

Guide for applicants

INNPAPER Open Call



INNPAPER

1 INTRODUCTION

1.1 What is INN PAPER?

INN PAPER is a European project that will be running until June 2021 and is focused on paper-based printed electronics.

1.2 Why was INN PAPER funded?

In the last decades, the increasing consumption of electronic devices generates an increasing volume of electronic waste each year. Since plastics and metals are the key materials of these devices, this is becoming a growing environmental and social problem.

Paper is rising as a good alternative to traditional materials for electronics: it is cheap, flexible, renewable and recyclable. This grants paper a strong potential to reduce the negative impact of e-waste.

1.3 What is INN PAPER developing?

In this context, INN PAPER was created to design a paper-based electronic platform comprising a printed battery, an electrochromic display (ECD) and a NFC system. This solution, manufactured in a multi-site pilot-line and reaching TRL5 in the project, yields a **high versatility**: by integrating different sensors and specific components into it, the INN PAPER technology will enable the future production of a wide range of industrial applications. In particular, to demonstrate its potential, INN PAPER is currently developing three use-cases:

- Smart labels for food packaging that include humidity, temperature and pressure sensors.
- Point of Care bioplatfoms for caffeine and drug (THC) detection in drinks and saliva respectively.
- Point of Care tests for Influenza virus and *Streptococcus* bacteria detection.

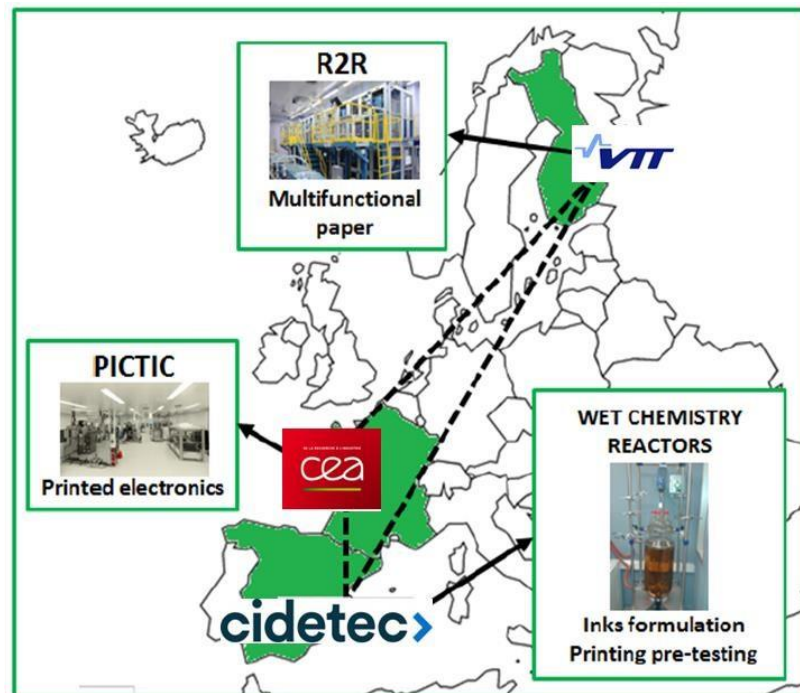
1.4 What is the aim of the INN PAPER Open Call?

To go a step forward and demonstrate the possibilities and benefits that the INN PAPER solutions can bring, the project consortium is organizing an Open Call with the aim of providing support to innovative companies in the process of **technology roadmapping** towards more **sustainable solutions in the field of flexible printed electronics** through the use of paper/cellulose not only as substrate but also as active material (e.g. as component in printable functional inks). To this end, INN PAPER brings together the following 3 Pilot Lines:

- **VTT** (Finland), for potential users interested in tailor-made multifunctionalised (nano)paper. The plant produces different grades of nano and microfibrillated cellulose as well as nanocellulose films by R2R (with surface modifications if necessary)



- **CIDETEC** (Spain), for cellulose-based inks formulation and preliminary printing assessment, mainly aiming at printable electrodes/electrolytes for batteries and electrochromic displays but also at achieving other functionalities.
- **CEA-LITEN** (France), a large-area printing pilot-line (named PICTIC), being available for organizations interested in the paper-based electronic platform and potential use-cases. The plant works on sheet-to-sheet mode and includes a complete set of industrial coating and printing equipment such as slot-die, screen-printer, inkjet/aerosol jet, gravure printer, flexo/heliography tools, etc.



The 3 above mentioned pilot-lines will become open-access after the project end (i.e. by July 2021) to further develop the paper-based electronic solutions and support industry (start-ups, innovators, SMEs, large enterprise) in their developments to move from TRL4 to TRL7.

