



# SPEECH

Visit <http://www.mindef.gov.sg> for more news and information about MINDEF and the SAF

---

**SPEECH BY MINISTER FOR DEFENCE, DR NG ENG HEN, AT THE DEFENCE TECHNOLOGY PRIZE AWARD CEREMONY 2020, ON 30 OCT 2020, 1400HRS, AT MINDEF AUDITORIUM**

*Permanent Secretary (Defence)*

*Chief Defence Force*

*Chief Executive, Defence Science Technology Agency (DSTA)*

*Chief Defence Scientist (CDS)*

*Chief Executive Officer DSO*

*Leaders of the Ministry of Defence (MINDEF), DSO and DSTA family*

*President and CEO, ST Engineering*

*Distinguished Guests*

*Ladies and Gentlemen*

*Good afternoon.*

## **Introduction**

1. Friends and colleagues, I think you all understand why we need to hold this year's Defence Technology Prize under these circumstances. It is a large auditorium but we are keeping to the safety numbers the Ministerial Taskforce (MTF) prescribes. But I thought the fact that we are gathered here, with many friends who are joining us online epitomises what the Defence Technology Prize is about. It tells us of the need for and the tendency of the technological advances to deal with a host of challenges – known and unknown in our modern society. So if you think about it, thankfully we have these killer apps and platforms that were available in the COVID-19 pandemic. Just imagine if

---

## **MINDEF Communications Organisation**

Public Communications Directorate

MINDEF Building, 303 Gombak Drive, #01-26 Singapore 669645 Tel: 9228 6190 Fax: 6769 5139

---

we did not. Unthinkable, because it will cripple society. We could not have these meetings, and the fact that you can scale up, whether it is 500, 5,000, 10,000, allows our economies some level of normalcy and to resume our activities and I think without these technological avenues, modern society would have grounded to a halt without them.

2. I had firsthand experience on the need for these apps that will allow large crowds to join you. Well, of course I am talking about the recent General Elections. It was basically held online and my Group Representation Constituency (GRC) thought about how we could campaign during a general election when the COVID-19 pandemic was there. So we built ourselves a studio – we have a mini Channel News Asia in our constituency site, with a backdrop. Thankfully I won – that is why I am speaking to you, but we had a good problem when my GRC was elected. We had to think how to thank the hundreds of volunteers who assisted us and campaigned for us. Traditionally, what we would do in previous elections was to go on a ‘Thank You’ bus and go on a ‘Thank You’ parade with the residents. At the end of it, we book a whole restaurant and everybody meets and we thank them personally. Obviously, you cannot do that during COVID-19. And yet, at the same time, you wanted very much to thank them for all their efforts. So we racked our brains and we decided to take a hybrid approach. We bought each family a seafood dinner and we all ‘Zoomed’ in together within the comfort and safety of their homes. We mingled and showed our appreciation to them using these platforms. None of these would have been thinkable a few years back. I suppose even the founders of these apps, whether it was Zoom, Webinar or Skype, would have never conceived that you needed these to even get society back to function. Technology provides solutions to wicked problems and can improve or even save lives. This is ultimately what this award ceremony today is about for each of you, and I mean the scientists and engineers, whether it is DSTA, DSO, the Singapore Armed Forces (SAF) or ST Engineering, as you go about your daily affairs.

### **Defence Technology Community (DTC) Contributions to Singapore’s Fight against COVID-19**

3. All of you here, scientists and engineers, and staff in these organisations that I mentioned, recognise that not all discoveries and inventions culminate in runaway successes like Zoom, Webinar or Skype. Indeed, for every successful project, many more fail along the way. Let me give you one example. Dyson’s popular and revolutionary vacuum cleaner - most of you would have it in your homes - had to undergo 5127 prototypes before the final version was put to market. Underlying all your enterprises - whatever projects or studies you are involved in, big or small, those that succeed

or end in failure - is that common motivation to build something better than anyone had conceived of before. Because if you think about it, the vacuum cleaner has been around for a very long time. To believe that you can create something better, that many people have thought of before, takes a lot of guts, belief, and quite a lot of money. But if you hit on a good idea, it sells. It is true for all of you, especially for those who are receiving their awards today which represent a wide range of innovations to help deal with our various security threats.

