

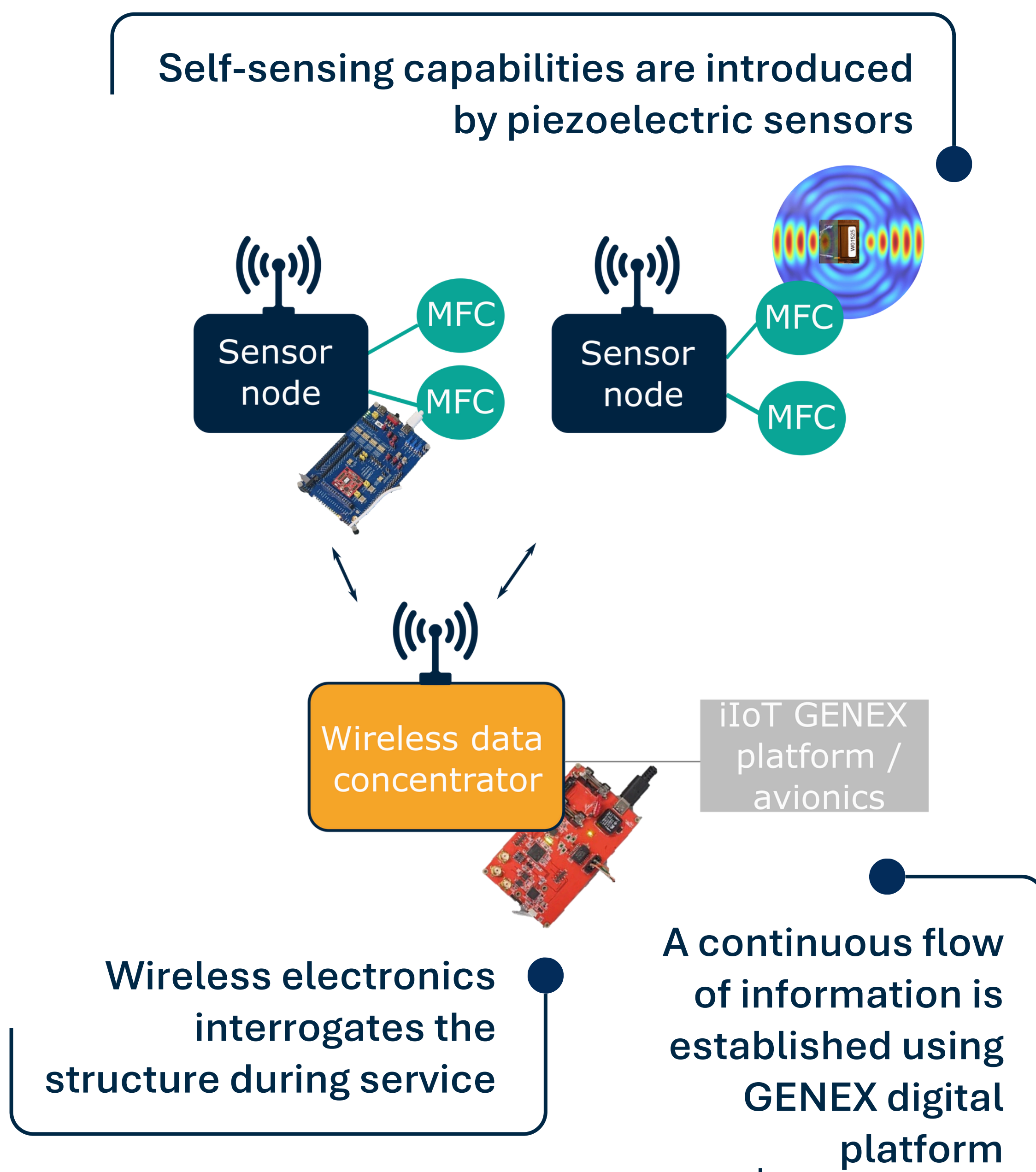
GENEX

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

MANUFACTURING

Hardware

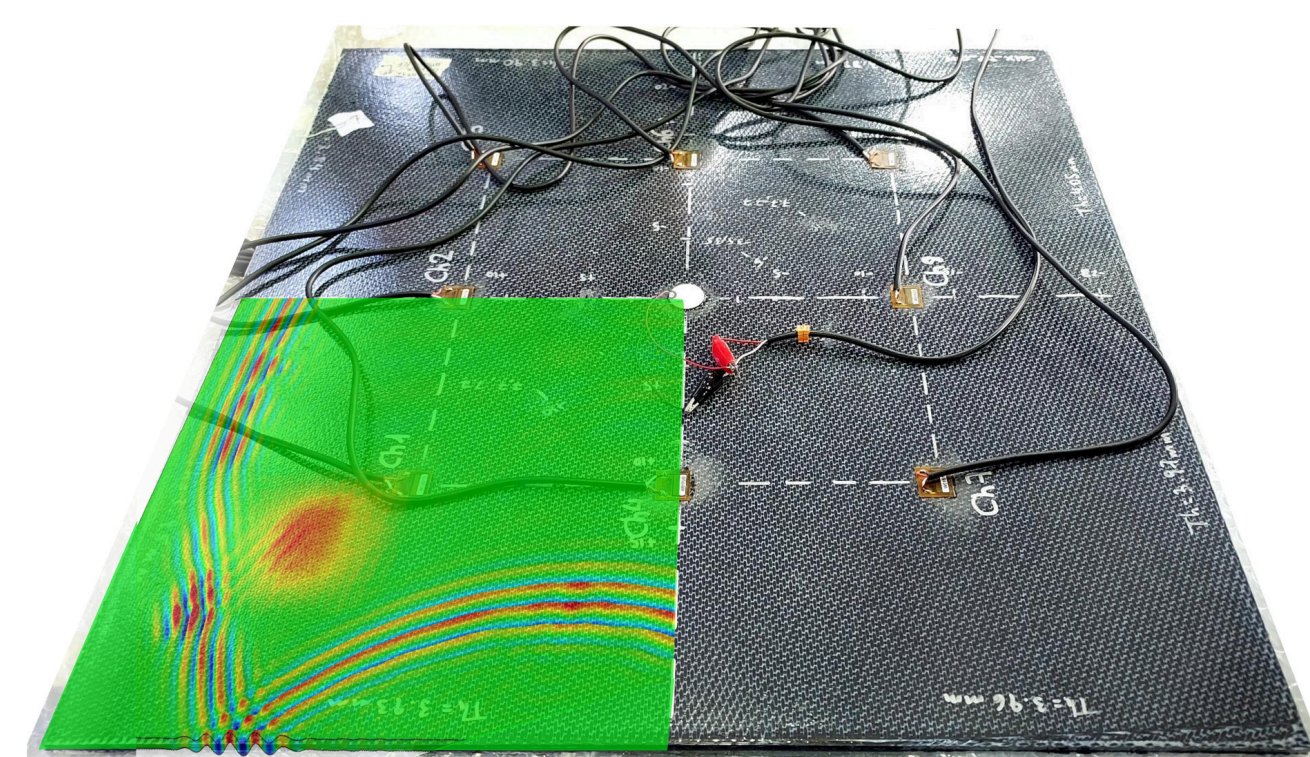
