



HECATE Project Public Overview

April 2024



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EUROPEAN PARTNERSHIP

Summary

p.3

The people

p.5

Brief project
introduction

p.16

Contacts



01. The people

Project coordinators



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Project coordinators



Ignacio CASTRO

- Senior Principal engineer - Research
- Collins Aerospace Ireland – Project Coordinator.
- Collins Aerospace Ireland role in HECATE: Project technical and contractual coordination, technical research contribution across several WPs.



Short bio:

- MSc and PhD in telecommunication engineering
- Technical and research lead for electrical systems in CAI
- Experienced in coordination of EU programs
- 50+ publications between conferences, journals and patents



Jérôme VALIRE

- Senior expert in electrical architecture
- Safran Electrical & Power – Technical Leader.
- Safran Electrical & Power role in HECATE : Project technical coordination, technical contribution to several WPs and owner of the ground testing COPPER bird platform.



Short bio:

- MSc in electrical engineering
- Technical expert responsible for road map and development of components for hybrid propulsion
- Experience in coordination of EU programs



02.

Brief project introduction

Consortium

Objectives and targeted Performances

WP structure and leaders

Synergies



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In a nutshell



*Plus 6 MEuros requested contribution to UKRI

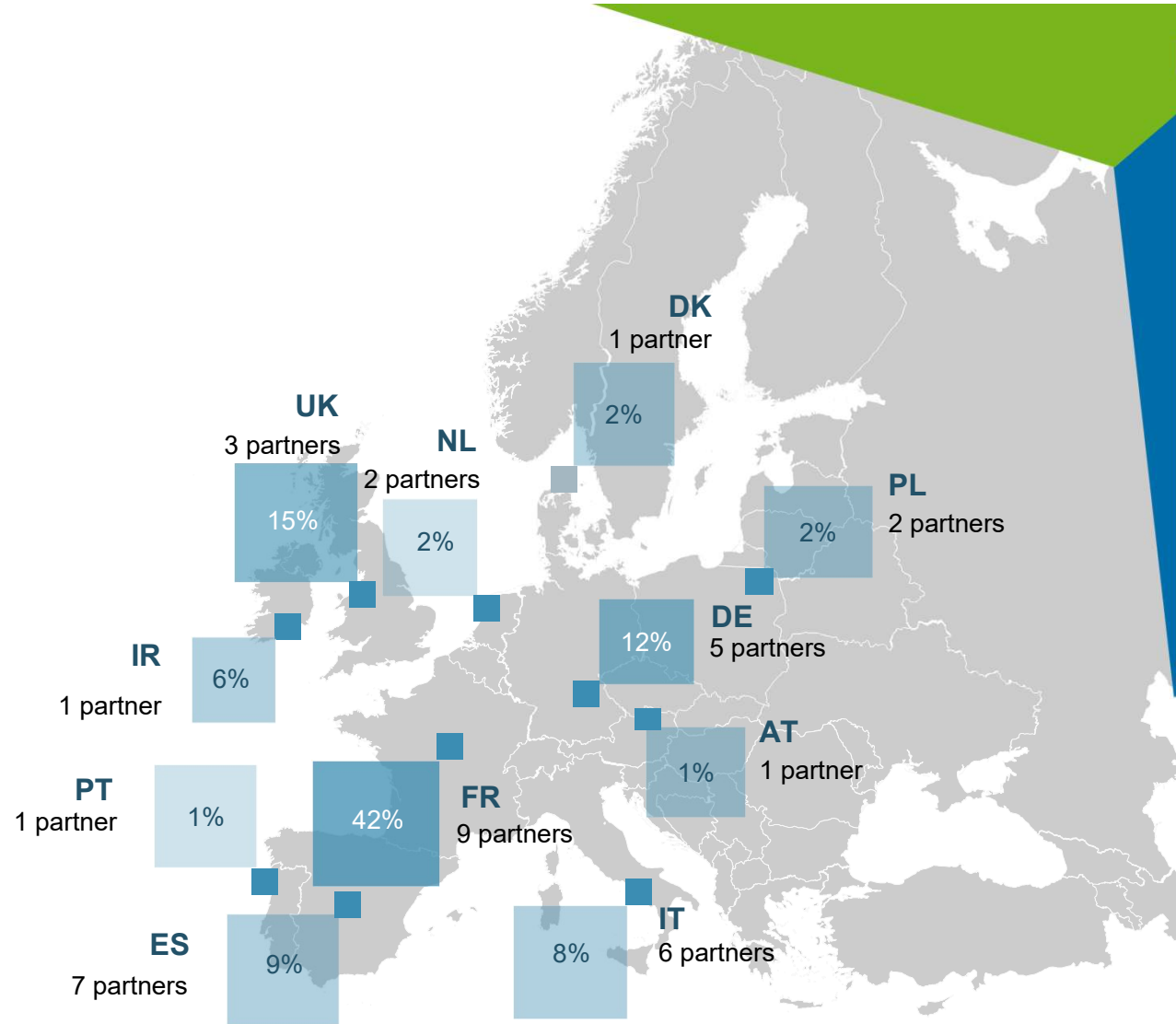
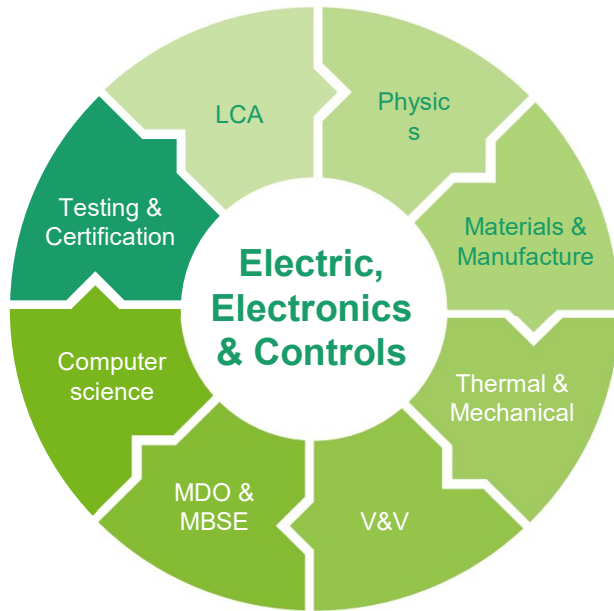


