National Supercomputing Centre

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SupercomputingAsia 2022 (SCA22) conference announces annual SCA Awards and winners of the Data Mover Challenge 2021

The SupercomputingAsia Conference recognised key HPC pioneer-leaders with its annual SCA22 Awards. The winning teams from Asia, Australia and the US were also announced at the awards ceremony for the international Data Mover Challenge 2021 (DMC21) competition.

Singapore, 2 March 2022 – The SCA Awards are an opportunity for the HPC community to recognise and celebrate those who have contributed significantly in one way or another to High-Performance Computing, or those who have been instrumental in the development of the HPC ecosystem, particularly for the Asian or Indo-Pacific region.

This year's SCA22 Award recipients have been recognised for their contributions towards the development of HPC in their respective countries and towards driving international HPC cooperation and collaboration through their activities.

"The SCA Awards continues to identify and recognise individuals who have made significant achievements in their vision, leadership and contributions to HPC and related technologies. The three SCA22 award winners, indeed, have well established track records of impactful achievements that have greatly benefitted the HPC communities, both domestically and across the region," said Prof Lawrence Wong, Chair of the SCA22 Organising Committee.

The SupercomputingAsia 2022 (SCA22) Award winners are:

Name	Award Name	Organisation	Citation
Prof David Abramson	SCA HPC Visionary Award	The University of Queensland, Australia	For significant contributions to the advancement of Australian and global HPC through the development of world-leading HPC research and distinguished service in international HPC communities.
Dr Jysoo Lee	SCA HPC Leadership/ Achievement Award	KAUST (King Abdullah University of Science and Technology), Saudi Arabia	For leading pioneering initiatives to develop South Korea's HPC community and driving activities that have advanced international cooperation.
A/Prof Francis Lee Bu Sung	SCA HPC Network Achievement Award	Singapore Advanced Research and Education Network (SingAREN)	For contributions towards promoting global research and interaction between HPC communities through the establishment and growth of both local and international research and education networks.

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The winners were nominated, assessed and selected based on their significant and pioneering contributions to the HPC community. The SCA22 awards were presented at the SCA22 Awards Ceremony, held on 2 March 2022 at the SupercomputingAsia 2022 (SCA22) hybrid conference in Singapore.

A/Prof Tan Tin Wee, Chief Executive, National Supercomputing Centre (NSCC) Singapore & Co-Chair of the SCA22 Steering Committee (left) presenting the award to A/Prof Francis Lee Bu Sung (right) at the SCA22 Conference in Singapore.

A solemn tribute was also given to the most recent past winner, Dr Putchong Uthayopas from Kasetsart University, Thailand who had passed on late last year. The recipient of the SCA21 Asia HPC Leadership Award in March 2021 for his role in growing the HPC capability in Thailand and his contributions to ASEAN HPC collaboration, Dr Putchong was fondly remembered as a dedicated pioneer and champion of HPC in Thailand and also across Asia.

For more information about our winners, please refer to the Annexes below.

For more information about the SupercomputingAsia Awards and past winners, please visit https://www.sc-asia.org/sca-awards/.

Data Mover Challenge 2021

Moving data is an essential foundation of national and global science. The international Data Mover Challenge (DMC) is a competition organised by the National Supercomputing Centre (NSCC) Singapore that aims to bring together experts from industry and academia in a bid to test their software and solutions for transferring huge amounts of research data. The DMC competition encourages international teams to come up with the most advanced and innovative solutions for data transfer across servers located in Singapore, Australia, Canada, Europe, USA, South Korea, Japan and Saudi Arabia that are connected by 100Gbps international research and education networks.

