

Focus on CSIR

Expertise in Aeronautics

Faster-than-real-time
mission simulations

The CSIR develops
robust simulated
environments.

In aeronautics,
simulated combat
scenarios are developed
that integrate major
aircraft capabilities and
challenges – air-to-air
missiles, data links,
radar, etc.



The South African Air Force (SAAF) is using the software for an improved understanding of the systems to design flight formations and develop tactics against new threat scenarios. The software has also made a major contribution to develop doctrine and tactics for fourth generation fighter aircraft.

Capabilities

- Air-to-air and air-to-ground mission simulation
- Multiple air and ground threat scenario simulation
- Parametric modelling of fixed and rotary wing flight models
- Modelling of various aircraft stores – missiles, rockets, bombs, laser designation pods

Outcomes

Mission planning that includes:

- Predictions of mission effectiveness
- Measurement of performance and effectiveness
- Survivability predictions against ground- and air-based threats



The South African Air Force uses a CSIR developed mission planning tool, based on the mission simulation framework, to develop its doctrine and tactics and do its mission planning for the Gripen and other aircraft. This capability was first used during the Soccer World Cup in South African in 2010.

The software allows for the modelling and evaluation of various aircraft performance models as well as various store models (including laser pods, dumb and boosted bombs and air-to-air missiles). Air-to-air missile hit probability modelling is also incorporated. The aircraft radar is modelled in high fidelity and the option to change radar modes during the simulation has been included. Furthermore, the helmet-mounted display is also modelled – combined with a visual detection model that models the pilot's ability to visually detect other aircraft.

Running the software on secure laptops have also added to ease of access and adoption.

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