



## Project Overview

D-STANDART

*Vis DHANISSETTY (NLR)*



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# Project background

Motivation



## Situation

- › Composite materials crucial for sustainable future
  - Aircraft 50% or more out of FRP
  - Wind energy sector with larger turbines
- › Extreme loads and stress cycles during product lifetime
- › Damage tolerance needed to extend the lifespan

## Challenge

- › Lack of fundamental knowledge regarding damage growth process under cyclic loading
- › Complex interaction of fibres, fibre orientation, and matrix materials
- › Every new design requires multiple tests at various scales
- › Imperfect solutions: high-safety factors, 'no growth' criterion

## Consequence

Composites products are

- › Expensive
- › Laborious
- › Inefficient to manufacture

## Need

A better understanding of the fatigue characterization at a meso-scale, so that we can scale up the gained insights to larger structures

02

## Project overview

Objective, approach, and impact



# D-STANDART objective

## Project intention

### What?

To 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** (operating loads, application environment, and impact of manufacturing defects)

### How?

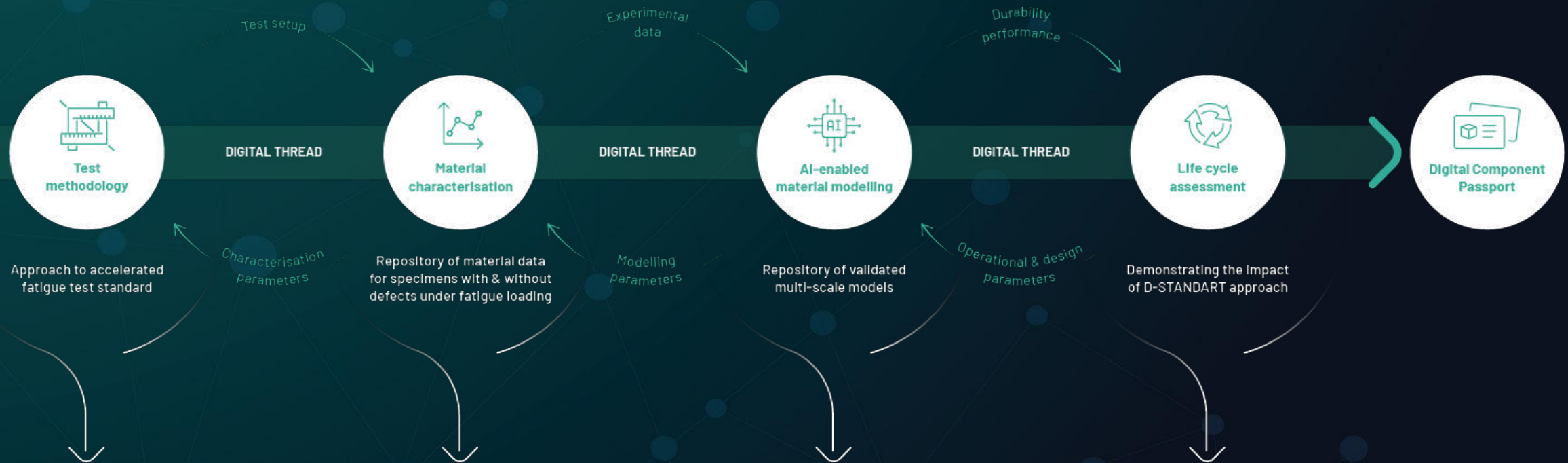
- › **Through minimal and accelerated testing** of generic specimens
- › Transferring the results of the experiments to large-scale structures using **artificial intelligence and machine learning**

### Effect?

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

# D-STANDART approach

Addressing the “how” of the objective



## IMPACT

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

# Thank you!

## Contact points for any question:



zenodo

[d-standart.eu](https://d-standart.eu)

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