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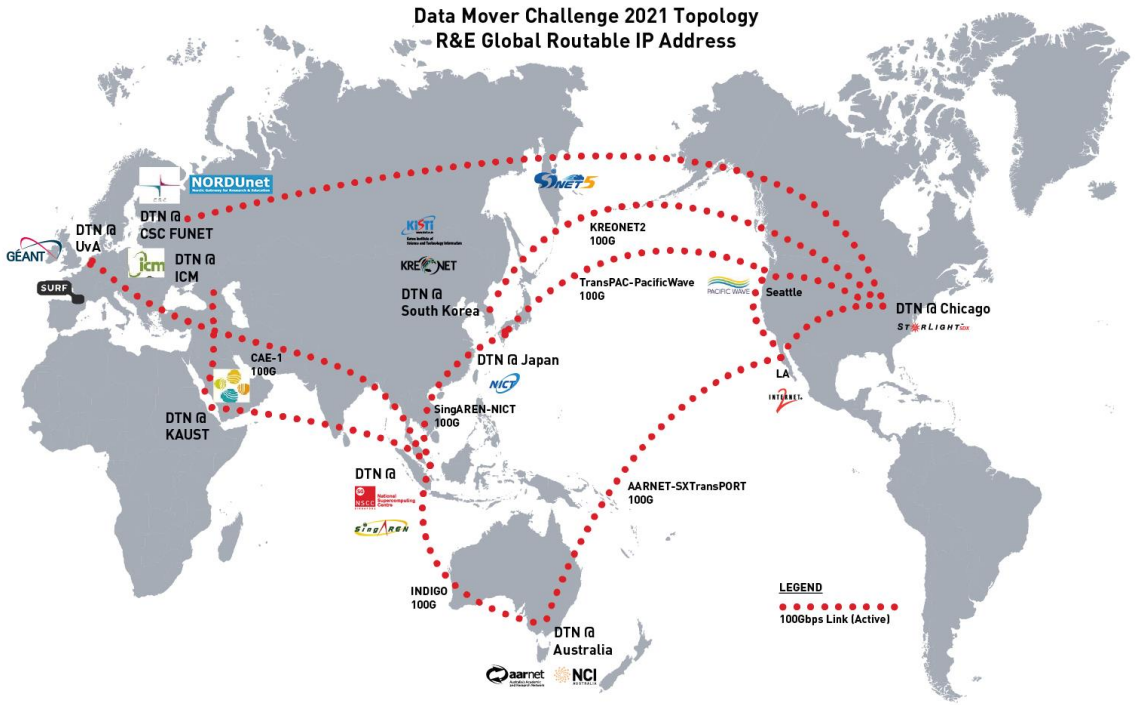

Seven international teams from Singapore, Japan, Poland, Australia, Malaysia, USA and Germany participated in the DMC21 competition. The challenge focused on optimising point-to-point data transfers between sites – a crucial step forward in advancing research collaboration and sharing. Teams competed by deploying the best software tools on Data Transfer Nodes (DTNs) that were set up within existing international networks across the globe.

After three gruelling months of development and deployment of software, the panel of international judges conducted extensive deliberations and reviews and the results of the DMC21 were announced at the SupercomputingAsia 2022 (SCA22) hybrid conference. Winners were invited to present their winning solutions live at SCA22.

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A/Prof Tan Tin Wee, Chief Executive, National Supercomputing Centre (NSCC) Singapore & Co-Chair of the SCA22 Steering Committee (left), presenting the award for "Best Long-Distance Performance AND Overall Winner" to a representative from Team Ciena-iCair-UETN (right) at the SCA22 Conference in Singapore.

"The DMC judging committee was presented with an interesting range of participants who each had a unique approach to the challenge. The winning solutions covered the spectrum of network technology and the quality of the entries were highly regarded by the judging panel, with each presenting its own merits in various use cases," said Mr Andrew Howard, Associate Director of Cloud Services at the National Computational Infrastructure (NCI) Australia, and Chief Judge of the DMC21 Judging Committee.

Commenting on the uniqueness of each team's winning solutions, Mr Howard said, "*Team MUSASHINO* created a new internet protocol which was able to deliver a reliable data transfer service over a range of network conditions like loss and congestion while two other teams, *Arcitecta* and *Globus*, focused on using the network efficiently. *Arcitecta* optimised for large reliable dataset replication within an existing data management framework while *Globus* utilised a well-established data transfer ecosystem and applied it to the DMC context. Team *Fast is Good* focused on delivering large data sets through firewalls and impaired networks efficiently. Team *Ciena-iCair-UETN* produced a highly optimised framework which was able to programmatically define a data transfer with the ability to employ machine learning to optimise the paths, network configurations, protocols and throughput presented through a Jupyter interface. It was also able to integrate with existing Jupyter workflows."

