

Money for space - it's about time

I grew up in Penfield Avenue, a stone's throw (and we measured it as boys!) from what is now known as the Defence Science and Technology Organisation in Salisbury, just north of Adelaide in South Australia. In the late 1940's it was known as the Long Range Weapons Establishment, or, because of the 6000 head of sheep they ran to keep the grass down, Lambs, Rams Wethers and Ewes. This experience with rockets and the development of fast analogue and digital computing for trajectory calculations later lead to Australia being included in the European Launcher Development Organisation in the 1960s. The Europa rocket that was developed got a satellite to orbit altitude at the end of the decade but it failed to complete its orbit. Nevertheless, a number of satellites, including the Australian built WRESAT, were successfully launched from Woomera. The lessons learned went into the development of the European Space Agency in 1974, when the author was working in the European Space Technology Centre in the Netherlands and, unfortunately, Australia was not involved.

During the following 30 years, Australia has had a rather stop-start space program, culminating in recent years with the launch of Fedsat, which finally ceased operating in 2008. Unfortunately, funding of the parent body, the Cooperative Research Centre for Satellite Systems, ceased in 2005, 3 years prior. University teaching in aerospace and a number of research programs proceeded unabated over this period so Australia is still producing qualified engineers and scientists of international caliber.

It is important to remember that space holds great strategic interests for Australia, our closest ally, the USA and also our neighbours. In particular, the need to gather information from satellites that are intercepting data transmissions or simply observing the surface of the region have great strategic importance for defense and for emergency services. Of crucial importance is a thorough understanding of the extent and power of the World Wide Web, how it is being used and by whom. Satellites, their ground stations and an informed core of experts are required in Australia, especially now in this period of economic instability.

Given the above synopsis, it would appear that Government has been underperforming in space related strategic issues for some time which could be regarded as a weakness with rather widespread international implications. The present initiative in Space Science has a good chance of ameliorating some of the gaps in our expertise and experience.

Our own research in the Space Plasma Power and Propulsion Group at the Australian National University has embarked on a program of research and development of electric propulsion for spacecraft which has attracted considerable interest amongst students from Australia and around the

world. And also from the largest aerospace company in the world. We have been working on a plasma thruster that was both discovered and developed in our laboratory. The Helicon Double Layer Thruster is the

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brainchild of Dr Christine Charles and is a very safe and simple thruster for use in satellite station keeping and interplanetary missions. Such is its potential that ASTRIUM, the space arm of the European Aeronautic Defense and Space company have been supporting its development and now have commissioned the Surrey Space Centre to have a space ready HDLT for launch in 4 years!

This achievement has been aided by grants from the Australian Government to take a prototype to Europe for tests in 2005 and more recently by a Linkage grant with ASTRIUM/EADS. However, the major development of the space ready version will be principally carried out in Europe as Australia does not have a proper space simulation chamber and infrastructure and presently does not have the space qualified technicians and engineers necessary to allow the integration of our payload into the launch systems.

The Australian Space Science Program will be a major step forward in overcoming these very considerable barriers to further aerospace education and Research and Development in situ. It would allow us to deliver technically competent science and engineering students to universities and industry and, equally important, provide a resource that can be tapped by Science Policy areas seeking to define the present cutting edge of space technology developments.



Michael Keniger, John Hullet, Antonio Cantoni, Zigmantas Budrikis, Chris Nicol, Penny Sackett, Les Field, John Ralston, Robin Batterham, Hugh Durrant-Whyte, Alan Langworthy, John Hopwood, Gregory Hancock

function as it does.

- **Dr Chris Nicol**, chief technology officer, Embedded Systems, NICTA, Sydney – for work on a number of key technologies used in mobile phones, affecting daily communication on a global scale. He has built a world-leading integrated circuit research group and a state-of-the-art chip design team in Australia.

Laureate Professor John Ralston, creator and director of the **Ian Wark**

Institute, University of South Australia was awarded with the Lifetime Contribution award. His career spanning more than 40 years has contributed strongly to the productivity, profitability and sustainability of many industries – including the mining, materials, chemical, pharmaceutical and biotechnology sectors.

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