

'Science fiction' facility pushes research boundaries

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A world-leading, room-sized virtual reality environment has been switched on at Monash University, allowing scientists to step inside their research and manipulate ultra high-resolution visualisations of data.

The most advanced facility of its type in the world, the \$1.8 million CAVE2 is a next generation immersive hybrid 2D and 3D visualisation tool comprising 80 3D LCD panels in an eight metre, 320 degree, curved wall formation. Located in the University's innovative New Horizons Centre, CAVE2 will be officially launched later this year.

With resolution matching human visual acuity, processing power of 80 trillion computations per second and sophisticated sensors allowing motion tracking, CAVE2 allows scientists to explore data from sources including the Australian Synchrotron, electron microscopes and medical imaging instruments in unprecedented ways.

Inside CAVE2, doctors can observe a patient's brain from between the blood vessels, planetary scientists can walk on the surface of Mars, reconstructed from NASA data, and engineers can observe how a severe storm would batter infrastructure.

Users have likened CAVE2 to 'science fiction technology'. It can deliver real-time display of 2D or 3D imagery and 30 frame per second playback of 84 million pixel images. These capabilities are underpinned by an ultra high speed 10 gigabit per second connection to the Monash network, supporting collaboration within and beyond the University.

Pro Vice-Chancellor (Research and Research Infrastructure) Professor Ian Smith said CAVE2 would allow unprecedented interactions with the leading [research infrastructure](#) located in the Clayton Precinct.

"CAVE2 has potential application across Monash University's entire research portfolio, and completes our trifecta of world-class data capture, world-class computational processing, and world-class knowledge discovery," Professor Smith said.

Director of the Monash eResearch Centre, Professor Paul Bonnington said the CAVE2 was a prime example of how technology could drive research progress.

"CAVE2 combines cutting-edge display and graphics technology with advanced software to provide a unique and powerful 'lens' for examining extremely large and complex data collections in the Big Data era. In enabling and emphasizing visual connection to complex data, CAVE2 will transform the way our scientists and researchers interact with their [data](#)," Professor Bonnington said.

The first CAVE2 was designed and built at the Electronic Visualisation Laboratory (EVL) at the University of Illinois, Chicago. The Monash facility, the only one of its type in the Southern Hemisphere, is only the second, and the largest, to be constructed.

Provided by Monash University

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