"The judging committee would like to thank the teams who participated and our partners across the global HPC and NREN community who kindly provided their expertise, resources and capabilities and their ongoing support through the challenge," continued Mr Howard.

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Congratulations to all the winning DMC 21 teams!

Team	Country	Award Name	Citation
Team MUSASHINO	Japan	Most Innovative and Best IPv6 Performance	Good proprietary reliable protocol, friendly to other internet protocol. Good, high speed IPv6 protocol.
Arcitecta	Australia	Most Complete Solution and Best Software Architecture	Good system architecture design.
Fast Is Good (Raysync/Robust)	Malaysia/China	Best Virtualisation Support	Good exploitation of containerisation
Globus	USA	Best Integrated Software Experience	Good end user software design and architecture
Ciena-iCair-UETN	Canada/USA	Best Long-Distance Performance AND Overall Winner	Highest consistent throughput, especially over long distance from Europe to Australia

DMC21 Judging Panel

Participants were assessed and awardees were selected by an international panel of judges comprising domain experts and professionals in the field of networking and data transfer. Members of the judging panel for DMC21 included:

Name	Designation & Organisation	Country	Panel
Andrew Howard	Associate Director – Cloud Services, National Computational Infrastructure (NCI)	Australia	Chief Judge
Cees de Laat	Professor, Informatics Institute, Faculty of Science, University of Amsterdam	The Netherlands	Judge
Francis Lee Bu Sung	Associate Professor, School of Computer Science and Engineering, Nanyang Technological University (NTU)	Singapore	Judge
Lawrence Wong	Emeritus Professor, Department of Electrical & Computer Engineering, National University of Singapore (NUS)	Singapore	Judge
Tim Chown	Network Development Manager, Jisc	United Kingdom	Judge

For more information about the Data Mover Challenge 2021 (DMC21), the participants and the supporting partners, please visit https://www.nscc.sg/data-mover-challenge-2021/.

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About the SupercomputingAsia 2022 (SCA22) Conference

Co-organised by HPC centres from Singapore, Japan, Australia and Thailand, SupercomputingAsia 2022 (SCA22) is an annual conference that encompasses an umbrella of notable supercomputing and allied events in Asia. SCA22 will be held as a hybrid conference from 1 to 3 March 2022. The key objective of SupercomputingAsia 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, optimum networking opportunities and the Supercomputing community in Asia. The conference co-organisers include the National Supercomputing Centre (NSCC) Singapore, RIKEN Center for Computational Science (R-CCS), Research Organization for Information Science and Technology (RIST), Pawsey Supercomputing Centre and the National Computational Infrastructure (NCI) Australia. Since 2018, the SCA conference series has quickly grown to become a key meeting and networking platform for the HPC and supercomputing value chain for Asia and internationally. Partners share new insights, discuss trends and present the latest advances the development of HPC. The conference attracts international delegates including mid- and C-level executives, principal researchers and HPC professionals from academia, industry and the public sector.

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Annex A – Information on SCA22 Award Winners

SCA HPC Visionary Award

The SCA HPC Visionary Award recognises an outstanding individual who has demonstrated great vision in the future of HPC and has contributed significantly to the development of the HPC community, particularly for the ASEAN, Asian and Australasian regions.

Citation

For significant contributions to the advancement of Australian and global HPC through the development of world-leading HPC research and distinguished service in international HPC communities.

Prof David Abramson

The University of Queensland, Australia

David is a Professor of Computer Science, and currently heads the University of Queensland Research Computing Centre.

He has been involved in computer architecture and high-performance computing research since 1979. He has held appointments at Griffith University, CSIRO, RMIT and Monash University.

