

# E D I T O R I A L

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Four years have passed since the inaugural issue of DSTA Horizons. It is a testament to the spirit of knowledge sharing among the local defence ecosystem that with each year, an increasing number of quality articles have been submitted. The fourth edition of DSTA Horizons features a record number of 11 articles, among many other excellent articles that we are not able to feature due to space constraints.

Each article highlights a different aspect of the multi-faceted nature of the local defence community. If there is a common thread to be found in these diverse articles, it is the dedication to excellence, regardless of discipline. Four of the articles have been presented at International or Asia-Pacific conferences.

At times, DSTA's influence stretches beyond the defence community. This is best exemplified in the first article, *Shaping the Integrated Floating Stage at Marina Bay*, which describes the challenges DSTA engineers faced during the design and implementation of the Floating Platform for the National Day Parade.

The next article, *Island Air Defence: Challenges, Novel Surveillance Concepts and Advanced Radar System Solutions*, discusses the sophisticated threat environment and proposes novel concepts such as elevated sensors and non-cooperative target recognition techniques that will likely make up the air surveillance system of the future.

An *Experiment in Machine-Augmented Sensemaking in Intelligence Analysis*, showcasing the Risk Assessment and Horizon Scanning (RAHS) system, follows. The RAHS system provides a suite of sensemaking tools that allow analysts to scour through massive loads of information to uncover non-obvious linkages so that pre-emptive action can be taken.

The fourth article, *Realising System of Systems Interoperability*, highlights the importance of interoperability in a System of Systems configuration and puts forward a proposition for achieving the desired outcome.

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As modern warfare becomes increasingly complex, operational requirements of Command and Control (C2) systems become harder to define. By adopting a systems engineering approach that utilises an assembly of emulator and C2 modules for testing functionalities, commanders can operate a system before it is implemented. That is the premise of the article, *Emulator-Based Command and Control Development: A Systems Engineering Approach to Developing Command and Control systems*

An example of an innovative approach in managing R&D investments can be seen in the article, *The Real-Options Based Approach to Management of Defence R&D Investments: An Exploratory Study*, which proposes the use of this methodology for valuation and management of R&D investments.

A communication and strategy forum conducted by the Future Systems Directorate in January 2007 gave rise to the seventh article, *Ten Ideas for Designing Next Generation Communications Network*, which gives an overview of the 10 most promising ideas that emerged from the forum.

The eighth article, *Battlespace Communications Connectivity Model*, discusses in detail how the model can provide an analytical tool for a communications engineer to design feasible solutions based on the four independent domains of Core Network, Extended Backbone, Access Network and Peer-to-Peer Network.

The ensuing article, *Evolution of Communications Payload Technologies for Satellites*, illustrates how intelligent design and processing capabilities can be incorporated to enhance a satellite's communications performance using technologies such as channelisation and space-based inflatable reflector antenna.

The Singapore Armed Forces' learning management journey is traced in the next article, *The Challenge of Implementing an Enterprise Learning Management System – The Singapore Armed Forces' Experience*. The article provides insight into the Enterprise Learning Management System, which promises to bring about a learning experience that is without boundaries for servicemen.

On a less technical note, the eleventh and last article, *Contracting by MINDEF and DSTA – Understanding the Law and Practice of Defence Procurement in Singapore*, touches on the procedural framework and operative concepts governing the law and practice of defence procurement in Singapore. It will no doubt provide an illuminating glimpse for anyone who is interested to learn more about the defence procurement system.

We hope that Horizons will not only archive the achievements of our members, but will inspire greater learning and growth within DSTA and the defence community for many years to come.