SUPERCOMPUTING ASIA
Gathering the best of HPC in Asia

Co-organised by HPC centres from Australia, Japan, Singapore and Thailand, the SupercomputingAsia (SCA) conference is an annual event that encompasses an umbrella of notable supercomputing and allied events in Asia.

The key objective of the SCA conference is to promote a vibrant and relevant HPC ecosystem in Asia. Delegates will be able to gain access to visionary insights from thought leaders in academia and industry as well as optimum networking opportunities with the supercomputing community in Asia. Regular programme highlights of the conference include tracks and sessions covering current and future trends in high performance computing (HPC) technology worldwide. These topics include HPC applications and technologies, AI, HPC-Quantum Computing integration, green data centre technologies, hyperscaler infrastructure, and HPC security, among others.
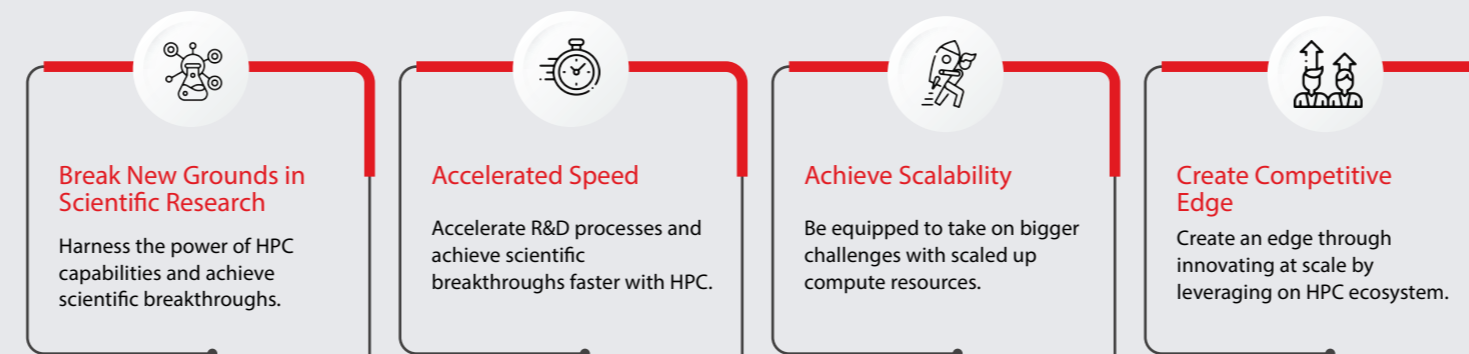
The conference has become a key networking and collaboration platform for regional and global supercomputing partners, which attracts HPC thought-leaders, decision makers, academics and industry professionals. SCA has hosted or co-located key events and meetings that strengthened local, regional and global cooperation in supercomputing technology. Past SCA events have hosted strategic meetings with regional and global HPC centre partners for sessions such as HPC in healthcare & genetics, Supercomputing Frontiers Asia conference, the Asia-Pacific Research Platform (APRP) and the EU-ASEAN-Japan Symposium.

For more information, visit www.sc-asia.org

Industry	Scientific	Strategic Showcase	Co-located HPC Events	Tutorials & Exhibitions
HPC technology updates & case studies	Academic and research paper presentations	Strategic verticals on the use of HPC	Integrating the entire HPC ecosystem	Learn from the best in HPC

www.sc-asia.org

Co-organised by:

PARTNER WITH US
and redefine Research and Development with HPC

To create a rich and diverse ecosystem of skills and infrastructure, NSCC customises HPC collaboration models to cater to the diverse research and development needs of businesses, government agencies, researchers and educators.

Break New Grounds in Scientific Research
Harness the power of HPC capabilities and achieve scientific breakthroughs.

Accelerated Speed
Accelerate R&D processes and achieve scientific breakthroughs faster with HPC.

Achieve Scalability
Be equipped to take on bigger challenges with scaled up compute resources.

Create Competitive Edge
Create an edge through innovating at scale by leveraging on HPC ecosystem.