Prior to joining UQ, he was the Director of the Monash e-Education Centre, Science Director of the Monash e-Research Centre, and a Professor of Computer Science in the Faculty of Information Technology at Monash. From 2007 to 2011 he was an Australian Research Council Professorial Fellow.

David has expertise in High Performance Computing, distributed and parallel computing, computer architecture and software engineering. He has produced in excess of 230 research publications, and some of his work has also been integrated in commercial products. One of these, Nimrod, has been used widely in research and academia globally, and is also available as a commercial product, called EnFuzion, from Axceleon.

His world-leading work in parallel debugging is sold and marketed by Cray Inc, one of the world's leading supercomputing vendors, as a product called ccdb.

David is a Fellow of the Association for Computing Machinery (ACM), the Institute of Electrical and Electronic Engineers (IEEE), the Australian Academy of Technology and Engineering (ATSE), and the Australian Computer Society (ACS).

His hobbies include recreational cycling, photography and making stained glass windows. He is also an amateur playwright, and author of Purely Academic.

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SCA HPC Leadership/Achievement Award

The SCA HPC Leadership/Achievement Award recognises an outstanding individual with excellence in leadership within the HPC community, particularly for the ASEAN, Asian and Australasian regions.

Citation

For leading pioneering initiatives to develop South Korea's HPC community and driving activities that have advanced international cooperation.

Dr Jysoo Lee

KAUST (King Abdullah University of Science and Technology), Saudi Arabia

Dr Jysoo Lee is Facilities Director of the Research Computing Core Labs at KAUST (King Abdullah University of Science and Technology) in Saudi Arabia. He is responsible for KAUST's high-performance computing, artificial intelligence, and visualization services. Prior to this role, Lee was Director of the Supercomputing Center in KISTI (Korea Institute of Science and Technology Information) and Founding Director General of NISN (National Institute of Supercomputing and Networking) in South Korea.

Jysoo Lee has been working in the area of high-performance computing for more than 30 years, and has made numerous contributions. At KISTI, he led national supercomputing and high-performance research network services supporting 400+ organizations across South Korea. He was responsible for the planning, procurement, and service of South Korea's fourth-generation national supercomputing facility with the budget of $60M. He was responsible for several national high-performance computing projects in South Korea. He led the "National Grid Infrastructure Construction Project", resulting in the creation of the national Grid computing service of K*Grid, development of the Grid middleware package of KMI (Korea Middleware Initiative), and delivery of the commercial Grid service demonstrator. He planned and led the "National e-Science Infrastructure Construction" project for producing a cyber research environment to enhance research productivity. Several domain-specific environments and common software packages were created from the project. He also led the effort for the legislation of the "National Supercomputing Promotion Act" to enhance people's quality of life and the economic development of the nation through the efficient use of supercomputing. The key action for achieving the goal was establishing and implementing a national plan for the supercomputing ecosystem. NISN (National Institute of Supercomputing and Networking) was created to support the action. Lee became the founding Director General of NISN and led the development of and supported the execution of a five-year national supercomputing master plan and yearly implementation plan. He also led the planning of the Super Korea 2020 project for the construction of the fifth-generation national supercomputing infrastructure. He also has been active in building HPC communities. He led the establishment of KSCSE (Korean Society of Computational Sciences and Engineering), an interdisciplinary forum for fostering communication and collaboration between diverse disciplines, and KSC (Korea

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Supercomputing Conference), an annual event for the South Korean supercomputing community. As Deputy Chair of GFK (Grid Form Korea), which is the largest Grid research community in South Korea, he established formal relations with OGF (Open Grid Form) as an affiliate member. He also hosted and participated in numerous international meetings such as GGF (Global Grid Forum), PRAGMA (The Pacific Rim Application and Grid Middleware Assembly), and HPC Saudi.

At KAUST, he streamlined the research computing infrastructure of $100M+ capital investment, and is serving as chair of the acquisition committee for the procurement of a third-generation flagship supercomputer. He created a program for impactful collaborations with major in-Kingdom organizations, resulting in three world records with Saudi Aramco, better daily forecasts with Saudi's National Center for Meteorology, and major cost savings with the Saudi Electricity Company. He also created a data science service, consisting of computing infrastructure, training and support programs.