The range of **flexible printed electronic technologies** addressed by the INN PAPER consortium (both by the pilot-line owners and by other core partners) includes:

- Batteries
- Electrochromic displays (both monocolour and multicolour)
- Environmental sensors (e.g. for temperature, humidity and shock detection)
- Lateral flow - Electrochemical immuno- and geno-sensors (providing quantitative response)
- Communication systems (to link the sensors with the user interface (e.g. mobile phone))

Your idea can be based on the above technologies but also on other types of sensors and/or functionalities, being clearly different to the three use-cases addressed in the



INN PAPER project listed in section 1.2.. In brief, we are looking for **new ideas/additional use-cases!**

1.5 Why participate?

The winner of the Call will benefit from the INN PAPER ecosystem composed by leading research organizations and recognized experts in the field of printed electronics. Winning this call will enable to the company **to be positioned in the “green printed electronics” market** as early adopter of the paper-based electronics technology which explores/exploits the potential of paper as substrate and component in flexible electronics.

The report to be provided (including the results of the technical viability assessment, manufacturing process flow, roadmap to TRL 7 and estimated cost) will allow to the winner company **to evaluate if the proposed idea worth to be further developed by transforming the concept into a physical prototype**. If this is the case, **open-access to the pilot-lines network and its services** will be offered to winner **at reduced rates** or even through collaborative project from July 2021.

1.6 What does the Open Call offer?

Partners will provide to the Open Call winner, services consisting of person-months necessary to perform a study and elaborate a report on:

- Technical viability assessment for the manufacturing of the proposed use-case
- Manufacturing process flow
- Roadmap to reach TRL 5 or 7 (depending on the use-case)
- Manufacturing cost estimation and partnership model

Most of the man efforts will be invested by the 3 pilot-lines owners, which will be supported by other core partners of the project if necessary.

1.7 How to apply

Are you interested in applying to the Call? Please follow the next steps to apply:

- Have a look to the **INN PAPER pilot-lines and technologies portfolio** on [the project website](#)
- Identify the technologies/approached that could endow your product/idea with improved and/or more innovative characteristics/functionalities and also more eco-friendly features.
- Register and [download](#) the **Application Form for first stage**
- Fill and submit the application form [through the website](#) within the application period (deadline 31st August 2020 for the 1st stage)

Only applications in English language will be accepted.



2 DATES

- **Application period:**
 - First stage: from 1st of April to 31st of August 2020.
 - Second stage: from 15th of September to 26th November 2020.
- **Evaluation period:**
 - For the first stage: from 1st of September to 14th of September 2020.
 - For the second stage: from 27th of November to 17th of December 2020.
- **Communication of the winner:** 18th of December 2020.
- **Signature of Contract Agreements:** 31th of January 2021.
- **Project launch:** 1st of February 2021.
- **Report delivery to the winner:** 30th of June 2021 or end of INN PAPER project.

3 ELIGIBLE PARTICIPANTS

The call is open to:

- Mainly SMEs, start-ups and Mid-caps (see definitions below), but also large industrial companies.
- Tech (innovative companies) or non-tech (traditional industries).
- For any product from all activities fields/sectors that could benefit from greener solutions based on paper.

Type of company		Staff headcount	(and) Turnover	(and/or) Balance sheet total
Mid-cap		< 3,000	N.A.	N.A.
SME	Medium-sized	< 250	≤ 50M€	≤ 43M€
	Small	< 50	≤ 10M€	≤ 10M€
	Micro	< 10	≤ 2M€	≤ 2M€

The companies must be based in Europe.

4 EVALUATION CRITERIA AND PROCESS

The submitted proposals will be evaluated by the Evaluation Board composed of 3 evaluators (expert evaluators, with experience in evaluation process, selected within the INN PAPER partners).

In the first stage, partners will have only to submit a summary of the idea (1 page). These project ideas will be evaluated only with the aim of identifying if they are complementary / different to the three use cases of the INN PAPER project. The applicant will receive a notification confirming if the proposal is eligible or not and with some short recommendations for the second stage proposal.

In the second stage, all the eligible proposals (from 1st stage evaluation) will be evaluated according to the following criteria:



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- **Concept** (level of innovation, viability, etc): Score ranging from 0 to 5.
- **Impact** (economic –for company business, addressable market size-, social, environmental, technological). Score ranging from 0 to 5.
- Type of company: SMEs/start-ups will get 1 extra point.

The maximum overall score is 11. The threshold for the individual criteria is 3 and the overall threshold 7. Proposals failing to achieve the threshold score per individual criteria and the overall threshold will be rejected. Proposals will be ranked according to the overall scores in descending order.

