**REMARKS BY MR HENG SWEE KEAT,**
**DEPUTY PRIME MINISTER AND CHAIRMAN OF THE NATIONAL RESEARCH**
**FOUNDATION AT THE LAUNCH OF THE NATIONAL SUPERCOMPUTING CENTRE**
**SINGAPORE'S ASPIRE 2A AND ASPIRE 2A+ SUPERCOMPUTER,**
**25 OCTOBER**

Mr Quek Gim Pew, Chairman of the National Supercomputing Centre Singapore or NSCC,

Dr Terence Hung, Chief Executive of NSCC,

Ladies and gentlemen,

1.      A very good afternoon to everyone.

      a.  First let me thank Gim Pew, Terence and the team for hosting me and my team. I commend the team for the remarkable progress that you have made since NSCC was set up nine years ago, in 2015.

            i.  I look forward to learning more about your achievements and plans going forward.

2.      Looking at the progress that we have made in NSCC, and developments around the world, it is clear that supercomputing will have a critical role in enabling us to tackle a range of scientific, industrial and societal challenges.

      a.  Today, I am pleased to announce that Singapore is committing S$270 million to advance NSCC's next-generation supercomputers, grow the talent pool in high-performance computing, and strengthen Singapore's high-performance computing ecosystem.

      b.  These investments are part of Singapore's continuing commitment to build robust national supercomputing infrastructure and to develop our talent and capabilities, to enhance the lives of people, here in Singapore, in our region, and around the world.

      c.  The supercomputers that we are launching today, ASPIRE 2A and ASPIRE 2A+, will significantly advance computing capabilities that better support our

policymakers and researchers in addressing emerging problems and working with global partners to tackle shared challenges.

    i. Researchers can leverage high-performance computing more efficiently through automation, code optimisation, and innovative solutions.

    ii. It will also provide the infrastructure to support innovation across key fields such as in AI, genomics, climate science, and quantum computing, contributing to Singapore's Smart Nation vision.

3. In the past 2 years, Generative AI and Large Language Models, have unleashed sweeping waves of transformation across the global economy.

    a. These models require vast computational power to process billions of parameters and deliver impactful applications.

    b. Supercomputers are critical in enabling this, to address computationally intensive tasks.

        i. Today's supercomputers are incredibly powerful, with the world's leading machines boasting a combined capacity of over 8,200 PetaFLOPS.

        ii. This is equivalent to the processing power of 82 million consumer laptops.

    c. By enabling us to model, simulate and analyse vast datasets, supercomputers are critical in enabling us to tackle critical challenges.

        i. From enhancing the accuracy of extreme weather predictions to expediting drug discovery and vaccine development, and improving urban planning through traffic and energy use simulations, supercomputers drive the essential real-world solutions needed to create smarter, more sustainable, and interconnected cities.

ii. Some breakthroughs in recent years in areas like space exploration, vehicle design, and vaccine development were powered by supercomputers.

iii. In the coming years, we can expect to see even more.

4. With these developments in supercomputing, the launch of these two latest supercomputers, ASPIRE 2A and ASPIRE 2A+, is very timely.

   a. Earlier this month, Prime Minister Lawrence Wong launched Singapore's Smart Nation 2.0 vision, which aims to enhance the quality of life, boost economic competitiveness, and create sustainable urban environments.

      i. By unlocking advancements in AI and data-driven technologies, these supercomputers will play an important role in realising this Smart Nation 2.0 vision.

5. Terence earlier laid out NSCC's mission of enabling the scientific community in Singapore to achieve excellence.

   a. Indeed, in our R&D endeavours, we must harness the power of supercomputing to address complex challenges.

   b. The National Research Foundation is setting aside $120 million for the AI for Science initiative.

      i. This programme leverages AI to accelerate discoveries in fields such as advanced materials and biomedical sciences.

      ii. ASPIRE 2A and ASPIRE 2A+ will provide the immense computational power needed to handle complex data and algorithms.

      iii. This can drastically shorten experimentation cycles in these applications, potentially enabling breakthroughs in months that could otherwise take years.

   c. Another example of ASPIRE 2A+ in action is MERaLiON AI, an AI model with wide applications in healthcare, security, telecommunications, and media.

     i. MERaLiON AI can speed up medical diagnoses, enhance security through faster threat detection, and improve customer service in telecommunications by processing data more efficiently.

     ii. Researchers from A*STAR's Institute for Infocomm Research are using ASPIRE 2A+'s GPUs to train these AI models much faster. What previously took over 340 days can now be completed in under six.

     iii. This not only accelerates innovations while delivering real-world benefits that directly improve lives and drive industry growth.