SENSOR NETWORK OPTIMIZATION & WIRELESS COMMUNICATION NODE



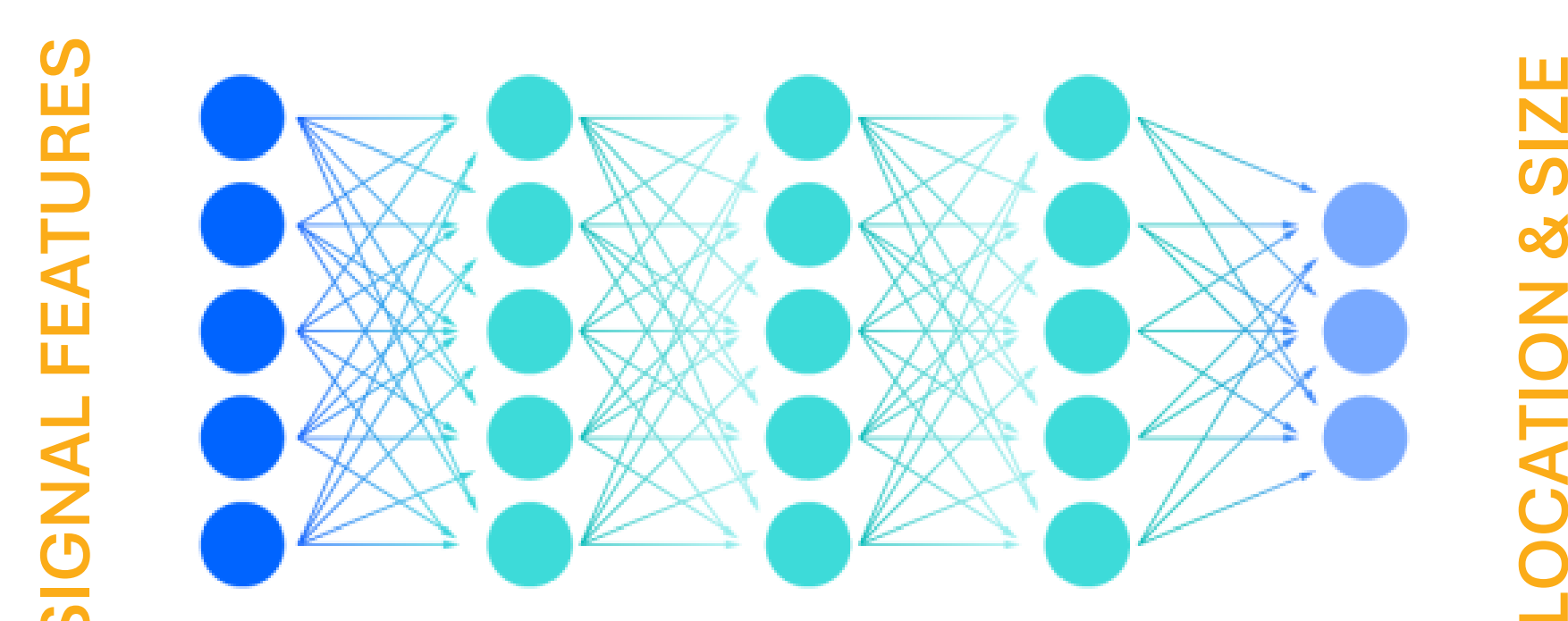
Software

UGW SIMULATIONS & ML MODELS FOR DAMAGE DETECTION