Transforming Singapore's research landscapes

NSCC aims to deliver HPC capabilities to accelerate R&D for Singapore government agencies and research institutes. With NSCC's state-of-the-art HPC capabilities-powered and integrated solutions, organisations are able to scale up their research and increase the speed and efficiency in their research areas such as weather monitoring, digital twin modeling, big data analytics, healthcare AI, precision medicine, transport, advanced manufacturing and quantum computing technology. We continuously engage and explore collaborations with government agencies, research institutes, industries and Institutes of Higher Learning (IHLs) to discover new HPC use cases.

Accelerating innovation across industries

Explore a Proof-of-Concept trial period with NSCC; a negotiated period of complimentary familiarising, testing and proof-of-value as a starter kit. If you would like to continue using HPC to fuel innovation after the starter period and enjoy industry-competitive rates on HPC resources such as the latest CPU, GPU and/or high performance storage resources, talk to us.

Powering up your research

Major users or organisations affiliated to existing founding stakeholders (eg. A*STAR, NUS, NTU, SUTD) ride on the packages already provided to our key fee-paying stakeholders and users. These users enjoy access to large allocations of dedicated HPC resources and can leverage the existing high-speed, high-bandwidth secured connectivity via their parent organisations or partner nodes found across Singapore. For those interested in securing large amounts of HPC resources for your particular needs, you may consider joining NSCC as a unique major fee-paying user.

CONNECT WITH US

For more information on our collaboration models and ways to accelerate your research, reach out to us at bizdev@nscc.sg.

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SUPERCOMPUTING FOR ALL
POWERING INNOVATION

About NSCC

The National Supercomputing Centre (NSCC) Singapore was established in 2015 to manage Singapore's national petascale facilities and high-performance computing (HPC) resources. As a National Research Infrastructure funded by the National Research Foundation (NRF), the HPC resources that we provide helps support the research needs of the public and private sectors, including research institutes, institutes of higher learning, education institutions, government agencies and companies.

With the support of key partners and stakeholders from the Singapore HPC community such as the Agency for Science Technology and Research (A*STAR), Nanyang Technological University (NTU), National University of Singapore (NUS), Singapore University of Technology and Design (SUTD), National Environment Agency (NEA) and Technology Centre for Offshore and Marine, Singapore (TCOMS), NSCC catalyses national research and development initiatives, attracts industrial research collaborations and enhances Singapore's research capabilities. For more information about our key stakeholders, partners and collaborators, please visit www.nscc.sg.

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WHAT CAN NSCC'S SUPERCOMPUTERS DO FOR YOU?

01 SUPERSIZE YOUR RESEARCH

Bigger aspirations and more rewarding challenges

Most modern world-changing projects require vast amounts of computational power to succeed. NSCC offers unique petascale supercomputing resources, structured planned queues, and dedicated support to give your extremely data-intensive, complex research projects that competitive edge to fly higher and reach further.

02 ACCELERATE YOUR RESEARCH

Faster processing and greater connectivity

When you need to crunch massive amounts of data requiring millions of compute hours, NSCC's petascale resources are able to provide. This raw compute power is coupled with 100G Infiniband high-performance links across Singapore and globally, so you can work faster, bigger, and more collaboratively.

03 ACCESSIBLE AND FLEXIBLE

Supercomputing to suit your needs

NSCC supports you now, and in the future. Our infrastructure is available to all local public and private researchers wanting to tap on the power of supercomputers. We welcome conversations with researchers, entrepreneurs and educators to help co-create and build flexible collaboration models and initiatives to unleash the maximum benefits of supercomputing.

