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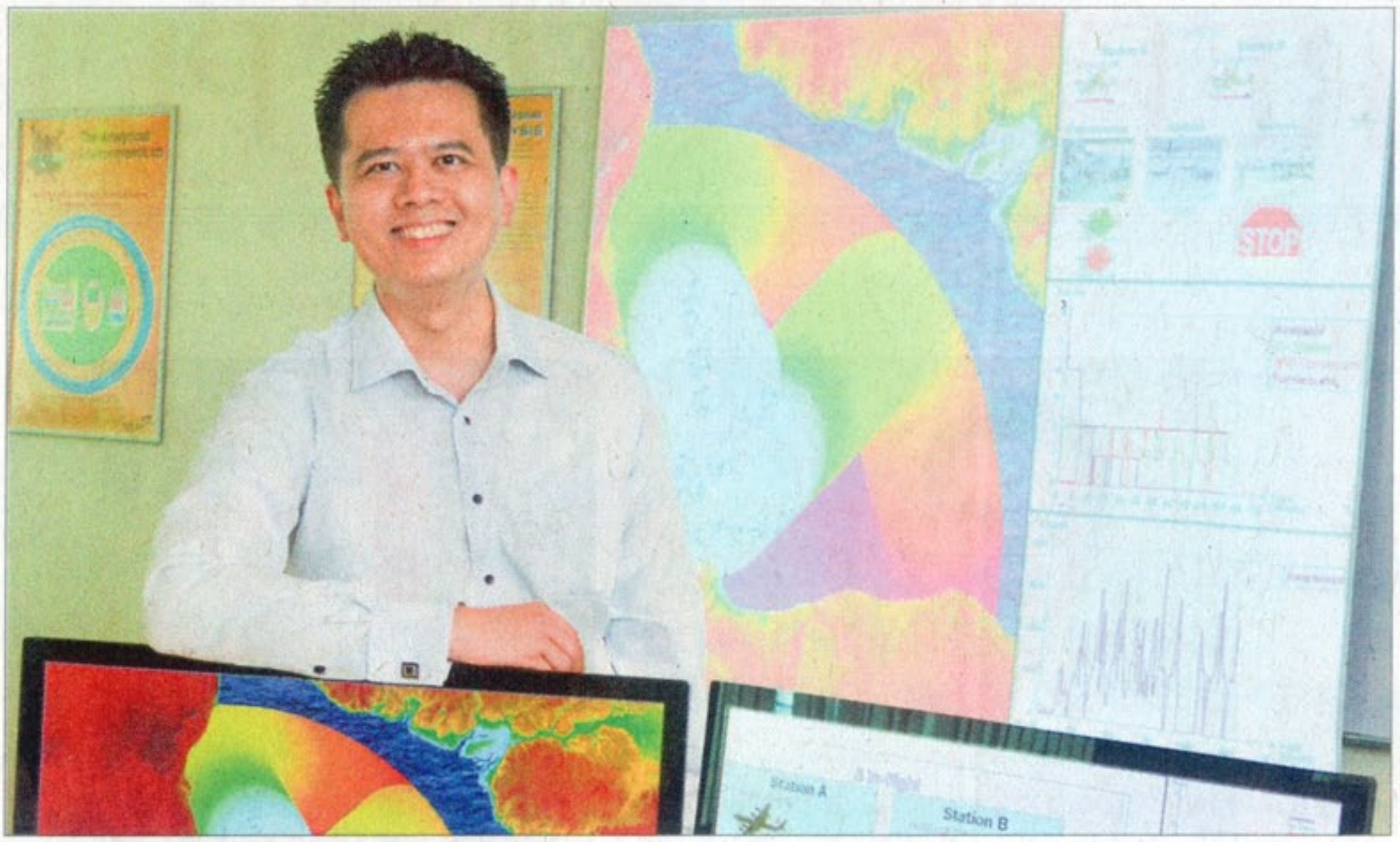
CAREERS IN THE PUBLIC SECTOR

'Eureka' moments



Mr Lau's work involves developing analytical tools and simulations that help in decision-making.
PHOTO: DSTA

DSTA principal analyst Lau Joon Hong's interest and aptitude for solving problems led him to his job in operations research

ESTHER TEO

IT WAS the knack for solving problems that got Defence Science and Technology Agency (DSTA) principal analyst Lau Joon Hong hooked on a career in the niche field of operations research (OR).

When he was a Bachelor of Engineering (Computer Engineering) undergraduate in Nanyang Technological University, his final year project (FYP) encompassed developing an algorithm for robots and, as a proof-of-concept, developing simulations and designing experiments.

His FYP supervisor told him that what he did constituted as OR work.

"That got me interested as I found it intriguing to develop analytical tools and simulations to make things work better in real life.

"I also enjoyed the thought-provoking process of finding solutions to complex problems," says Mr Lau, 31.

Inspired by how technologies such as radar, jet engines, wireless communication and GPS all began as military inventions, he decided to go into defence engineering.

He now works at DSTA's Masterplanning and Systems Architecting Programme Centre, where he leads teams in conducting studies on military operations, applying advanced analytical methods and proposing most optimal recommendations to support decision-making in DSTA and the Singapore Armed Forces (SAF).

Quantifying effectiveness

In general, the studies that Mr Lau conducts look into developing cutting-edge defence capabilities for SAF.

He designs and develops analytical tools to automate and process large-scale experiments, as well as specialised simulations that are able to model and play out the interactions between various factors that may affect the outcome.

With engineering problems becoming increasingly complex and cross-domain in nature, his simulation models are vital to test the technical performance and deployment of systems as well as the effects of the operating environment.

"This model-based approach allows us to quantify the operational effectiveness of alternative solutions, thus enabling more informed decisions," he says.

Among the tools Mr Lau developed was a simulation tool, which strengthens SAF's maritime surveillance capability and helps to safeguard Singapore's interests against threats such as piracy.

He also developed a graphical concept of operations (CONOPS) tool, which, through animated visualisations, enables various stakeholders to better visualise and discuss how military operations unfold in time and space.

For their work on the simulation tool and the graphical CONOPS projects, Mr Lau and his teams were awarded the DSTA Excellence Award, which honours individuals and teams who have demonstrated exemplary leadership or teamwork and achieved extraordinary success through innovation.

Fulfilling moments

Seven years into the job, Mr Lau still finds his work engaging.

He is always out and about, holding meetings with various parties, such as SAF partners, to understand their operational missions, as well as technical subject matter experts to find out how various weapon systems work.

He also meets fellow analysts to discuss the progress of their studies and presents study results and recommendations to stakeholders.

The principal analyst can also be found at the lab developing and running tools and models to study new problems, conducting simulation experiments, analysing results and deriving insights.

He says: "The most fulfilling moments are the 'eureka' moments when I discover counter-intuitive insights that would not have surfaced without conducting an OR study.

"For me, the feeling is similar to making scientific discoveries that will change the future."

While there is a wide range of professions available for DSTA employees to explore, Mr Lau says he enjoys doing hands-on technical work for now.

Having benefited from the strong teamwork and good leadership at DSTA, he hopes to share the expertise and experience he has gained on the job with younger analysts in the organisation.

He feels encouraged when the younger analysts he works with and mentors are able to get up to speed fast and do their jobs well.

In fact, he says the sense of accomplishment he gets from his juniors' achievements is no less than if he were to attain them himself.

Of the key qualities necessary to excel at his job, he says: "One should possess a keen, analytical and innovative mind; enthusiasm in problem solving; courage to challenge conventional ideas; and curiosity to find out how things work and how they can be made better."