Ultrasonic guided wave monitoring is used to detect delaminations and unfolding



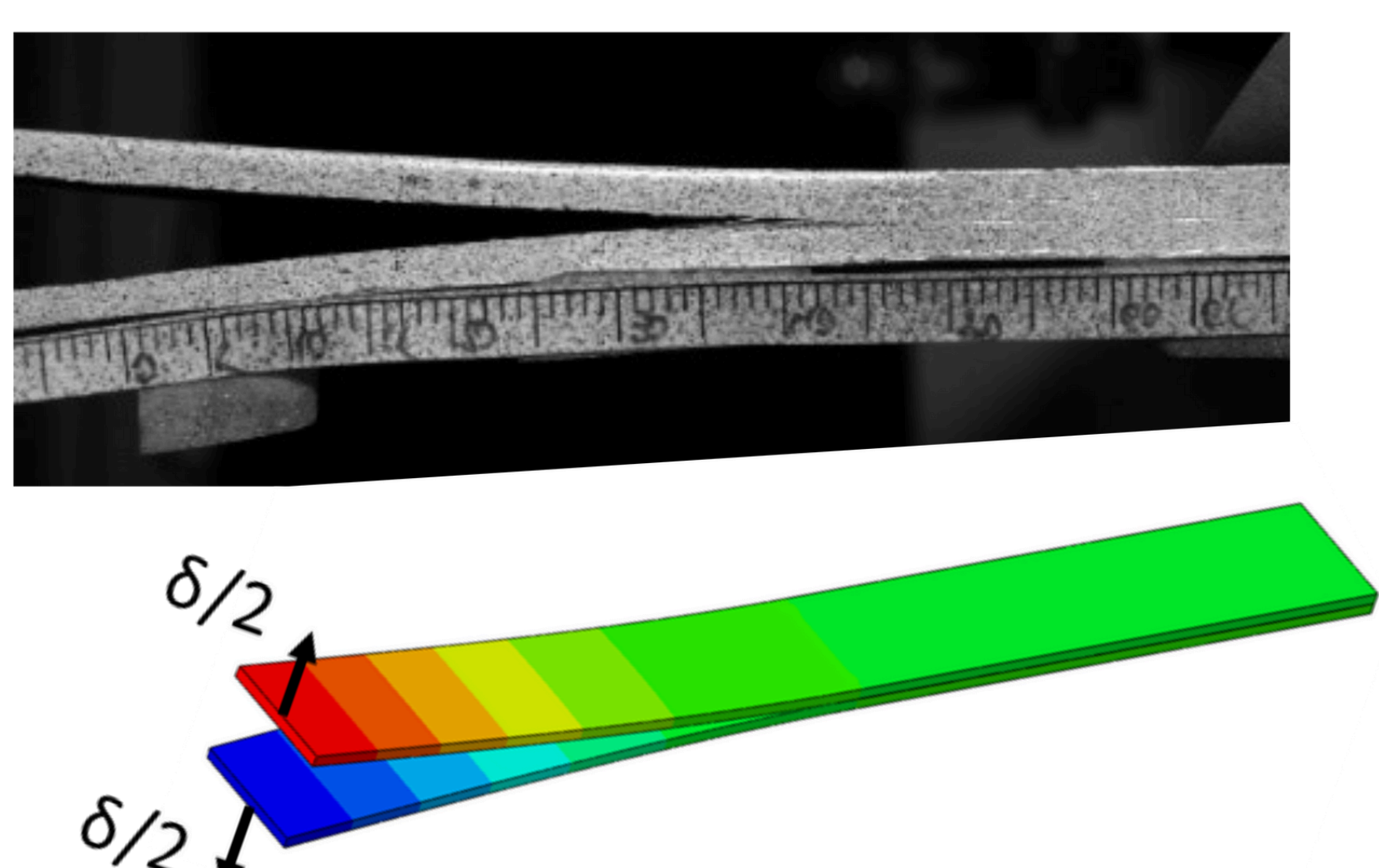
Self-developed open-source HPC scalable software allows to obtain big datasets