Partners



Consortium overview

Profile	Total	Grant
IND	73%	68%
SME	8%	7%
RTO/ Univ.	19%	25%



Aims, objectives and partners contributions

HECATE aims to deliver transformative technologies considering HVD for the electrical distribution of hybrid electric regional aircraft.

- High-power, high-voltage and certifiable electrical distribution for electrical architectures.
- Technology enablers at TRL5 in hybrid-electric propulsion for regional platforms with potential use for other aerospace domains (UAM, SMR, ETC.)
 - Supported by mitigation of HV and EMI phenomena plus development of digital twins to reduce time dedicated to testing.
- Contribute to the reduction of aircraft greenhouse gases toward the objectives of -30% net GHG emission reduction by 2035 and of zero emissions by 2050.



Project outline



- Definition of the electrical distribution architecture and specifications.
- Development and maturation of transformative technologies in the electrical distribution.
 - Supported by transversal activities: Digital Twins and EMI/EMC
- Demonstration and integration at COPPER bird ground test.
- Road mapping, impact, scalability to future platforms based on acquire know-how and LCA.
 - Readiness of technologies toward CA Phase 2 and commercial exploitation.

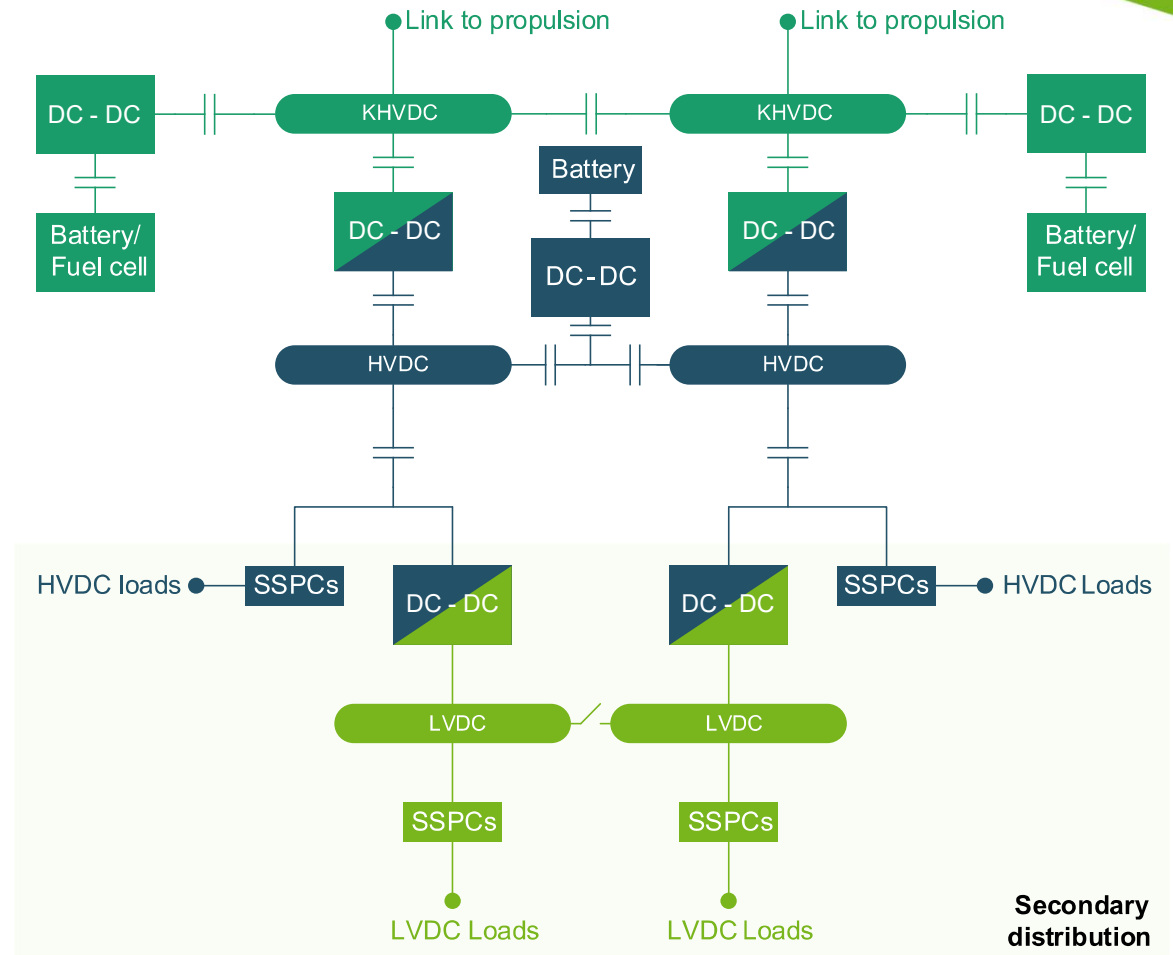
WBS & leaders



Electrical architecture

HECATE will define the electrical architecture and all the related technologies.

