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Like many successful business founders, Sentient Vision's Dr. Paul Boxer has a list of people and organisations he credits with helping his fledgling Kestrel Moving Target Indicator technology get its first big break. But he believes his list may be the only one to include Lord of The Rings character Gandalf.

Sentient flying high with Kestr

WHILE responding to a Defence Science and Technology Organisation (DSTO) query about his earlier iSentry product in 2005, Boxer found DSTO and Sentient were both working on moving target indication (MTI) systems, DSTO with limited success. The system was designed to interrogate pixels in feeds from sensors such as electro-optic cameras and infrared systems to spot moving man-made objects that may be missed by the naked eye. Isolating an object would trigger the host system to highlight it with a red square on the sensor operator's display screen.

The applications are limitless, from military threat identification to civil search and rescue. But DSTO couldn't quite get it to work as desired.

"It had one problem that meant it couldn't be operational, and we found out when we went over there that this one problem was that it was 400 times slower than real time," Boxer said. "So I said would you be interested in seeing some software that can actually do this MTI task in real time?"

DSTO's emphatic nod created a challenge – in 2005 test-quality aerial video imagery wasn't nearly as accessible as it is now, particularly for a company with a total complement of two. But necessity was the mother of invention and Gandalf rode to the rescue.

"We ripped a scene out of 'Lord Of The Rings - The Two Towers', where Gandalf is riding through the forest, ran our software on it and our little red square followed Gandalf all the way up," he said. "And we used that to demonstrate to DSTO."

DSTO was impressed enough to fund delivery of the software and recommend Melbourne based Sentient for a Capability and Technology Demonstrator (CTD) program, and later a CTD extension, which provided the necessary funds and collaboration to help turn the Kestrel system in to a commercial success.

That led to the next major stepping stone – Kestrel's first sale in to an operational unit in 2009, the Army's 20STA, operating the ScanEagle UAV. But the process was not without its hiccups.

"The first demonstration went poorly and it took us another year to get in there and get the sale happening," Boxer said. "That sort of stuff happens when you've got new technology."

But success bred success. Sentient Vision's Kestrel software is now in service with every ADF UAS unit, including the Army's Shadow and Royal Australian Air Force Heron, and has proven itself in battle in Iraq and Afghanistan.

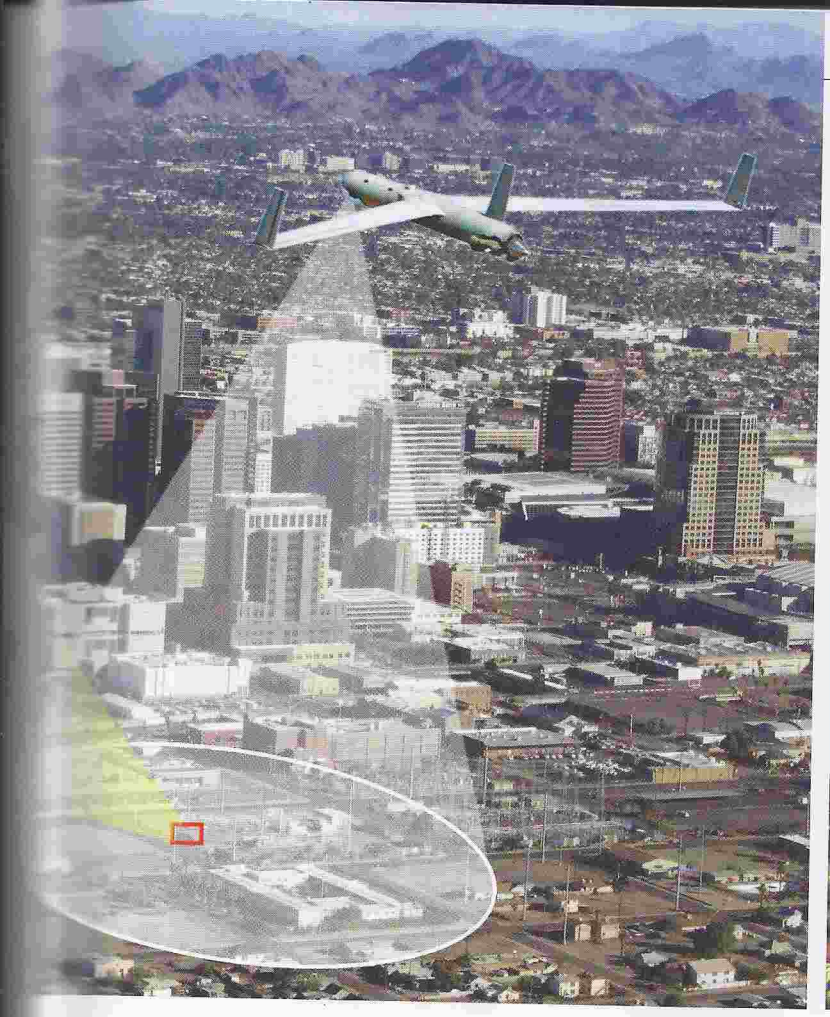
It is also in the Canadian CP-140 Aurora (the Canadian P-3 Orion), will be part of the sensor suite of the new Boeing P-8 Poseidon maritime patrol aircraft, and is being integrated in to one of the world's largest maritime military helicopter programs. In March this year Kestrel was selected by the US Navy's NAVAIR for deployment in the mission control system for the MQ-8 Fire Scout rotary wing shipboard unmanned aerial system.

