EDITORIAL

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2012 marks a new beginning for DSTA Academy which was rebranded from DSTA College on 1 April 2012. Going beyond the name change, DSTA Academy will be strengthened as an important pillar to equip Engineering and Scientific Personnel with deep professional knowledge necessary to deliver complex systems as well as raise their professional standing in Singapore.

Leveraging DSTA's diverse talents, its unsurpassed resource in practical knowledge and experience in systems engineering, as well as complex programme management and development, DSTA Academy is well placed as fertile ground for our people to learn from the best in our defence community. We trust that the learning and network built at the DSTA Academy will enable our professionals to collaborate and apply cross-disciplinary knowledge to develop and implement cost-effective systems solutions for the defence and security of Singapore.

Aligned with this vision, DSTA Horizons continues as a key channel of DSTA for knowledge sharing within the defence community. Given our unique roles and responsibilities in defence capability development, we have ample opportunities to undertake difficult project challenges and innovate creatively. Anchored on innovation, this eighth issue covers a selection of 10 articles to showcase our novel applications, solutions and frameworks which have been applied to a wide range of projects and studies.

The issue begins with the article 'Innovative Approaches to Rock Tunnelling' which describes the construction of the Underground Ammunition Facility. With limited land in Singapore, the use of underground space had to be optimised through rock engineering technologies. The article introduces innovative approaches to rock cavern development as well as risk management and contracting practices which were applied while adapting a well-known tunnelling methodology to the local context.

In land-scarce Singapore, there is a severe lack of training areas. The numerous instrumented training systems acquired by the Singapore Armed Forces (SAF) are constantly enhanced by DSTA engineers to maintain a highly realistic environment for the soldiers to train in. 'Realising the Singapore Armed Forces Instrumented Battlefield' shares the innovative solutions that have been put in place by our Modelling and Simulation (M&S) engineers, and suggests an integrated training framework that will pave the way for the next quantum leap in training systems capability development.

'An Innovative Application of System Safety Methodology' attests to DSTA engineers' ability to innovate when confronted with a new situation. Faced with the challenge of assuring the safe use of a proprietary and commercial facility (i.e. the Vertical Wind Tunnel) for the SAF, the team adapted the military system safety process to ensure a safe, realistic and cost-effective training environment for the SAF parachutist.

The next two articles highlight the perennial challenges faced by DSTA engineers who manage Army projects and develop systems for armoured vehicles. First, a military computer must be designed to mitigate the effects of vibration in armoured vehicles. A fresh and yet to be tested solution is proposed for 'Ruggedising Off-the-Shelf Computers for Military Applications' while achieving cost-effectiveness at the same time. Second, measures for 'Reducing Vibration in Armoured Tracked Vehicles' are presented to minimise the impact of vibration on crew efficiency, fatigue levels, safety and long-term health.

A discussion on innovation would not be complete without a discourse on how DSTA has striven to meet the challenges of the ongoing transformation of a Third Generation SAF. Two articles in this issue highlight DSTA's continuing endeavours to manage projects and systems which are increasingly complex. First, 'Communications Modelling and Simulation for Development of Network-Centric C4 Systems' describes how communications M&S can be used to define and design complex communications networks. Second, 'Evolutionary Development of System of Systems through Systems Architecting' suggests systems architecting as an effective means to realise and manage the evolutionary development of SoS coherently over the system's development life cycle.

Through a system's life cycle, obsolescence must be managed to maximise the value of a military system. Using real case studies, the article 'Comprehensive Life Cycle Approach to Obsolescence' explains how a practical framework can manage obsolescence cost effectively in the different phases of the system's life cycle.

It is also critical to take a proactive approach to manage IT disasters as data centres house the most valuable assets of organisations. 'Staying Prepared for IT Disasters' illustrates the key considerations for a comprehensive IT Disaster Recovery plan and describes the measures that one should undertake in the event of a disaster in a data centre.

Finally, 'A Venture Capitalist's Perspective on Innovation' is Cap Vista's take on its journey as DSTA's strategic investment arm since its inception in 2003. The article shares how Cap Vista Pte Ltd collaborates with partners in the broader entrepreneurship ecosystem as it seeks to nurture innovative technology start-ups as well as small and medium enterprises in Singapore.

It is our hope that readers will find the articles informative and insightful and that the open sharing will continue to inspire a culture of learning and growth. I am grateful to the authors for their contributions and dedication and look forward to continuing the quest for new knowledge and deeper insights in another enriching issue of DSTA Horizons next year.