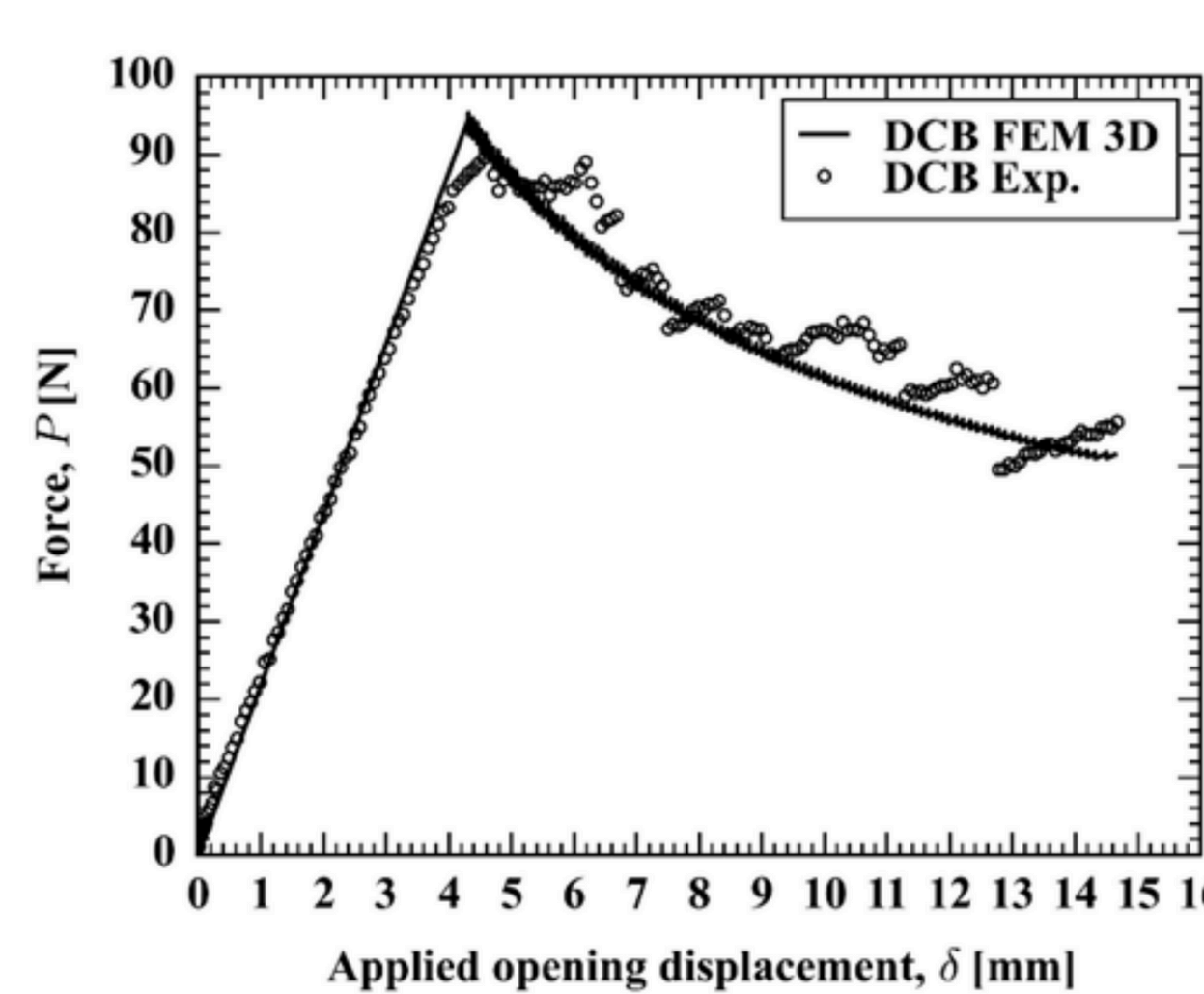
Machine learning models are trained to predict damage location and size

