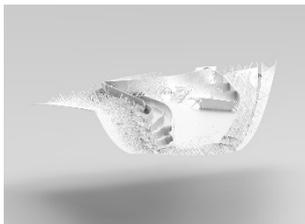
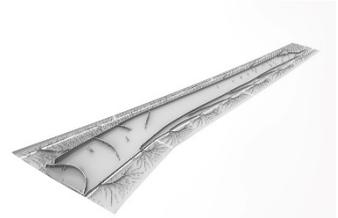


Press Release 9.10.2017

Project TopWing published top innovative results in NATURE

The project TopWing led by the Technical University of Denmark (DTU) was awarded with 12 million core hours under the 10th PRACE Call for Proposals for Project Access. Using PRACE resources on Curie hosted by GENCI at CEA, France allowed the TopOpt Group from DTU under Ole Sigmund to implement the computational morphogenesis tool and produced simulations with a giga-voxel resolution (three-dimensional equivalents of pixels). The developed tool from the TopOpt Group paved the way for full-scale airplane wing design with hitherto unprecedented resolution and huge potential for improved design and weight savings for the aerospace industry.



Niels Aage, research team member, gave a fascinating talk entitled “Ultra large scale structural optimisation-topology optimized wing structure” about the achievements of the project at [PRACEdays16](#). At that occasion, he won the PRACEdays16 Award for Best Industrial Presentation.

One year later the progress of their research work is reflected and highlighted in a paper, which is published in NATURE.

" ... This paper stands out as a contradiction to the so-called HPC gap in manufacturing; generally a notable absence of structural engineering on HPC systems due to a reliance on poorly scaling ISV software. It is for this reason that the authors of this work and the support provided by PRACE should be greatly applauded. I have no doubt that the work will encourage other engineers, both in academia and industry, to follow their lead, transforming many industry sectors that underpin the EU economy."

Lee Margetts, Vice-Chair of the PRACE Industrial Advisory Committee

"We would like to congratulate Ole Sigmund and his research team for their wonderful research achievements in their project TopWing. The team has shown how the computer decides the entire shape itself, which should enable completely new designs in future engineering applications. It is a great example of how leading fundamental and applied research can go hand-in-hand, and we are delighted that PRACE was able to help realise the project."

Prof. Erik Lindahl, Chair of the PRACE Scientific Steering Committee

The original NATURE article can be found here: [Giga-voxel computational morphogenesis for structural design](#), published on 5 October 2017.



Press Release 9.10.2017

Check out this video at Science magazine website:

<http://www.sciencemag.org/news/2017/10/watch-supercomputer-design-radical-new-wing-airplanes>

Facts & Figures

Principal Investigator

Ole Sigmund, Technical University of Denmark, Mechanical Engineering

Research Team: Technical University of Denmark, Mechanical Engineering

Boyan Lazarov

Niels Aage

Erik Andreassen

Project title:

TopWing - Topology optimization of aircraft wing

PRACE Hosting Member:

Awarded 12 million core hours on CURIE hosted by GENCI at CEA, France

About PRACE

The Partnership for Advanced Computing in Europe (PRACE) is an international non-profit association with its seat in Brussels. The PRACE Research Infrastructure provides a persistent world-class high performance computing service for scientists and researchers from academia and industry in Europe. The computer systems and their operations accessible through PRACE are provided and funded by 5 PRACE members (BSC representing Spain, CINECA representing Italy, CSCS representing Switzerland, GCS representing Germany and GENCI representing France). The Implementation Phase of PRACE receives funding from the EU's Seventh Framework Programme (FP7/2007-2013) under grant agreement RI-312763 and from the EU's Horizon 2020 Research and Innovation Programme (2014-2020) under grant agreements 653838 and 730913. For more information, see www.prace-ri.eu

Do you want more information? Do you want to subscribe to our mailing lists?

Please visit the PRACE website: <http://www.prace-ri.eu>

Or contact **Silke Lang**, Communications Officer:

Telephone: +32 2 613 09 28 E-mail: [communication\[at\]prace-ri.eu](mailto:communication[at]prace-ri.eu)