He established the "Grid and Supercomputing Program" in UST (University of Science and Technology) in South Korea and had served as the Chief Professor since its inception. In 2018, he was selected as one of the "People to Watch" by HPCwire, a leading media in the area of high-performance computing.

SCA HPC Network Achievement Award

HPC development in our region has not progressed in isolation or without the help of international partners from across the world. For their contribution towards helping to grow the HPC ecosystem in Asia, SCA HPC Network Achievement Award recognises individuals or organisations who have played key roles in helping develop the HPC infrastructure and the related ecosystem in the region.

Citation

For contributions towards promoting global research and interaction between HPC communities through the establishment and growth of both local and international research and education networks.

A/Prof Francis Lee Bu Sung

Singapore Advanced Research and Education Network (SingAREN), Singapore

Francis Lee is a trailblazer in the research and education community. He had initiated a number of major projects and initiatives that has brought the community together to work towards the common good.

He has been involved in SingAREN since it's early beginnings as a project funded by Telecoms Singapore and iDA in 1998. He spearheaded the discussion and formation of SingAREN as a not-for-profit entity. As the founding President of SingAREN in 2003, he focused the sustainability and

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relevance of the entity to its members by deploying new services such as eduroam and SGAF (single-sign-on). Under his stewardship SingAREN obtained the SLIX 1.0 grant from NRF in 2013. The move to lease dark fiber connections rather than procuring bandwidth made SingAREN's network technology deployment independent of the telcos. In 2014, SingAREN deployed the first 100Gbps national research and education network (NREN) in the region. In 2019, as a co-PI of SLIX 2.0, SingAREN expanded the fiber footprint and became more resilient and has grown to become a national research infrastructure (NRI). Francis played a major role in the growth of SingAREN and has been a constant driving force in guiding SingAREN over the past 20 years.

Francis has been the key spokesman for SingAREN at international meetings since 2003 and was elected to various portfolios at the regional and international level including TEIN*CC and TransPAC, and helped establish SingAREN and Singapore as a major R&E network hub. From just a single international link to USA in 2003, there are now more than a dozen international connections with several 100G intra- and inter-regional links. Singapore now has high-speed network connectivity to Europe, USA, Oceania and East Asia with a large number of these links funded by our partners as SingAREN is a trusted, efficient and well-connected hub. Francis helped facilitate these achievements through the collaborations he cultivated over many years and building trust with the community. To ensure international submarine cable resilience and diversity, Francis initiated the Asia Pacific Ring MOU with partners from USA and East Asia in 2017, where partners will serve as a back-up of each other's links and share information of the cable system procured to ensure diversity. This collaborative network was renamed APOnet in 2021 with the addition of new members. Likewise, in 2019 he repeated a similar initiative with European partners for the connectivity between Europe, East Asia and Oceania called the Asia-Pacific Europe Ring (AER). The two initiatives have been a major game changer that improved the resiliency of international connectivity as well as cost-sharing of the procurement of links. These include the CAE-1 100G link from Singapore to Slough (UK), which is co-funded by 6 parties (3 from Europe and 3 from Oceania and East Asia).

Francis has been the advisor to the NTU teams participating annually at the Student Cluster Competitions held in Asia, Europe and USA since 2016. Under his supervision the teams have achieved great success including being the Overall Winner at SC17; the Highest Linpack Award from 2017-2019; and 2nd Overall at ISC18, and ISC21. Currently, the NTU team is ranked 4th on the Student Cluster Competition Worldwide Leadership list.

In 2019, he took the lead in organising the inaugural Data Mover Challenge, which is a competition that encourages commercial entities and the academic and scientific community to demonstrate their capabilities and expertise to test software and solutions for transferring huge amounts of research data. The DMC has grown from just a few links across the Pacific and Oceania to include Europe in the latest DMC21 competition. Francis serves as a member of the judging panel and continues to shape the competition.