Digital Twin

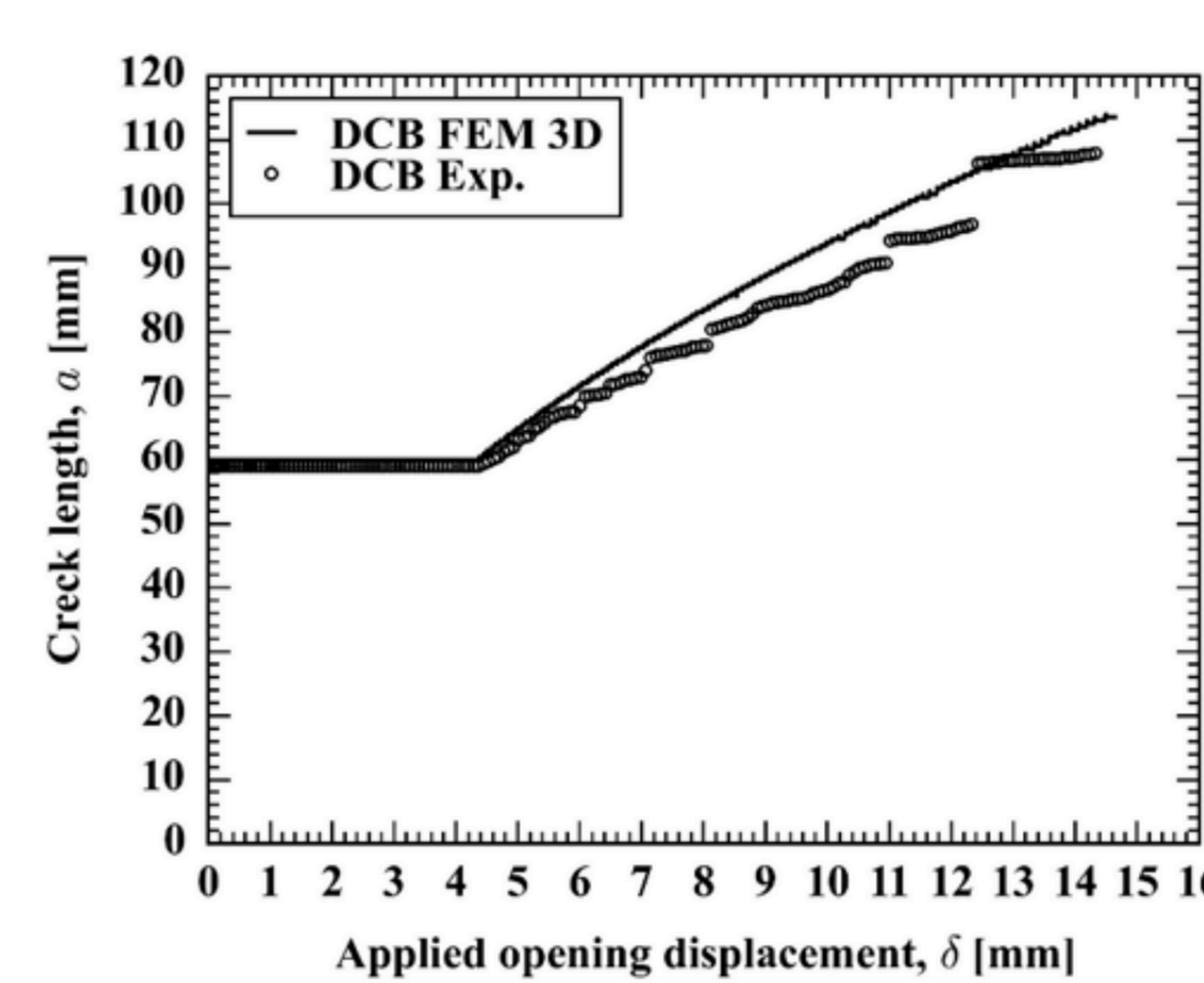
FATIGUE & FRACTURE MODELS FOR REMAINING USEFUL LIFE PREDICTION



Fatigue and fracture models predict the progression of the delamination under future loading scenarios



Force, P [N] – Applied opening displ., δ [mm]



Crack length / delamination length a [mm] – δ [mm]

The digital twin predicts the remaining useful life of the component with a certain detected damage

IoT GENEX digital platform

IN-SERVICE MONITORING

REPAIR



CONNECT WITH GENEX



genex-project.eu



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