Kestrel has been picked up by two of the world's three major sensor turret manufacturers, some of which on-sell the system under a different brand name.

With the relative size of the Australian market, the future was always going to be overseas.

"We've made a conscious effort to make it look as American as possible for the American market," Boxer said. "We consider it a point of customer resistance if they have to buy software or anything from overseas, because they do tend to believe that they have the best technology, which they usually do. In this case we believe we had the technology required but we had to de-Australianise it."

The international success has created some ironies for Sentient. One is that the RAAF evaluated Kestrel for the P-3 Orion, but didn't go any further. It may be that Canadian Auroras equipped with Kestrel take home a Fincastle Anti-Submarine Warfare trophy in competition with Australian aircraft that



LEFT: Kestrel is now functioning on a number of different UAV platforms worldwide.

BELOW: The Kestrel system is able to track patterns of life movement.

el success internationally

declined to fit the software. Another is that Kestrel's success on international platforms means Australia may pay a premium for the system when buying those platforms through the US Foreign Military Sales (FMS) system rather than dealing directly with Sentient.

Not that Boxer is losing any sleep over it - Sentient is too busy creating the next generation of MTI system. Last year the company demonstrated its new Visual Detection and Ranging (ViDAR) technology to the US Coast Guard. ViDAR takes advantage of new digital high resolution systems to vastly increase its coverage and range. It can also lower a sensor operator's workload by detecting an object, then turning the platform's sensor turret to point at and hone in on the object.

"It can cover huge swathes of ocean, with lower fatigue for the sensor operators and much higher reliability," Boxer said. "We have imagery during the Coast Guard demonstration where we were detecting fast boats, about 20 feet in length. The boat and its wake were completely invisible to the human eye looking through the sensors, but our system detected it and slewed the turret to it at distances of 16 kilometres."

The Royal Australian Navy will take a closer look at ViDAR later this year.

Looking back, Boxer wishes that Australia in general was more ready to accept that "we really do world standard stuff sometimes". And he has one strong piece of advice for those contemplating a similar path.

"Too many companies start, as we did, thinking I've got a great technology," he said. "They develop that technology up to a really good level and then wonder why they fail. A successful company is 50 per cent technology and 50 per cent commercial. You've got to have the ability to have talented people who can find the customer, understand the customer's needs and get the customer to buy in to the solution."