and Mouser Electronics who kindly provided us with the material and technologies to prototype and test the material part of our project. A special thanks goes to the CLIK laboratory that offered its space for the Hakathon and the development of the project, to Flavio Stiffan for following us constantly and giving us precious advice and to Politecnico di Torino for giving us the opportunity to participate to this experience.

Last but not least, a thank you to you readers, to your interest and your curiosity!

The BioDesigners team

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