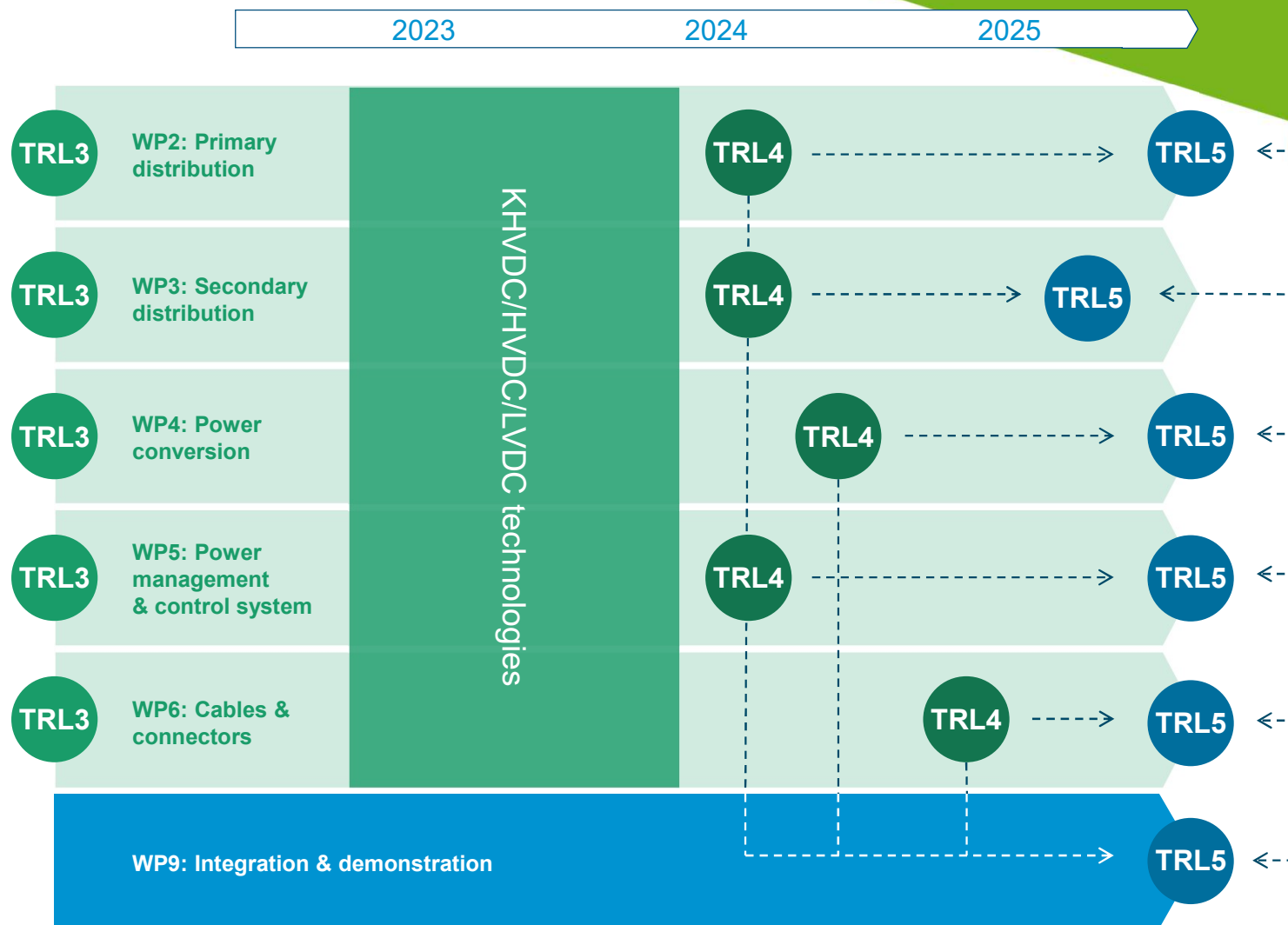
- Two preliminary architectures will be evaluated
 - An electrical architecture based on batteries/fuel cells.
 - An electrical architecture segregated for propulsion and distribution.
- Three different voltage levels will be used.
- Interaction and alignment with HERA and HE-ART are critical for the definition of the electrical architecture and power/voltage/current levels.
 - All of the technologies will be adapted to the requirements set in WP1 with the interaction and synergies to all topics identified within Clean Aviation or other program internal or externally funded.



Maturity

- All technologies will be TRL3* ready at project start.
- TRL5* will be achieved at the end of 2025 by the integration and demonstration.
 - Developments after TRL4* and subsystem testing will be critical to achieve TRL5*.
- Beyond the project > TRL9*
 - Industry partners will continue development based on know-how and market opportunities.
 - TRL6* > 2026/2027.
 - TRL7-9* will depend on the launching of HERA by LDO, AD and/or ATR.