04 TRANSFORMATIVE

The possibilities are endless

Supercomputing is a vital aspect of Singapore's digital transformation and a key scientific resource. NSCC supports this transformation in research and business, with a strong track record of powering high-resolution virtual modelling and simulation solutions, enabling digital twin technology, and supporting a rapidly increasing number of innovations in data-driven AI as well as quantum technology initiatives across various sectors and industries.
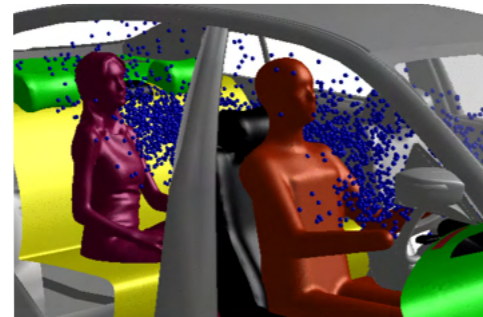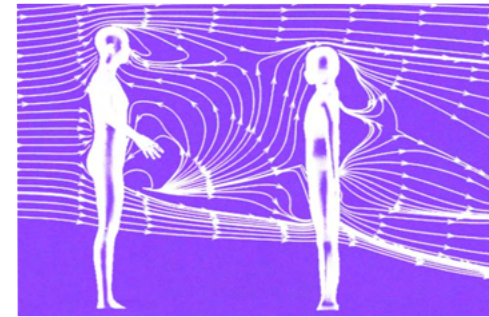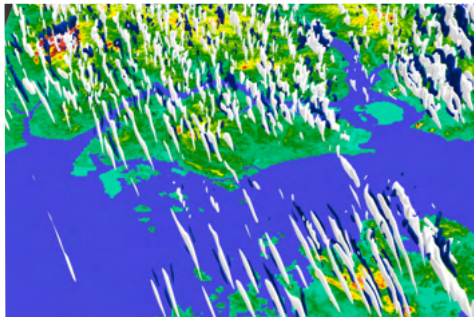
SINGAPORE'S SUPERCOMPUTING JOURNEY

1980s
Government identifies supercomputing as an important resource.

1988
Advanced Computation Centre (ACC) installs first NEC SX-1A supercomputer.

1993
National Supercomputing Research Centre (NSRC) is formed.

1996
NSRC installs Singapore's most powerful supercomputer then, the Cray Research T94.

2015
National Supercomputing Centre (NSCC) Singapore, the nation's first national petascale facility, is established with the support of A*STAR, NUS, NTU and SUTD as founding stakeholders.

2016
Singapore's 1 PF supercomputer, ASPIRE 1, comes online as the region's most powerful supercomputer and ranked 115th in the TOP500 supercomputer list (Nov 2016 ed.).

2017
New AI.Platform@NSCC with NVIDIA bolsters AI capabilities for academic, research and industry and supports AI Singapore (AISG) efforts.

2018
The inaugural SupercomputingAsia 2018 (SCA18) conference is held.

2019
Finance Minister and Chairman of the National Research Foundation (NRF), Mr. Heng Swee Keat announced a grant of S$200 million to upgrade the nation's supercomputing capability at Supercomputing Asia 2019 (SCA19).

2020
NSCC's new Köppen system, an add-on to ASPIRE 1, is commissioned to support the research needs of the climate research community.

2022
Singapore commissions next generation supercomputer, ASPIRE 2A, with up to 10 PF of computing capacity and is seven times more powerful than ASPIRE 1.

Find out more about Singapore's high-performance computing (HPC) journey and the evolution of the national supercomputing ecosystem and infrastructure.

SINGAPORE'S NEXT GENERATION NATIONAL SUPERCOMPUTER

ASPIRE2A

Advanced **S**upercomputer for **P**etascale **I**nnovation **R**esearch & **E**nterprise **2A**

- **>3.5x** more cores
- **5x** more compact (1.5x less nodes)
- **2x** more GPUs
- **7x** more compute power

than ASPIRE 1

Singapore's first national petascale supercomputer

SPECIFICATIONS

CPU
105,984 Cores
CPU (AMD EPYC™ 7713)
800 Nodes

1,024 Cores | High Frequency Nodes (AMD EPYC™ 75F3)
16 Nodes

352 GPUs | Accelerated Nodes
GPU (NVIDIA A100)
82 Nodes

476 TB
Total System Memory

25 PBytes
Storage (Spinning + Nearline)

10 PBytes
Scratch Disk

- Parallel DMF hierarchical storage system with remote backup
- Parallel High i/o (200Mb/sec) storage flash module
- Kubernetes Containerisation for HTC workflows
- Direct-to-Chip aircon-less green cooling
- Rear door heat exchange thermosiphon cooling system
- Quantum Simulator Module
- Visualisation Lab

