

# EDITORIAL



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This special year marks DSTA's 20<sup>th</sup> anniversary. It is also one of unprecedented change due to the COVID-19 outbreak where amid new crises and challenges, DSTA has continued to provide engineering support and innovative solutions to the nation. The 15<sup>th</sup> edition of DSTA Horizons thus puts forth eight articles carefully curated to show the diverse competencies and expertise within DSTA that enable it to develop and implement cost-effective systems solutions for the defence and security of Singapore.

The first article '**Designing the Hunter Armoured Fighting Vehicle (AFV)**' discusses new design approaches in the development of the Hunter AFV to address resource constraints while realising the next bound of networked warfighting capabilities for the Singapore Army. It also highlights innovations in the systems engineering process to develop a more comprehensive suite of design tools and testing methodologies, for agility in verifying and validating complex systems. This is followed by the article '**Achieving Environmental Sustainability for MINDEF and the SAF**' which outlines how DSTA contributes to

Singapore's sustainable future by being early adopters of innovative green technology, delivering sustainable camps and bases, implementing initiatives in a broad-based manner, and promulgating good practices through projects and developments.

Providing an overview of DSTA's data-centric strategy to help the Ministry of Defence (MINDEF) and the Singapore Armed Forces (SAF) achieve data-enabled transformation is the article '**Towards a Data-Enabled Organisation**', which also covers the Fleet Management System initiative that demonstrates the exploitation of instrumentation data and data analytics on military platforms to improve the readiness of platforms, streamline maintenance, and reduce operating costs. Following which, '**The Development of a Synthetic Battlespace**' explores the approach in developing a synthetic battlespace to support new capability development. It shares how DSTA leveraged modelling and simulation technology to create a digital twin of the battlespace to support System-of-Systems and new Concept of Operations development.

The fifth article **'Hybrid Approach for Cost-Effective Development of Explosive Storehouses'** shows how our project management teams strive for continuous improvement in their support for MINDEF and the SAF. It covers a systematic effort to develop new explosive containment facilities that have the capability to mitigate fragment and debris hazards, by tapping knowledge in using a combination of small-scale explosive testing and numerical modelling of large-scale structures. **'Operating and Supporting Three Generations of Weapon Locating Radars (WLR)'** traces the evolution of radar technologies, capabilities, as well as operations and support practices over three generations of WLRs. It also identifies the trade-offs as operational and maintenance support practices evolve. **'Design and Integration of the Littoral Mission Vessels' Launch and Recovery System (LARS) for Fast Response Craft'** compares the designs of LARS and outlines the integration process for stern ramp LARS applicable for multi-role naval vessels. Future directions in continual design improvements and incorporation of

emerging technology to enhance safety and operability are also discussed. The last article **'Review of Underwater Blast Safety Criteria'** examines past developments in underwater blast safety criteria and compares the associated experimental results with safety standards from various sources. While studies in the field are ongoing, it is critical to stay up-to-date with international researchers and developments to enhance the understanding of underwater blast effects on divers and the associated underwater blast safety criteria.

We hope readers find this issue of DSTA Horizons informative and interesting. The compilation of articles offers insights into the various fields of technology, both defence-related and otherwise, that DSTA is involved in. It also reflects the passion and commitment of the authors and reviewers inspired to share insights into their endeavours. We hope that DSTA Horizons will continue to be an integral platform for learning and sharing within the defence technology community, for many issues to come.