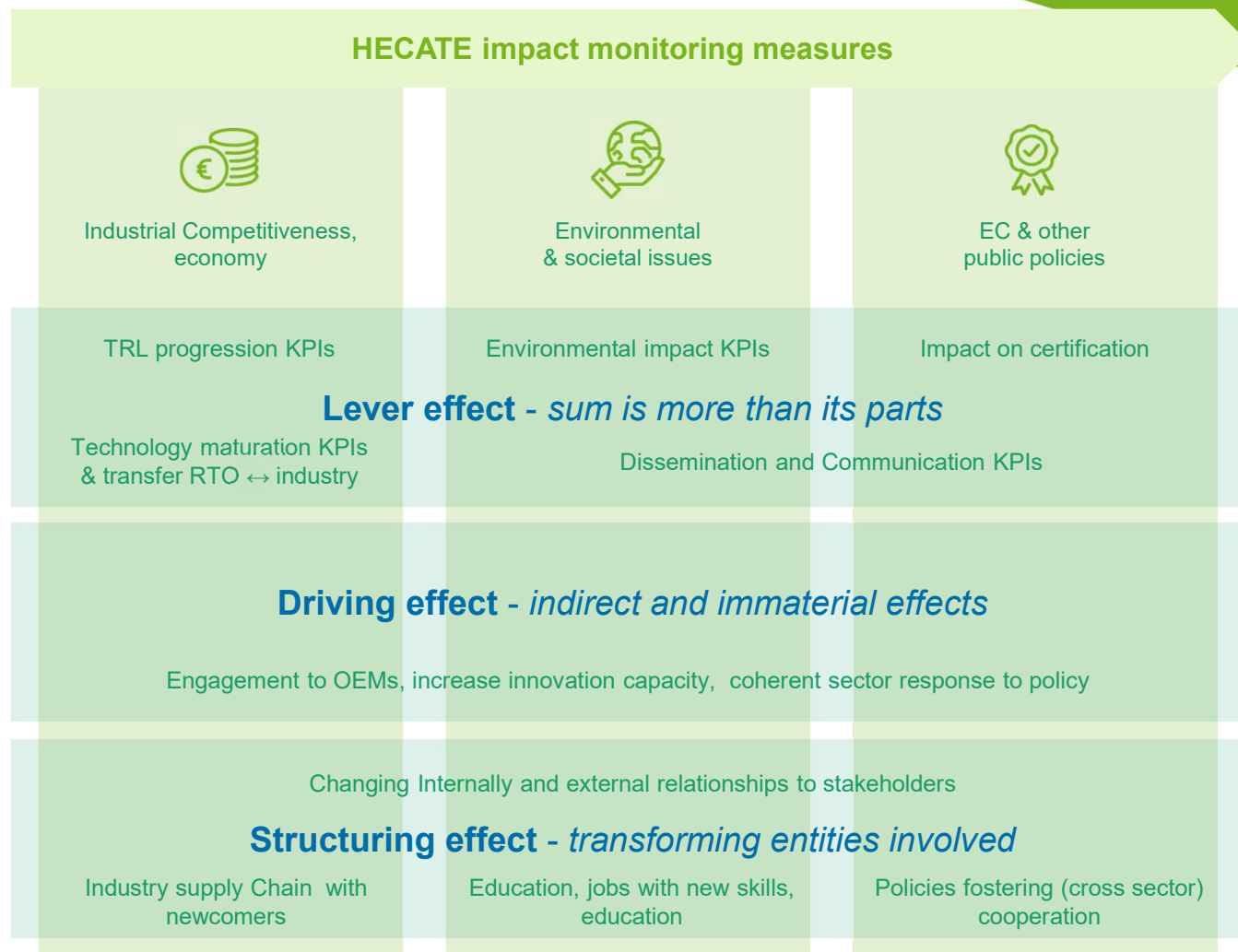
*TRL levels consider the EU definition



Performance monitoring

- **HECATE will take metrics from all project activities on three topics:**
 - Industrial competitiveness and economy.
 - Environmental and societal impacts.
 - EC policies and regulations.
- **This metric are to be evaluated in three tiers:**
 - Tier 1: Lever effects, sum of the parts leads to a combined improvement.
 - Tier 2: Driving effects, indirect and immaterial impacts.
 - Tier 3: Structuring effects, transformative changes to the stakeholders and the ecosystem.

*TRL levels consider the EU definition



Thank you!

Contact points for any question:



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- **Coordinator**

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