

Horizon Europe Framework Programme (HORIZON)  
HORIZON- RIA

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## **TRIUMPH**

Triple junction solar modules based on perovskites and  
silicon for high performance, low-cost and small  
environmental footprint



**Deliverable report**

**D1.3- First Project Management Plan**

## Disclaimer/ Acknowledgment



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## About TRIUMPH

TRIUMPH is aimed at developing the next generation PV technology to come after tandems, i.e., an advanced triple junction cell concept. The devices will be based on the cost-effective and highly-efficient perovskites for the middle and top cells and the robust and well-proven silicon for the bottom cell. The **4 objectives** of are:

1. Achieving highly-efficient triple junctions **>33%** with **high stability** on 1 cm<sup>2</sup> area
2. Demonstrating a cost-effective and scalable route for triple junctions on **large-area ( $\geq 100$  cm<sup>2</sup>)** with minimal upscaling losses (efficiency **>90%**<sub>rel</sub> to small-area devices) with **3J modules** passing accelerated reliability testing.
3. Designing triple junction cells and modules for **sustainability** by **reducing CRMs** such as In and Ag, and by introducing **circular concepts** that allow easy recycling at end-of-life of the 3J modules.
4. Establishing the **value chain within EU** for future multi-junction modules.

The project consortium, coordinated by IMEC in Belgium, consists of **15 complementary partners** from renowned research institutions, illustrious universities as well as strong industrial players from across the value chain.

## TRIUMPH consortium members

No.	Participant Legal name	Acronym	Country
1 (Coord.)	INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM	IMEC	BE
2	FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V	F-ISE	DE
3	L'INSTITUT PHOTOVOLTAÏQUE D'ÎLE-DE-FRANCE	IPVF	FR
3.1	ÉLECTRICITÉ DE FRANCE	EDF	FR
4	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK	TNO	NL
5	SALD B.V.	SALD	NL
6	DYENAMO AB	DYN	SE
7	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	CNRS	FR
7.1	UNIVERSITE PARIS-SACLAY	UPS	FR
8	ALBERT-LUDWIGS UNIVERSITÄT FREIBURG	ALUF	DE
9	HANWHA Q CELLS GMBH	QC	DE
10	RENA TECHNOLOGIES GMBH	RENA	DE
11	ECOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE	EPFL	CH
12	CENTRE SUISSE D'ELECTRONIQUE ET DE MICROTECHNIQUE SA - RECHERCHE ET DÉVELOPPEMENT	CSEM	CH
13	VON ARDENNE GMBH	VA	DE

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## Document history

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22.03.2023	3	Veroni Ballet		Proposed to SB

## Dissemination level

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## **Publishable summary**

This deliverable is an internal deliverable describing the detailed Project Management Plan (PMP) with a Gantt chart and a Work Breakdown Structure (WBS), including a schedule per task, responsible partner, related subtasks, related deliverables, and dependencies with respect to other tasks.