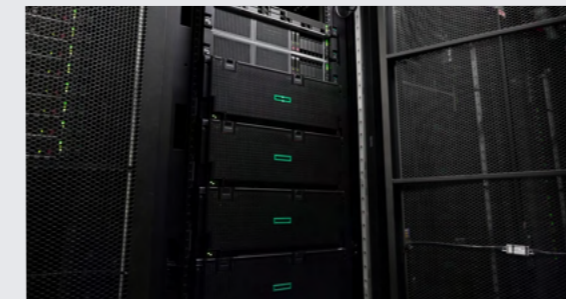### DATA CENTRE FEATURES

Award-winning green data centre

The new data centre at the NUS Innovation 4.0 Building has won sustainability awards including Singapore's Building Construction Authority (BCA) Platinum Green Mark Award certification and the W.Media Southeast Asia 2022 award for Energy Efficient Innovation. Key features of the data centre include an aircon-less compute area, locally-designed rear-door heat exchanger and is warm-water cooled.

IoT-enabled & digitally monitored smart data centre

The new data centre is equipped with intelligent monitoring AI-assisted tools, advanced DCIM and leveraging Digital Twin technology with integrated IoT sensors, which enables data analysis with CFD and AI thus facilitating operations and optimising real-time supercomputer and data centre operations.

Linked via 100G network fabric

The new data centre forms part of a high-speed, resilient research network of distributed data centres and systems connected by 100G research links between major research nodes in Singapore such as A*STAR, NUS, NTU and SUTD.

OUR LOCAL & GLOBAL 100GBPS NETWORK FABRIC

LONDON
NETHERLANDS
SOUTH KOREA
JAPAN
HONG KONG
SAUDI ARABIA
GUAM
HAWAII
CHICAGO
SEATTLE
LOS ANGELES
SINGAPORE
AUSTRALIA
NEW ZEALAND

ADDING VALUE TO SCIENCE AND BUSINESSES

RESEARCH

Supercomputing helps make your research process quicker and more efficient, by providing and enabling solutions for your increasingly complex and advanced data needs.

BUSINESS

Supercomputing gives your business a competitive edge, reduces your time to market for products and services, and helps lower costs by leveraging supercomputers to experiment in a virtual environment.

PART OF OUR HPC COMMUNITY

NSCC's national supercomputing infrastructure and resources are dedicated to supporting Singapore's research aspirations across key fields identified under the nation's Research, Innovation and Enterprise (RIE) plan.

- Manufacturing, Trade and Connectivity
- Smart Nation and Digital Economy
- Urban Solutions and Sustainability
- Human Health and Potential

Supercomputers support R&D in various fields:

- Advanced Manufacturing and Engineering
- Aerospace
- Bioinformatics and Medical Informatics
- Climate Modelling and Weather Forecasting/Prediction
- Computational Finance/Fluid Dynamics/Material Science
- Data Analytics
- Data Centre and Networking
- Deep Learning Machine/Artificial Intelligence
- Geonomics & Precision Medicine
- Immersive Media Production
- Life Sciences
- Offshore & Marine
- Quantum Physics/Chemistry
- Scientific Analysis

Find out more about how supercomputers are helping Singapore scientists and researchers by scanning this qr code:

LOCAL AND GLOBAL PARTNERSHIPS

Connectivity
Ahead of the curve

NSCC's supercomputing power is augmented by a network of local and global connectivity resources that enable the quick, safe, and efficient transfer of large amounts of data — an essential part of the equation in academia, research, and industry. NSCC collaborates with the Singapore Advanced Research and Education Network (SingAREN) to continually upgrade high-performance local and global network connectivity to anticipate growing needs, and enable our collaborations with international research platforms and partners.

Island network
Encouraging accessibility and collaboration

A high-speed, high-bandwidth network fabric traversing Singapore, the dedicated 100G Infiniband network enables seamless data sharing, and now connects major research institutions like the Agency for Science, Technology and Research (A*STAR), National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore University of Technology & Design (SUTD), and more.

International collaborations
Shared experiences and goals from across the globe

NSCC establishes partnerships with like-minded national HPC infrastructures, centres and HPC research organisations from around the world to drive collaborative activities, joint projects and events that help advance HPC capability & education, develop talent, raise competency and enhance international cooperation.

NSCC