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At the forefront of defence technology

A senior engineer of the Air Systems Programme Centre at the Defence Science and Technology Agency (DSTA) shares his passion for the job

By Belinda Wan
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While training to be an infantry scout commander during National Service, senior engineer of the Air Systems Programme Centre at the Defence Science and Technology Agency (DSTA) Matthew Wu learnt about how unmanned aerial vehicles (UAV) could be used to gather enemy intelligence on behalf of soldiers, mitigating risks posed to military personnel.

This got him interested in the usefulness of UAVs. During his final year in university, he visited the DSTA career booth at a campus career fair.

There, he met a DSTA engineer who shared how the defence sector has been a leader in harnessing unmanned technologies for various military operations to reduce risks to soldiers.

"This stoked my interest in a career in DSTA and defence engineering," said Mr Wu, 31.

KEY TO SINGAPORE'S DEFENCE

DSTA aims to harness and exploit science and technology, and provide technological and engineer-

ing support to meet Singapore's defence and security needs. It provides advanced technological solutions to the Singapore Armed Forces (SAF) so that it continues to be a formidable fighting force.

After graduating with a Bachelor of Engineering (Mechanical Engineering) degree with Second Upper Class Honours from the National University of Singapore (NUS) in 2010, Mr Wu joined DSTA's Air Systems Programme Centre the same year, where he has been working for five years.

CUTTING-EDGE TECHNOLOGY

The Air Systems Programme Centre handles the acquisition, systems integration and development, as well as upgrading of air platforms for the Republic of Singapore Air Force (RSAF). The work of the Programme Centre involves diverse air capabilities, including fighter jets, mission aircraft, transports, helicopters and UAVs.

Since joining DSTA, Mr Wu has been working on the Heron 1 UAV Programme, a medium-altitude UAV that features state-of-the-art avionics, detection capabilities and

communication systems that enhance the RSAF's intelligence, surveillance and reconnaissance capabilities.

Mr Wu said: "My work involves acquiring, developing and integrating systems and technologies on board the Heron 1 UAV, so it meets the stringent requirements of the RSAF."

As the UAV is remotely controlled, the operators depend on the wireless communication between the ground control crew and the airborne UAV when controlling the platform.

"I work closely with partners in the SAF and contractors to conduct regular rigorous tests on Heron 1 UAV's wireless communication system, to ensure that it is safe for operation."

SURMOUNTING CHALLENGES

Depending on the day, he could be in Singapore conducting tests, or overseas with partners in the RSAF and contractors, assessing and resolving technical issues to ensure the performance of the Heron 1 UAV, or drafting and reviewing technical documents and contracts, and participating

in project meetings and teleconferences at the office.

But Mr Wu had to overcome a fair share of challenges in his work, which he calls "dynamic and exciting".

"There was an initial steep learning curve. The Heron 1 UAV is a complicated system that comprises many interdependent subsystems that each plays a vital role," he said.

To ensure that the UAV is performance-ready and safe for operation, Mr Wu's team has to constantly conduct trials.

Due to the complexity of the subsystems, his team has to be skilled in various engineering domains. Whenever a potential issue with a subsystem is identified during testing, it has to be analysed systematically, along with other subsystems that may also have indirectly contributed to the issue.

Thankfully, there is a strong culture of teamwork and open communication in DSTA.

Mr Wu said: "When I joined DSTA as a fresh graduate, systems engineering concepts were new to me. But my supervisors and colleagues were patient, and



Photo: DSTA

shared their knowledge and experiences with me. This has helped me to grow and contribute more effectively to the team."

Due to the complexity of the projects, work at DSTA involves teamwork with defence engineers specialising across many different technical domains.

PRESSING ON

Specialised training programmes in DSTA help to develop employees in specific areas of expertise.

For instance, engineers in the Air Systems Programme Centre attend an induction course for an overview of the different air systems DSTA works on.

"During the course, I attended a Flying Appreciation Programme, where I learned how to fly an aircraft. This taught me the importance of designing intuitive and ergonomic user interfaces so that systems can be operated easily," said Mr Wu.

Incentives like these keep Mr Wu going, as well as the knowledge that his work is making a difference to Singapore's defence

capabilities.

"I am glad that what I do in DSTA is aligned with my interest and engineering background. It is satisfying to know that the work we do is appreciated by the organisation, and partners in the RSAF and the Ministry of Defence.

"My career with DSTA has been challenging yet fulfilling. Throughout the entire Heron 1 UAV programme, I have dealt with various challenges during different project phases and honed my multidisciplinary expertise. Overcoming these challenges and witnessing the UAV in operation make me feel rewarded."

Describing himself as perceptive and systematic, Mr Wu said defence engineers need to pursue excellence, and push boundaries with innovation to provide the best engineering solutions for Singapore's defence.

"Apart from being determined, you must also be passionate in science and technology, and stay updated on the latest technologies and information in the field."