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Subject: (Embargoed) Speech by RADM Teo Chee Hean, 1 Apr, 9.15 am

# *Singapore Government*

## **PRESS RELEASE**

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**SPEECH BY RADM TEO CHEE HEAN, MINISTER FOR EDUCATION  
AND SECOND MINISTER FOR DEFENCE AT THE 2000 NATIONAL  
SCIENCE TALENT SEARCH AWARDS PRESENTATION  
CEREMONY ON SATURDAY 1 APRIL 2000, AT CANNING  
BALLROOM, WESTIN STAMFORD, 9.15 AM**

**“Gearing Up for Knowledge Creation in the 21st Century”**

1. First, let me congratulate the finalists and all participants in this year's National Science and Talent Search (NSTS) Awards. You have demonstrated a high level of creativity and ingenuity in your projects. Your enthusiasm and energy shows that our young have a keen passion for science and technology.

### **Knowledge Creation**

2. The world we live in today is vastly different from that of our forefathers. Many of the everyday things we take for granted were not around a generation ago, and might have been alien even to your elder brothers or sisters. Our world

has been transformed by the many inventions and advances that have been spawned from research and development in science and technology.

3. A knowledge-based economy is about the production, exploitation and application of knowledge. In the earlier stages of Singapore's development, we relied heavily on knowledge created by others. Our competitive advantage was in application of knowledge. Over time, we also became adept at exploiting knowledge – using knowledge to innovate. But the most valuable part of the value chain is perhaps the most difficult – to create the knowledge that will lead to new products, new processes, and more knowledge.

4. Knowledge creation does not come about just by chance. It requires a combination of hard skills and softer factors like discipline and a “never-say-die” attitude. Countries that can invest in and develop their people's capacity to create knowledge will build up a strong edge over others which fail to do so.

5. The scientific research you have undertaken in preparing for this award is one good way for our young to have a taste of the kind of attitudes, skills and knowledge which will help us to succeed as a knowledge-based economy.

### **Preparing Our Young to Manage and Create Knowledge**

6. Let me start with attitudes. Through MOE's “Thinking Schools, Learning Nation” vision, our education system seeks to nurture curiosity, creativity and innovation as well as the entrepreneurial, risk-taking spirit. Students should always be prepared to try, and to welcome the opportunity of learning from success as well as failure. Researchers and technopreneurs are more likely to emerge from among students who “can-do – can-learn” and are willing to explore new opportunities. We want more students to have the passion and discipline of researchers, and the daring and perseverance of entrepreneurs.

7. Next, skills. In the new century, our people must have the ability to access and draw on critical information in a timely and creative manner. Information Technology (IT) can help us do this. To equip our young with the necessary IT skills, MOE has implemented the Masterplan for IT in Education, which will help students process and, more importantly, create new knowledge. The use of IT opens up exciting new possibilities in knowledge creation.

8. Last, our young must have strong foundations in Science and Mathematics so that they can acquire the discipline of inquiry and logical

reasoning. This is best achieved within the context of a broad-based education so that they will be stimulated by knowledge in other disciplines and think beyond the conventional. We can do better in the latter areas, but Singapore already has a strong lead in Mathematics and Science which are emphasised throughout a student's 10 years of general education. About two-thirds of polytechnic students and just over half our university students are in science and technology-based courses. Through the various programmes now being introduced in our educational institutions, and events like this Science Talent Search, we hope to encourage our young to build on their strong foundations to spark science and technology innovation in the future.

9. The know-how and skills needed to create knowledge in the long-term cannot be transmitted only through formal education. We need to foster a culture of lifelong learning. A culture of continuous learning will also promote critical enquiry and creative development within society at large, thus lending broad support for our efforts in the formal education system.

### **NSTB's Efforts to Promote Knowledge Creation**

10. Over the years, the National Science and Technology Board (NSTB) has played a catalytic role in stimulating knowledge creation among Singaporeans, at all levels. Beyond knowledge creation, we need to put in place mechanisms that can properly manage, protect and use the knowledge created so as to reap its full economic benefits. I am happy to announce that NSTB together with other agencies will be undertaking several new initiatives to strengthen Singapore's intellectual property (or IP) framework to support Singapore's transformation into a technology hub for the 21st century.

**11. First. NSTB, in collaboration with other agencies, will be setting up a Technology and Market Intelligence Service Bureau** to help companies make more intensive use of information and research for their innovation and R&D activities. In a knowledge-based economy, it is important to have a keen appreciation of technology and market intelligence (TMI). This will help companies identify the areas of technology that they should be building up. Companies will also learn how to maximise the creation and use of Intellectual Property to secure a competitive advantage. The Bureau will also serve as a resource that Singapore's researchers, innovators and technopreneurs can tap into and learn from.

**12. Second. The Intellectual Property Office of Singapore (IPOS) will**

**intensify its efforts to raise public awareness on intellectual property rights.**

Potential inventors and innovators must be educated on how they can protect and profit from their intellectual creations both in Singapore and globally by enforcing their intellectual property rights. We must continue to work on inculcating in our society a healthy respect for the intellectual property rights of those who have invested time and money to generate intellectual creations. This will encourage them to continue to produce inventions and innovations that not only benefit them financially, but society as a whole by improving the quality of life.

**13. Third. NSTB is refining its Patent Application Fund by moving it into its second phase.** The Patent Application Fund was established with the aim of developing an awareness among inventors and researchers of the merits of patent protection. Previously, funding was provided only at a relatively late stage in the patenting process and applicants had to first bear the initial costs of filing. For individuals and start-up companies, in particular, this posed a heavy burden. The Fund will now provide early stage funding for the protection of local innovations thus easing the up-front burden. This move will help promote a culture of protecting local invention. This is timely as technopreneurship takes root in Singapore. In 1998, almost 50% of companies that received investments from venture capital companies were technologically-based start-ups. More remarkable is the increase in the number of patent applications by local residents. In 1993, there were 142. This had increased dramatically by 308% in 1998 to 579 applications. In line with the Intellectual Property of Singapore's expanded role in promoting the use of intellectual property information and strategies, the Intellectual Property Office of Singapore will administer and manage the PAF for NSTB by reaching out directly to those who can benefit from the scheme.

**14. Fourth. NSTB will provide training grants under its Manpower Upgrading for Science and Technology (MUST) programme to train and develop professionals in support of science and technology and technopreneurship development.** NSTB will co-sponsor training attachments and internships for industry professionals to meet the growing demand for expertise in cross-disciplinary work in technical, business and legal issues. These include professionals in areas such as analysis of markets and technology intelligence, Intellectual Properties protection and management, investment analysis, technology and IP valuation. This will improve the management of knowledge and the development of technopreneurship. In addition, NSTB will co-sponsor with industry the upgrading of industry researchers and personnel

through higher academic degrees in research and technopreneurial areas.

**Conclusion: Looking Ahead**

15. For these efforts to bear fruit, we need to have a critical mass of young and talented individuals who are interested in R&D, and want to make R&D their career. Your participation in this year's NSTS has given you a taste of the challenges and excitement of R&D. I hope this experience has ignited an interest within you and helped you look at R&D with fresh eyes.

16. Whether you will grasp these opportunities depends on you. As young innovators, you have a unique chance to make your dreams a reality and, in the process, help build a better tomorrow. I wish you well as you pursue your passion in science and technology.

17. Thank you.

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