D-standart
for Durability Modelling of Composites

Durability Modelling of Composite Structures with arbitrary lay-up using standardised testing and artificial intelligence

OUR PROJECT

Develop **rapid methods to characterise fatigue damage in composites** and **sustainability of composite supply chains ;** and thereby model the durability and sustainability of large-scale composite structures with arbitrary layups **under realistic conditions** (loads, environment, manufacturing imperfections).

❭ **Through minimal and accelerated testing** of generic specimens.

❭ Transferring the results of small-scale experiments to large-scale structures using **artificial intelligence and machine learning.**

OUR AMBITION

❭ Enable **reduced time-to-market, material waste, and increased lifespan** of composite products in the **aerospace and wind energy** industries.

❭ Align with the objectives of **EMMC** and **EMCC** councils.

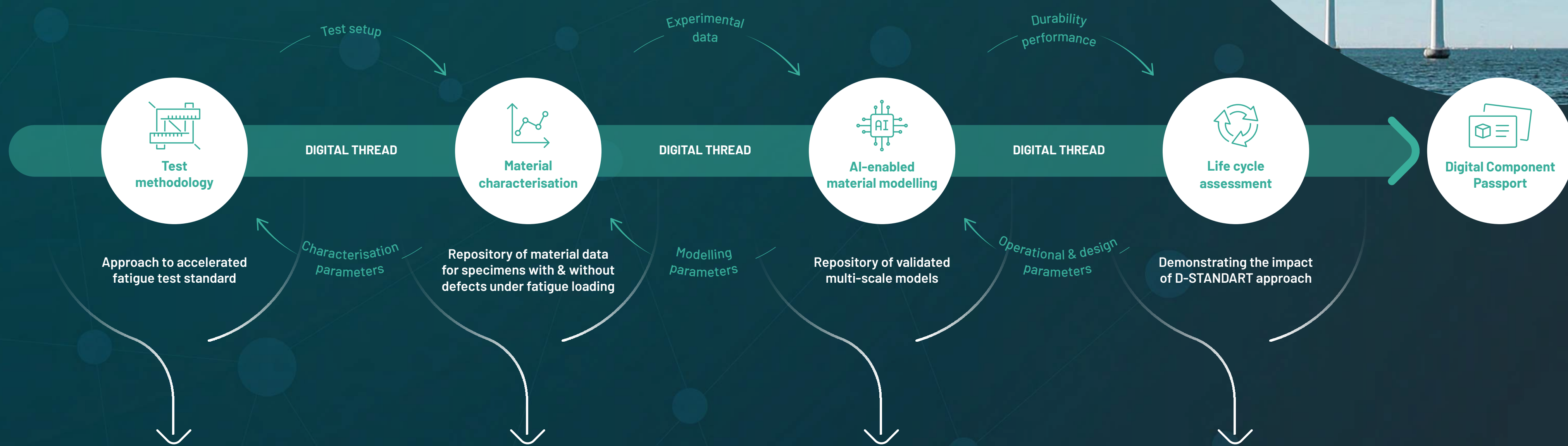|		
Starting date **01/01/2023**	Duration **36 months**	**9 partners** from 4 European countries
Project Coordination **Dr Vis Dhanisetty (NLR)** contact@d-standart.eu	Type of action **Research and Innovation Action (RIA)**	GA Number **101091409**

OVERALL APPROACH

The D-STANDART project **contributes to the development of sustainable lightweight composite products** by designing fast and accurate testing methods that build a repository of material data. This characterisation data is **used to train and advance multi-scale models** which demonstrate the prediction **capability of the durability performance** and **hence improved assessment of the product life cycle.** Meanwhile the interfaces of these activities are supported by the digital thread, forming the foundation for a Digital Component Passport.

Test setup → Experimental data → Durability performance →

Test methodology — DIGITAL THREAD — **Material characterisation** — DIGITAL THREAD — **AI-enabled material modelling** — DIGITAL THREAD — **Life cycle assessment** → **Digital Component Passport**

Approach to accelerated fatigue test standard

Repository of material data for specimens with & without defects under fatigue loading

Repository of validated multi-scale models

Demonstrating the impact of D-STANDART approach

Characterisation parameters — Modelling parameters — Operational & design parameters

IMPACT Reduced design & testing times, more reliable fatigue modelling, higher fatigue performance, reduced time-to-market, sustainable-by-design products

CONSORTIUM

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