

ABOUT GENEX

GENEX is an EU-funded collaborative research project aiming to create a multi-disciplinary digital twin-driven framework for optimized aircraft composite manufacturing and Operation & Maintenance (O&M) processes for ensuring aircraft's safety and airworthiness.

Without drastic measures, aviation related CO₂ emissions will become, by 2050, ten times higher than in 1990. For that purpose, **efficient** and **sustainable manufacturing**, **robust repairing processes** and an **operationally upgraded** and **extended aircraft lifecycle** are necessary to achieve the environmental goals set by the EU.

GENEX commits to developing:

- » Advanced and efficient manufacturing of recyclable composites
- » New structural health and usage monitoring and management systems
- » Digital-assisted repair processes and tools

When the physical world meets, uniquely, the virtual world for a premium manufacturing, maintenance, and repair approach to the next-generation aircraft composite structure

OUR TEAM



CONNECT WITH GENEX

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Designed by: EASN-TIS



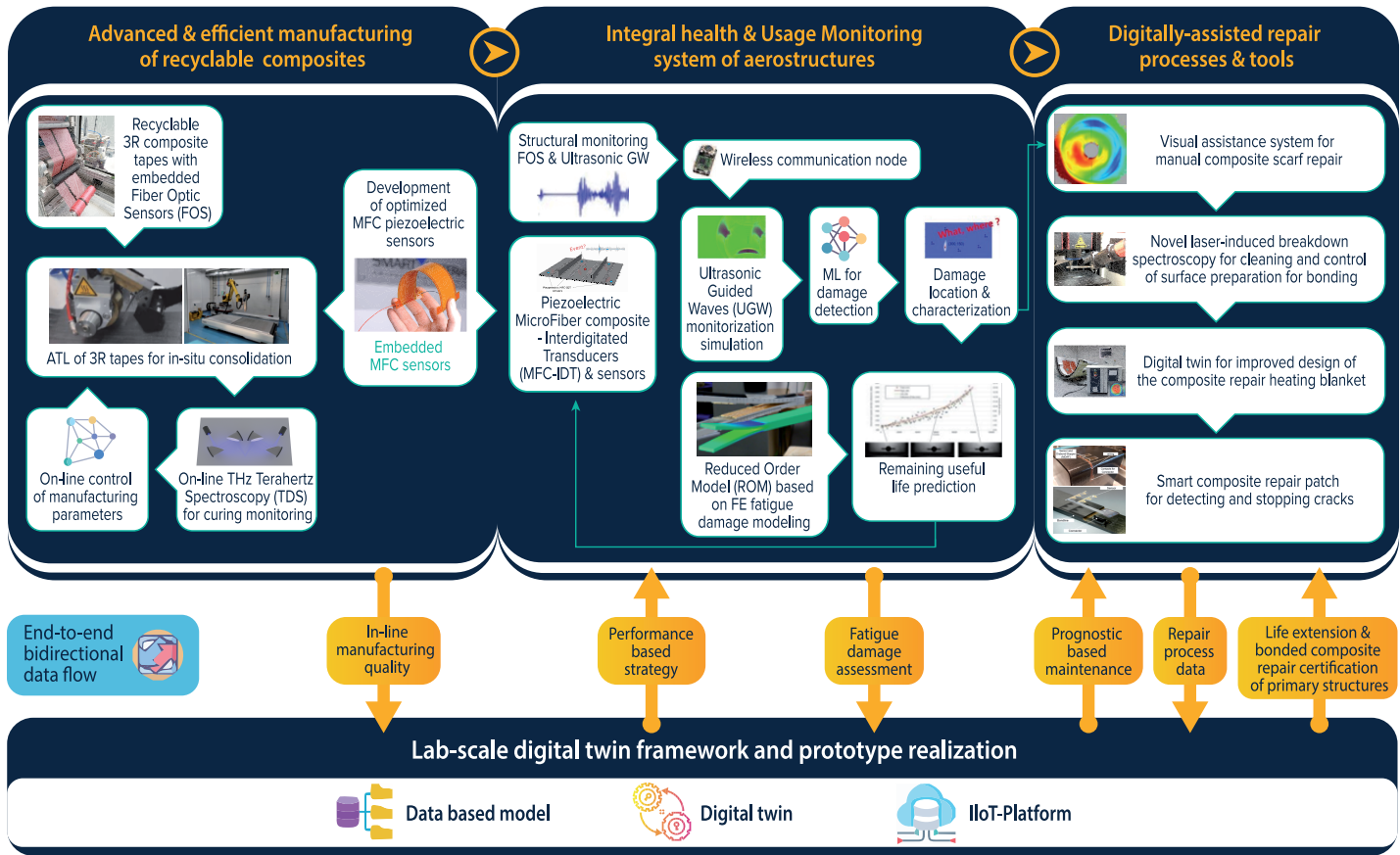
New end-to-end digital framework for optimized manufacturing & maintenance of next generation aircraft composite structures



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GENEX CONCEPT

GENEX OBJECTIVES



Environmental Impact & Maintenance, Repair and Overhaul (MRO) guidelines

As part of this holistic view, an environmental assessment of the potential benefits of the project will be performed, together with MRO guidelines for the next aircraft generation.

- To produce **eco-efficient materials** and processes, monitoring systems, and numerical models supporting **advanced manufacturing** of composite aircraft components.
- To invent a methodology built on **coupled physics -and data-based- algorithms** to improve the assessment of fatigue damage and residual life estimation of the aircraft structure under variable usage scenarios.
- To develop **pioneering digital-based processes** and **tools** to optimize **maintenance** and **repair** operations while assisting the digital transformation of composite repair.
- To create a **multi-disciplinary digital twin** of the aircraft component, rendering feasible a continuously updated model of the aircraft lifecycle.

A multi-disciplinary digital twin enabling data management across the entire lifecycle of the next-generation aircraft composite structures