6. Besides enabling breakthroughs in AI, we should also harness supercomputing to address real-world challenges, such as in climate change and healthcare.

    a. For instance, the Third National Climate Change Study or V3, carried out by the National Environment Agency's Centre for Climate Research Singapore, relied on NSCC's supercomputers to produce Southeast Asia's highest-resolution climate projections.

       i. By downscaling global models from 100 km to just 2 km over Singapore, researchers simulated over 3,000 years of climate data in under four years.

       ii. This data helps policymakers and businesses plan for extreme weather, heat stress, and rising sea levels, safeguarding Singapore's infrastructure.

    b. Similarly, A*STAR's Institute of High Performance Computing (IHPC) tapped on computational power to develop advanced airflow simulations that have helped a Singapore enterprise, KoolLogix, design an innovative data centre cooling system that optimises energy efficiency.

       i. This can help contribute to greener data centres, furthering Singapore's sustainability and digital ambitions.

ii.  In fact, the solution that KoolLogix has come up with is being used right here in the Data Centre housing ASPIRE 2A.

7.  Terence also touched on how NSCC's engagements with overseas counterparts have opened up opportunities for researchers in the Singapore ecosystem to collaborate with like-minded partners from Asia, Europe and the US.

   a.  Indeed, our approach to our research, innovation and enterprise endeavours must be anchored on the principle of collaborating with the best partners globally, whether in academia, industry, or government agencies.

   b.  Singapore is partnering with some excellent high performance computing centres, in particular with RIKEN in Japan and CSC in Finland, and as Terence mentioned earlier, with partners in Thailand and Australia.

      i.  These have been very valuable to our work.

   c.  This new investment that we are announcing also seeks to foster closer collaboration with industry, cultivating public-private partnerships and strengthening Singapore's ecosystem.

      i.  For example, NVIDIA, a global leader in graphics processing and AI, collaborated with NSCC to develop the all-GPU ASPIRE 2A+.

      ii.  NSCC has also signed a Memorandum of Understanding with Quantinuum to explore hybrid HPC-quantum computing as the next iteration of its supercomputing capabilities.

   d.  Together with industry leaders such as NVIDIA and AMD, NSCC is also working to advance quantum researcher skillsets in areas such as quantum simulation and hybrid quantum-classical computing.

      i.  This investment will further allow NSCC to better support the synergies between high-performance computing and quantum computing in terms of resources, capability development and infrastructure building, including quantum simulations and Hybrid Computing models.

8.  Our national investment into supercomputing goes beyond infrastructure.

    a.  To fully harness the power of advanced systems like supercomputers, we must invest in talent development. Ultimately, it is people who will unlock the full potential of supercomputing.

9.  I therefore commend NSCC for putting in place programmes to develop talent, collaborating with universities, research institutes, and industry to nurture the next generation of supercomputing experts.

    a.  Through the Young Investigator Seed Programme, for example, NSCC will provide young researchers access to high-performance computing resources in partnership with the Institutes of Higher Learning and agencies like A*STAR.

    b.  This programme encourages early-career talent by supporting high-performance computing-enabled research projects, giving young researchers invaluable hands-on experience to tackle real-world challenges and build future high-performance computing expertise.

    c.  NSCC is also working with Digital Industry Singapore to launch a pilot initiative targeted at SMEs and startups.

        i.  By setting aside national high-performance computing resources, this initiative enables smaller businesses to explore high-performance computing-driven research in areas like AI.

        ii. By leveraging these resources, I hope that SMEs and startups can accelerate business applications, innovate faster, and sharpen their competitive edge in the market.

10. To conclude:

    a.  The launch of ASPIRE 2A and ASPIRE 2A+ marks an exciting new chapter in Singapore's supercomputing journey.

b. We are not only leveraging powerful technologies to tackle some of the world's most complex challenges but also developing the talent needed to unlock their full potential.

    i. With continued investment in high-performance computing, strategic partnerships, and a strong focus on developing experts, we are well-positioned to work with like-minded partners in our region and around the world to make impactful innovations.

c. I hope that these new supercomputers motivate the research community in Singapore to aspire to greater heights, and I look forward to seeing how we can continue to harness the power of supercomputing to drive progress and solve the challenges of today and tomorrow.

d. Thank you very much.