4. Many of these projects took years to mature and I am sure that there were many failures and heartaches along the way. A remark by Dyson in a recent interview here struck me. He was asked, how did he and his staff deal with repeated failures, and he replied that they learnt so much through each failure. I thought there was an epiphany there, especially true for our people in DSTA, DSO, SAF, ST Engineering, because what is retained is not only success or failure, but the knowledge that is deposited in our people – the human capital that adds to their repertoire, their repository of information, their knowledge and experience. Which finally, even if you fail for that particular endeavour at hand, can be applied subsequently. That transmission factor is the person, and this proved itself in our battle against COVID-19. It was DSO that was the first off the block to be able to perform the reverse transcription polymerase chain reaction (RT-PCR) test very early in the epidemic. I remember when we said that we needed to find ways to test it, and DSO optimised it – and it was early days – and that capability gave confidence to the SAF, because the SAF had to continue its critical operations. A few thousand people they could quarantine, they could cohort, but if there was a suspicion of a case, if you had to depend on other agencies and there was too long a lag time, there was transmission – you risk the whole force being degraded and confidence being lost. It made a difference because we knew that we had in-house labs, in-house capabilities by DSO. How much did we believe in this capability? Well, in March this year, I had some flu-like symptoms. I was concerned not so much for myself but because I had to come into contact with people - Cabinet colleagues, others – so I thought better march myself down to DSO and get swabbed. Our SAF doctors were very professional, they did it very well and it was tolerable. They did the nasopharyngeal swab well and the RT-PCR test was negative. So while I was there, I was chatting with DSO staff and I said, if I have antibodies I do not have to bother about this. They said, “Sir, we’re trying antibody tests”, so I said “Good, take my blood, why don’t you go and try.” Unfortunately, it was negative – I did not have any antibodies. But, in April, when our SAF teams, and myself, had to go down to migrant worker dormitories and take care of infected patients in Community Care

Facilities, that capability of DSO gave us the confidence that if we needed to, we could detect early, we had access to these tests and that confidence makes a difference in our operations.

5. Subsequently, DSO developed the Direct-PCR test kits that reduced the time taken for these tests by more than half. The product is now available – you may have read that it is made into a kit through Advanced Medtech Holdings, and is the test that the Ministry of Transport (MOT) is using as we open up our airports. It is a measure of confidence, and mark of respect and trust that MOT approach us and says, “Can you run the labs for us”. So we have a lab now at Changi Airport, because when we expand, we are expecting a throughput. If they did not trust you, they would say, “Very good, I read about it, but let me find somebody else.” So when they asked me whether I minded, I said no, we will lean forward to help you. I am happy to announce that the Biological Defence Programme Team of DSO has received this year’s R&D team award, as they richly deserved – well done to all of you.

6. That accumulated expertise that resides in our people – our scientists and engineers – also made a national impact when DSTA developed a network analysis tool to enhance contact tracing and to identify potential clusters in the Whole-of-Government fight against the COVID-19 outbreak. When we broke it down, what did the MTF need? You have 300,000 migrant workers spread out over some large dormitories and smaller ones within the community. You had to have now a database which did not exist. You had to have facial or biometric recognition. You needed a Command and Control (C2) system. You needed something to know where people are at any one time, and when you had to move them, you needed a secure supply chain. All fundamental aspects that the SAF deals with on a day-to-day basis. So DSTA quickly developed IT and C2 systems to integrate all this data, as we call it, to give us situational awareness that provided the Ministry of Health (MOH) and Ministry of Manpower (MOM) with an accurate and timely day-to-day, if not hour-to-hour picture that proved crucial – because if you do not know where the potentially infected people are, you cannot control a pandemic.

