CLEARBOX SYSTEMS NEWS

Providing solutions for the Operations and Management of Communications Networks and the Electromagnetic Spectrum

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> Clearbox Systems is a technology company focused on developing new approaches and techniques for the Operations and Management of Communications Networks and the Electromagnetic Spectrum. The question is, *how do we come up with these "new approaches"?*

by Greg Reid — Managing Director

There are three key areas we work hard on to make this a reality.

Collaboration

We **collaborate**; and in the past 12 months we have made real strides in this area.

Firstly, we are proud to have signed a bi-lateral collaborative research and development (R&D) with the Defence Science and Technology (DST) Group. This was announced by the Minister of Defence, Christopher Pyne in August at Scindicate at DST Group in Melbourne.

We have also worked with the Australian National University (ANU) and their TechLauncher program on two projects in 2018 and will be continuing this relationship into the future.

Finally, we have entered into a strategic partnership with Datapath, Inc to develop increased product compatibility and to work on new innovations together.

Research and Development

We prioritise **Research and Development**; and in the past 12 months have appointed Timothy Spitzer as Technology Development Manager to oversee all our R&D activities. Tim's appointment has sharpened our focus and accelerated new product development and has been the platform on which we can successfully collaborate as described above.

Approximately 25% of our workforce is dedicated to R&D covering signal processing, software development and hardware engineering. Many of our project successes and our new offerings for the year ahead are as a result of this R&D effort.

Customer Focus

We are fortunate to be able to **engage closely and often** with our Customers through our many support contracts. Our engineering staff have daily interaction with the end users of our systems and see firsthand not only the issues faced, but future developments that we will need to account for. This feeds directly back into our R&D activities where we can quickly roll out updates or prepare brand-new solutions in conjunction with our customers.

A good example of this is some work we are currently undertaking to update our software that currently manages several of the ADF's WGS ground stations. Some of the changes being made were independently developed by us and others have come from operator interaction and workshops with our customer.

Greg Reid has been Managing Director since early 2017. Greg spent 20 years in the Royal Australian Navy in operational and project roles, and 10 years in the Broadcast industry before joining Clearbox Systems.

WHAT'S NEW

New Foresight Modules

We have several new modules available for our **Foresight** product. Building upon a core of equipment and sensor monitoring and control (M&C) the following modules are now available in Foresight:

- **Notifications.**
  This module allows an operator to add an arbitrary reminder into the system for some future date. Some customers have used this to do system-wide notifications of network outages.
- **Tickets, including integration with JIRA.**
  This module allows customers to raise support or operational issues in the system to be addressed by other users and optionally push them to JIRA.
- **Spectrum Display.**
  This module provides a spectrum trace plot and a waterfall display (with selectable colour map) and enhances Foresight spectrum operations and management capabilities.
- **Decimator integration.**
  This module integrates with the SED Systems D3 Decimator to enable remote spectrum monitoring using Foresight.

Foresight

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CLEARBOX SYSTEMS

Highlights of the past year

DST Group – Collaborative R&D Agreement

Clearbox Systems has entered into a multi-year bi-lateral collaborative research and development agreement with DST Group. Working with scientists in Adelaide, Clearbox Systems will be undertaking R&D in Advanced SATCOM and Electromagnetic Spectrum Operations and Management algorithms, concepts and techniques.

Datapath – Strategic Partnership

Clearbox Systems and Datapath have entered into a Strategic Partnership signing an MOU to develop product compatibility in support of the ADF. In addition, the MOU will allow for the companies to pursue innovation and joint business opportunities where their combined strengths in advanced satellite communications, product and systems integration and network management software will create winning solutions.

Commercial Radio Australia – Support Extension

The DAB+ Network Management System (NMS) was designed, developed and delivered by Clearbox Systems for Commercial Radio Australia's (CRA) Digital Radio network. The system has been supported by Clearbox Systems since delivery and this support has been extended until 2023.

Airservices Australia – System upgrade and Support Extension

Clearbox Systems designed, developed and delivered a M&C system for the SATCOM component of Airservices Australia's Air Traffic Control network. The system has been supported by Clearbox Systems since delivery and has been recently upgraded with support extended until 2024.

TXA – System upgrade and Support Expansion

The TXA DTV NMS was designed, developed and delivered by Clearbox Systems for TXA's Digital TV network. Clearbox Systems is undertaking a significant upgrade of the system which now supports over 70 sites around Australia. This system continues to be supported until 2021 at the earliest.

ADF WGS Ground Station

ADF – WGS Ground Stations Upgrades and Support

Clearbox Systems has deployed and sustains several systems that are used to operate the ADF's WGS Ground Stations around Australia. The past year has seen several major upgrades undertaken and a 5-year support contract commence. In particular, Clearbox Systems performed separate upgrades which saw the communications capacity of two ground stations double, and another which enables new baseband communications. Both upgrades significantly enhanced the ADF's SATCOM capacity and capability.

ABC and SBS - DAB+ system

With partner Digidia, Clearbox Systems supplied and configured three systems that are now installed in Canberra, Hobert and Darwin for the transmission of Digital Radio in those cities. The systems carry multiple services for each broadcaster and feature redundancy features and output monitoring.

Blackmountain Tower, Canberra

Inmarsat – Managing satellite services for the ADF

Clearbox Systems was awarded a contract by Inmarsat to design and develop the Operational Monitoring and Control System (OMCS) using its Foresight software. The OMCS will provide a single portal for the operation of all Inmarsat Satellite Services. The software will be deployed as a service by Inmarsat for their customers with the first customer being the ADF.

Techlauncher – Australian National University

Techlauncher is an ANU initiative which enables participants to develop the research and professional skills required to use technology to bring great ideas to life. Clearbox Systems participated in two Techlauncher programs in 2018 developing two software tools, one of which was successful at using machine learning to identify radio frequency signals.