

**HORIZON EUROPE PROGRAMME**  
HORIZON-CL4-2023-DIGITAL-EMERGING-01-33

GA No. 101135196

# **Developing New 2D Materials and Heterostructures for Printed Digital Devices**



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## **2D-PRINTABLE - Deliverable report**

### **D8.2 – Quality assurance and risk management protocols**



Funded by  
the European Union

<b>Deliverable No.</b>	D8.2	
<b>Related WP</b>	WP 8	
<b>Deliverable Title</b>	Quality assurance and risk management protocols	
<b>Deliverable Date</b>	2024-03-31	
<b>Deliverable Type</b>	REPORT	
<b>Dissemination level</b>	Sensitive – member only (SEN)	
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<b>Status</b>	Final	2024-03-27

#### Document History

Version	Date	Editing done by	Remarks
V1.0	2024-03-04	UNR	
V1.1	2024-03-25	TCD	
V2.0	2024-03-26	UKa	
<b>FINAL</b>	2024-03-27	UNR	

#### Project Scientific Abstract

The 2D-PRINTABLE project aims to integrate sustainable large-scale liquid exfoliation techniques with theoretical modelling to efficiently produce a wide range of new 2D materials (2DMs), including conducting, semiconducting, and insulating nanosheets. The focus includes developing the printing and liquid phase deposition methods required to fabricate networks and multicomponent heterostructures, featuring layer-by-layer assembly of nanometer-thick 2DMs into ordered multilayers. The goal is to optimize these printed networks and heterostructures for digital systems, unlocking new properties and functionalities. The project also seeks to demonstrate various printed digital devices, including proof-of-principle, first-time demonstration of all-printed, all-nanosheet, heterostack light-emitting diodes (LEDs). In conclusion, 2D-PRINTABLE will prove 2D materials to be an indispensable material class in the field of printed electronics, capable of producing far-beyond-state-of-the-art devices that can act as a platform for the next generation of printed digital applications.

## Public summary

The Horizon Europe 2D-PRINTABLE project aims to unlock the full potential of 2D materials as an indispensable asset in the field of printed electronics. By employing sustainable and affordable techniques known as liquid exfoliation, the goal is to create more than 40 new 2D materials, guided by machine learning and AI methods. Moreover, the project will develop innovative printing and liquid deposition techniques to fabricate nanosheet networks and heterostructures with unique properties, facilitating the production of advanced printed digital devices. In particular, these novel materials will be integrated into printable 2D-based heterostructures specifically designed for digital technologies, which will serve as the foundation for a range of printed electronic devices, including transistors with characteristics outperforming conventional printed electronics, solar cells and LEDs.

To support the achievement of the 2D-PRINTABLE objectives and reach the set targets for key performance indicators thereof, it is essential to have robust risk management procedures in place, ensuring a systematic and strategic response in case of unforeseen circumstances. The highest quality of the 2D-PRINTABLE project results is ensured by the introduction of internal quality assessment and risk management procedures. The risk management plan is designed to ensure the successful attainment of goals and objectives within specified timeframes, maintaining high quality, and staying within budget constraints. This document outlines a systematic process to identify potential risks and outlines contingency plans, along with establishing protocols for effective risk management.

# 1 Acknowledgement

The author(s) would like to thank the partners in the project for their valuable comments on previous drafts and for performing the review.

## Project partners:

#	Partner short name	Partner Full Name
1	TCD	TCD THE PROVOST, FELLOWS, FOUNDATION SCHOLARS & THE OTHER MEMBERS OF BOARD, OF THE COLLEGE OF THE HOLY & UNDIVIDED TRINITY OF QUEEN ELIZABETH NEAR DUBLIN
2	UNISTRA	UNIVERSITE DE STRASBOURG
3	UKa	UNIVERSITAET KASSEL
4	BED	BEDIMENSIONAL SPA
5	TUD	TECHNISCHE UNIVERSITAET DRESDEN
6	VSCHT	VYSOKA SKOLA CHEMICKO-TECHNOLOGICKA V PRAZE
7	UNR	UNIRESEARCH BV
8	UniBw M	UNIVERSITAET DER BUNDESWEHR MUENCHEN
9	EPFL	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE

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This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101135196. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.