General news

Airbus collaborates with CSIR on computational mechanics

Leading international aircraft manufacturer, Airbus, has signed a contract with the CSIR for collaborative research in the field of computational fluid dynamics (CFD). This is the first time Airbus will be making use of the skills of CSIR researchers.

The contract follows the international trend for multinational aerospace firms to source research and technology (R&T) and innovation on a global scale. The CSIR has now become an accepted member of the global R&T network of Airbus.

Aeronautics engineers from the CSIR will help with the development of mathematical software that is intended to aid the company as it designs and builds its next generation of aircraft, aiming towards 'greener, cleaner, quieter and smarter' means of travel.

The contract positions South Africa to become a reckoned player in the field of hi-tech engineering and technology. "Computational mechanics is an extremely exciting field where the sky is no longer the limit, but the next frontier," says Dr Arnaud Malan, principal researcher in computational aerodynamics at the CSIR.

The Airbus company develops, produces and supports world-leading airliners seating between 100 and 525 passengers. Malan says the CSIR is thrilled to have been selected to undertake research in the field of computational mechanics by an aircraft manufacturing company of this stature.

According to Malan, computational mechanics is a special field that brings together the very latest and greatest in the field of physics, mathematics and computer science. "The only limiting factor in this kind of work is, in fact, imagination. Creative imagination is essential." Borrowing from Albert Einstein, Malan says "'Knowledge is limited, but imagination encircles the world'. Today everyone can circle the globe safely in aircraft because someone imagined it."

He says computational mechanics is a rapidly growing engineering field and is highly competitive. "In fundamental particle physics, researchers have always been looking for a unifying theory to describe fundamental particles. In computational mechanics, we have such a theory on engineering scales. Essentially, it helps to design an aircraft in cyber space."

The research contract results from the research capabilities developed by Malan and co-workers over recent years. The contract was negotiated and signed within a month. "What is clear from the process, is that Airbus is a highly dynamic, forward-looking company seeking to develop the best aircraft for tomorrow and it is serious about engaging research that will assist in this pursuit," Malan says.

Malan and his team of researchers will use the capabilities of the Centre for High Performance Computing - a Department of Science and Technology initiative managed by the CSIR's Meraka Institute in cooperation with the University of Cape Town - during this research project.

"To us, this contract says that the CSIR and South Africa are viewed as holding expertise and technology *on par* with the best and brightest in the world," says Malan.


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