

AN INNOVATION PROJECT TO DESIGN A CONFIGURABLE CIRCUIT BOARD, USING PAPER AS THE MAIN MATERIAL

Our motivation

We consume electronics faster than ever, discarding them every few years. Smartphones, tablets, TVs... are made up of plastic and metal, materials that are difficult to recycle. This is a **growing environmental and social problem**: the electronic waste or e-waste.

At INN PAPER, we want to develop electronic devices using paper: a material that is **recyclable, reusable, cheap and flexible**. In the future, this technology can help reduce the amount of e-waste we produce, creating more environmentally friendly electronics.

Our science

We will modify the fibres of paper to give them **specific features**: conducting electricity, resisting higher temperatures, shielding from magnetic fields...

Using tailored inks, our technologies allow us to create differentiated areas within the same paper, **integrating** the different electronic items within the paper itself.

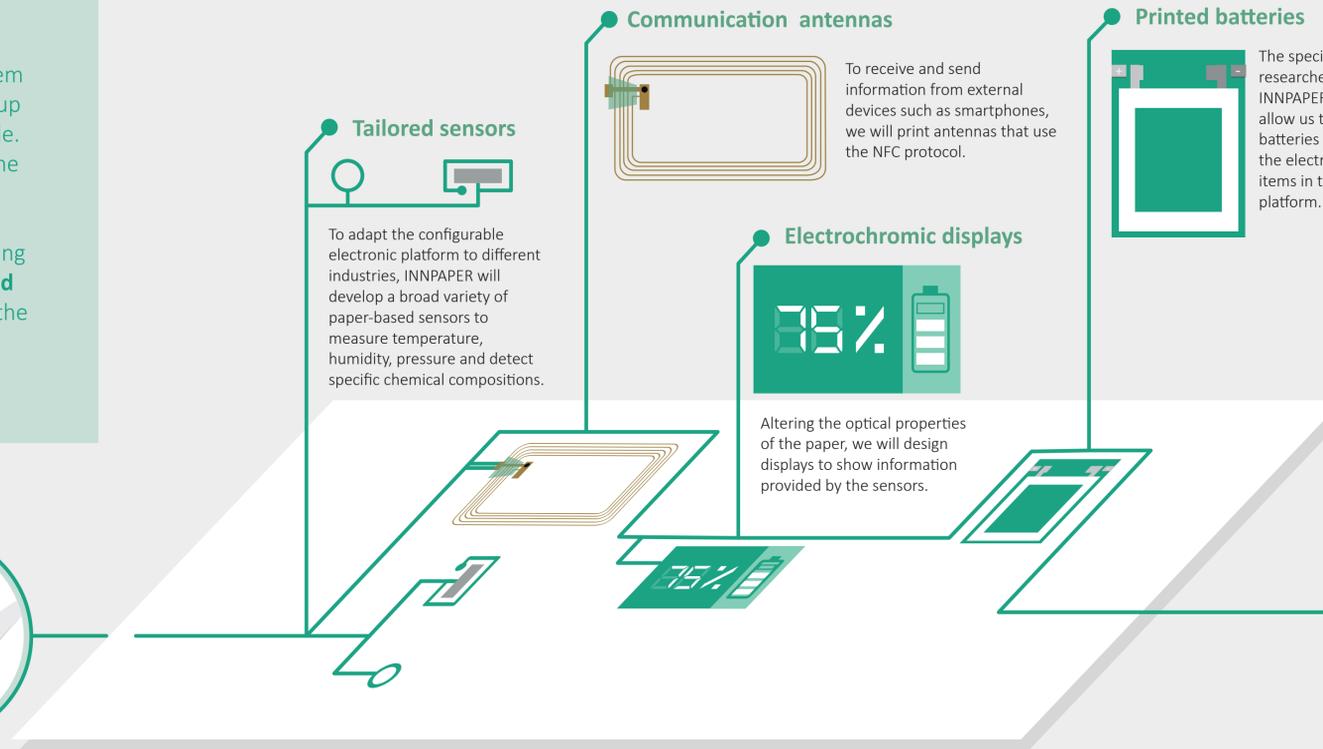
Giving rise to circuits, batteries, sensors, displays, and many other electronic items.



Our numbers



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Our technology

We will design the usual items found in electronics —such as circuits, batteries or antennas— using **paper** as the **main material**. Altogether, these items will form a configurable electronic board, adaptable to be used by industries in different fields.

Our production

To monitor the environmental impact and analyse the viability of the INN PAPER technology, the project comprises the **whole chain of production**: from the raw materials, to the assembly of the final devices.

Renewable resources

We will perform **life-cycle analysis**, that evaluate the environmental impacts of the extraction of the raw materials, their processing, the manufacture of the study-cases and their recyclability and reusability.

Sustainable production

At INN PAPER, we will produce all the prototypes in a **pilot assembly line** that uses the latest industrial processes available, such as roll-to-roll processing. These methods reduce the amount of material needed, lowering the carbon footprint.

Recyclable design

To minimise the amount of waste generated by our devices, we will design them to be as recyclable and reusable as possible. To do this, we will conduct **recyclability analysis** of our products, to use them to re-manufacture processes.



Our study-cases

INN PAPER will design **electronic solutions that could be adapted to multiple industries** in the future. To show the flexibility of our electronic configurable board, we will develop three prototypes for three different sectors: pharmaceutical, security and food industry.

Smart Labels

We will develop labels with pressure, humidity and temperature sensors, to monitor the state of the food inside the packaging.



Drug and caffeine detectors

Our paper-based chemical sensors can be tailored to detect the presence of specific molecules. To improve the monitoring of substances, our project will develop detectors of caffeine in drinks and THC in saliva.



Bed-side diagnostics

We will design biosensors to detect the presence of influenza virus and streptococcus bacteria in saliva. These sensors will be used to manufacture a fast, cheap and portable diagnostic test.

