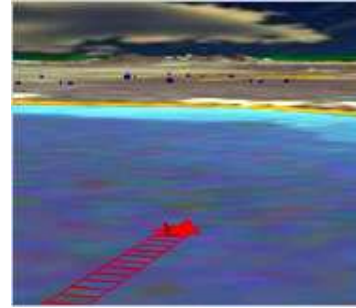


## Cyclops2 facilitates fresh view on research

A ground-breaking simulation, visualisation and analysis tool - the first of its kind in South Africa - has been developed by systems modelling and optronic sensor systems specialists at the CSIR. The new 3D analysis tool has been dubbed Cyclops2.

Cyclops2 can either connect to a running simulation or read logged simulation output data. The user can move around in time, for example pause the simulation or step backwards and forwards. All simulation objects and events are displayed in a 3D view and the user can move around freely in this virtual world to inspect the spatial and temporal relationships between objects. In addition, any information that is not directly observable in reality - such as a radar's detection dome and a missile's field of view cone - may be added. A filter allows the user to selectively exclude certain objects or groups of objects to unclutter the 3D view.



"We have a few simulation software packages and we visualise and analyse simulation results of these with the aid of the Cyclops2 tool," says CSIR optronics researcher Bernardt Duvenhage, adding that this new tool has been proven to accelerate the validation of simulation behaviour.

He says this visualisation capability is now also used by Denel and the CSIR's radar and electronic warfare group for real-time visualisation support, when researchers need to interpret and present their simulation results.

According to Duvenhage, their combined visualisation capability was an effort that required technical skill and innovative thinking. It uses open source modules with in-house software components to provide solutions for clients in the defence industry.

"Data analysis reports and graphs provide a consolidated view of the simulation, but visualising the events that occurred during the simulation, in an augmented 3D rendered reality, brings both awe and tangible, user-friendly evidence to the fidelity of the simulation," explains Duvenhage.

The Cyclops2 tool has been used successfully in support of ground-based air defence systems acquisition decision support. It has also been used to visualise the effectiveness of infrared countermeasures during one-on-one shoulder-launched missile engagements.

"Creating a cross-platform tool has enabled the first common distribution of a simulation and information visualisation component within an organisation and a wider community that run simulations at different system levels and in different technology environments," concludes Duvenhage.