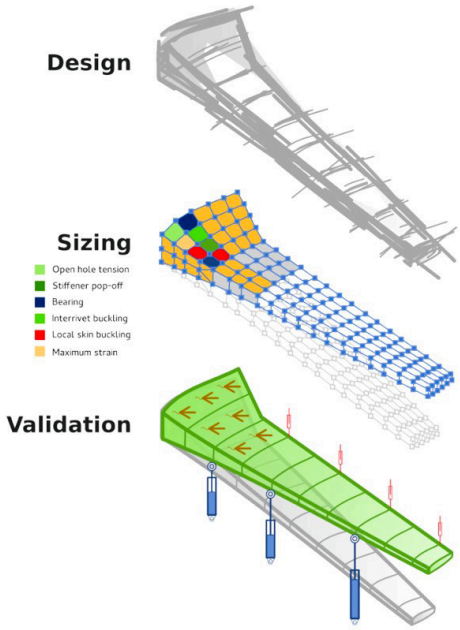
Fortissimo Success Story

FORTISSIMO

Near Real-time Analysis of Airframe Certification Test Data

Fortissimo Experiment Facts:
- Industry Sector: **Aeronautics**
- Country: **Netherlands**
- Software Used: **Pivotal**



THE COMPANIES

Colosso is a Dutch SME specialized in the design, analysis and physical testing of high-tech materials and structures, such as those used in the aerospace industry. Within this context, the key focus of Colosso is on the improvement of its processes and products. KE-Works is a Dutch software company. It develops KE-chain, a modelling platform for engineering applications.

THE CHALLENGE

The development of aircraft for civil aviation is driven largely by the economics of the materials constituting the airframe. Improvements in strength and durability can reduce aircraft weight and allow regulators to increase the inspection intervals.

There is a continuous demand for better materials and a greater understanding of how these materials perform in aircraft components. However, introducing a new structural material for an airframe is costly and takes several years, so there is a significant need for better certification processes.

THE SOLUTION

One of the ways of reducing the cost and lead-time of the material qualification process is to improve the predictive capability of material models. Improved models lead to a reduction of the amount of testing required to achieve an reduction in the overall weight of the airframe.

The approach taken in this experiment was to use KE-chain, together with Colosso's data analysis and storage framework to calibrate a new algorithm to model materials based on data from fatigue tests. An HPC environment provided by Gompute was used to provide on-demand computing resources. This resulted in an improved ability to predict crack propagation in airframe components and a reduction in the required amount of fatigue testing.

BUSINESS IMPACT

The results of this experiment directly contribute to the further development of a Colosso's advanced physical and virtual test data monitoring and analysis tool (Pivotal). KE-works will integrate the developed features and infrastructure deployment options in the offerings of KE-chain.

Using HPC will enable (near) real-time data processing and evaluation. A cloud-based, pay-per-use HPC system means that using Pivotal and KE-chain is much more cost-effective than using in-house resources, making these offerings more competitive.

Fortissimo Experiment Partners:
- Colosso (End User and Domain Expert)
- KE-works (ISV)
- Gompute (HPC Provider and Expert)

More Information:
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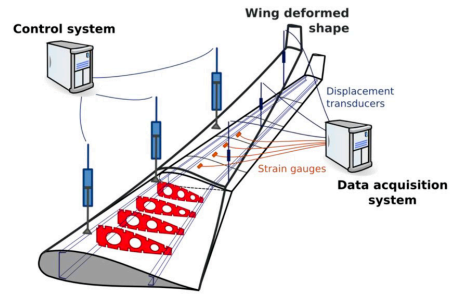
COLOSSO KE-works GOMPUTE



The experiment, supported by the cloud infrastructure provided by Gompute, strengthened the competitive position of both KE-works and Colosso. Because of the increased potential and capabilities of KE-chain and Pivotal, an increase in yearly revenue of €50-100,000 is predicted.

BENEFITS

- Improvements to the material model for testing airframe components, which will allow better components to be manufactured.
- Development of a new, promising software product, Pivotal, which will be offered together with KE-chain.
- Increase in revenue of up to €100,000 per year.

THE FORTISSIMO PROJECT

Fortissimo is a collaborative project that enables European SMEs to be more competitive globally through the use of simulation services running on a High Performance Computing cloud infrastructure. The project is coordinated by the University of Edinburgh and involves more than 100 partners including Manufacturing Companies, Application Developers, Domain Experts, IT Solution Providers and HPC Cloud Service Providers from 14 countries. These partners are engaged in over 90 experiments (case studies) where business relevant simulations of industrial processes are implemented and evaluated. The project is funded by the European Commission within the 7th Framework Programme and Horizon 2020 and is part of the I4MS Initiative.

I4MS Fortissimo is part of I4MS ICT Innovation for Manufacturing SMEs: www.i4ms.eu

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