7. This was not just in terms of better logistics control. We knew that if we did not protect our healthcare system, it would result in deaths not only from COVID-19 but also deaths from other diseases. That is exactly what is happening, whether it is in hospitals whether it is in nursing homes, old age homes or even community. We have to think, our scientists and engineers have to think of a way, how do you monitor thousands of people without admitting them to hospitals, because they

may not need admission. We decided early that what we needed was many many pulse oximeters. You put it on your finger, it measures the saturation of your oxygen. The saturation of your oxygen, this is a mini biological lesson, does not vary much on a day-to-day basis. Even if you hold your breath, or even if you do an aerobic sprint, it would still hover over 95%. It is very sensitive, we are not meant to be de-saturated. In Singapore, if it is below 89, if you were a migrant worker, we will pull you out, we will watch you very closely. If you are a Singaporean or a migrant worker, our alert is up. That is the big difference, why our mortality is so low. When international doctors, doctors who come into Singapore, they keep asking, how is it that you got your mortality so low. Those are the reasons, the systemic strengths.

8. For every potential crisis – whether it is shortage of personal protective equipment, masks, tests etc., we were steadied because we know that there is a repository of information, know-how and commitment in the staff of DSO, DSTA, SAF and ST Engineering. And they delivered each time, in various ways. Whether it is from the examples we talked about, whether it is UV-C Cabinets, whether it was other ways to meet our problems that you could not have imagined.

9. This fight against COVID-19 has not yet ended. And there may be many more battles ahead, and I look forward to more contributions from the biomedical teams. I want to thank all the staff involved for your tireless work and your personal sacrifices over the past months.

### **DTC Must Be Ready in this Rapidly Changing Environment – Challenges, Opportunities, and Evergreen Truths**

10. While the SAF, DSTA and DSO help deal with the outbreak, our core missions against traditional security threats must continue and not flag. They have not disappeared, they have not gone down in intensity or impact. In fact, we have taken this time, leaders within MINDEF and the SAF, to review our progress towards SAF 2040. These are not just A/As, an architectural term, this is not additions and alterations for the SAF. This is a fundamental review, if outdated structures are obsolete, they have to be replaced with better buildings and smarter features.

11. With each new cycle to refresh MINDEF and the SAF so that we maintain our relevancy and potency, the expertise of the scientific and engineering community will be called on. These aspects are reflected in the various teams that are receiving their awards today:

a. The Cyber Security Operations Centre 2.0 (or CyberSOC 2.0) team led by DSTA with Military Security Department and DSO uses artificial intelligence and machine learning techniques to better detect and respond to new and advanced cyber threats against our networks. For their efforts, the CyberSOC 2.0 team has received the DTP Team Engineering award.

b. Another team award goes to staff from DSTA together with the Republic of Singapore Air Force, DSO and ST Engineering, who successfully delivered the smart Combat Management System.

c. The Advanced Electronics System Team from DSO, together with DSTA and ST Engineering, receive their award for designing and building an electronic system for the SAF.

d. And DSO's team receives an award for the Sonars and Signal Processing Technologies for use in the underwater domain.

12. We have two individual award winners, Mr Paul Tan Hong Tat from DSTA is recognised today for his leadership in the build-up and delivery of cutting-edge cyber defence capability.

13. The second individual award winner is Mr Quek Yee Kian, Director and Distinguished Member of Technical Staff from DSO for his pivotal role in the design and development of radar remote sensing systems.

## **CONCLUSION**

14. It is good that we have this ceremony during the COVID-19 pandemic, because it reminds us that in both peacetime and war, this community, the DTC plays a crucial and vital role in ensuring that we can fulfill our mission to preserve the sovereignty and stability of Singapore. Well done and keep up the good work.

15. Thank you.

###