

Innovation and Impact

NATIONAL UNIVERSITY OF SINGAPORE
Annual Report 2018

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VISION
a leading global university
shaping the future

MISSION
to educate, inspire
and transform

VALUES
innovation, resilience
excellence, respect, integrity

The National University of Singapore aspires to be a vital community of academics, researchers, staff, students and alumni working together in a spirit of innovation and enterprise for a better world.

Our singular focus on talent will be the cornerstone of a truly great university that is dedicated to quality education, influential research and visionary enterprise, in service of country and society.



The new leadership, together with the NUS Board, must continue with the unrelenting transformation of the University as a central node for education, research and enterprise.

The past year was a period of leadership renewal. We welcomed Singapore President Madam Halimah Yacob, who is NUS' 10th Chancellor, and bade farewell to former Chancellor Dr Tony Tan Keng Yam, who strongly supported the University during his term as Chancellor. Madam Halimah, who is our law alumna, had previously served the University as a member of the NUS Board of Trustees, and we are delighted to renew ties with her as NUS Chancellor.

We are also deeply appreciative of Professor Tan Chorh Chuan, who stepped down as NUS President on 31 December 2017. Chorh Chuan, a visionary leader, has left behind a strong legacy for the new leadership team to build on and continue with the transformative journey.

The renewed leadership, helmed by new President Professor Tan Eng Chye as well as Senior Deputy President and Provost Professor Ho Teck Hua, proceeded swiftly to present a bold plan with new directions for the University. They enhanced the leadership team with the appointments of Distinguished Professor Chen Tsuhan as Deputy President (Research and Technology), Mr John Wilton as Deputy President (Administration and Finance) and Professor Freddy Boey as Senior Vice President (Graduate Education and Research Translation).

The new leadership, together with the NUS Board, must continue with the unrelenting transformation of the University as a central node for education, research and enterprise.

We have embedded lifelong learning into the NUS DNA to ensure that we will be an anchor in our students' aspirations for continual growth and upskilling in their careers and passions. Our approach of incorporating undergraduate training and lifelong education into our programmes will enrich the learning landscape, and change the complexion of our campuses with our young undergraduates and older working adults learning together, and from one another.

We continue to produce research that is aligned with the national priorities on Smart Nation, health innovation, materials science, and integrated sustainability. Strategic collaborations across different government ministries have enhanced many of our Centres of Excellence and the establishment of a growing number of corporate laboratories underscores our pursuit towards creating translational impact.

Over the past decade, we have seen a burst of enterprising activities signified by the large number of NUS spin-offs and start-ups created spanning different emerging areas such as artificial intelligence, immunotherapy biotech and adsorption desalination. Concurrently, we have extended our outreach overseas with a greater focus on ASEAN and China to enable an even greater flow of ideas, talents and market access within the region.

As I warmly welcome our new Trustee Mr Lee Ming San to the Board, I would also like to thank our former Trustees Professor Olaf Kübler and Mr Wong Fong Fui, who have retired from the Board, for their guidance and contribution.

The University's success is a reflection of the outstanding efforts of the entire NUS community and I thank all members of our University family for their contributions.

Mr Hsieh Fu Hua
NUS Chairman

NUS has pushed forward with efforts to provide a transformative and holistic education that combines academic rigour, experiential learning, global exposure and real-world relevance.

It has been an exciting and exhilarating year for NUS, with a new leadership team taking the helm.

Following a smooth and successful leadership transition, an able leadership team has been assembled, comprising several new appointments, each of whom brings substantial talent, expertise and experience. My leadership team is a strong and dynamic one, united in mission and ready to lead NUS to become a truly great university.

In 2017/18, NUS has continued to make bold, transformative moves to establish thought leadership and to shape the future of education, research and enterprise.

NUS takes cognisance that in the world of rapid change and technological innovation, lifelong education is a means for our graduates to keep abreast and to stay

ahead. NUS is thus a strong supporter of the Government's SkillsFuture initiative, and we have embarked on the NUS Lifelong Learners Programme in a trailblazing way. NUS is the first university to make student enrolment valid for 20 years from the point of first admission as an undergraduate or graduate student, whichever is earlier. In addition, all students and alumni will be automatically eligible to enrol in publicly available skills-based, industry-relevant courses for upskilling or reskilling. All these represent a bold commitment to our students and alumni, and our ambition to be their anchor for lifelong learning.

NUS has pushed forward with efforts to provide a transformative and holistic education that combines academic rigour, experiential learning, global exposure and real-world relevance. Students are empowered to develop skills in more

than one discipline – we now offer 180 double major and major-minor degree combinations. The undergraduate curriculum has been enhanced to incorporate training in computational thinking and programming, so that students are ready for this technology intensive world. Experiential training is also on the cards. In 2017, the cooperative education model incorporating 16- to 18-month internships, has been introduced to the data science and analytics, business analytics and information security degree programmes. These enhancements will ensure that our graduates retain a talent edge and continue to be among the most sought after in the global employment market.

NUS has been recognised for its substantial research achievements across many disciplines, as evidenced by the subject rankings carried out by major ranking organisations. I have announced that NUS will continue to build on our talent pool by hiring 200 new faculty members, who will, alongside current faculty, collectively shape new peaks of excellence at NUS, in priority areas as well as new and exciting research areas like data analytics, artificial intelligence and fintech.

NUS continues to deepen collaboration with industry, strengthening translational research and research impact on society. A fourth Corporate Lab has been established in partnership with Wilmar International, Asia's largest agribusiness group, to test and develop ingredients and food products, and to develop sustainable production of industrial enzymes and biochemicals.

On the Enterprise front, NUS continues to grow our entrepreneurial and innovation network. The NUS Overseas Colleges programme, NUS' flagship entrepreneurship programme, has expanded to include two new destinations, namely Jakarta, Indonesia

and Toronto, Canada. BLOCK71, NUS' distinctive incubator concept, launchpad and network, has two new locations in Suzhou and Jakarta, established in partnership with NUS (Suzhou) Research Institute and the Salim Group respectively. BLOCK71 will support innovation and entrepreneurship development, by driving active interactions between research and start-up communities in both Singapore and the respective locations, facilitate the testing of business ideas and technologies, enabling start-ups to accelerate growth, reach international markets and scale more efficiently.

Back on home ground, the NUS campus scene has seen new and revitalised facilities, such as the University Sports Centre and the University Cultural Centre. It is a physical reflection of how NUS seeks to continually reinvent, make improvements and pursue excellence. In the same spirit, NUS has embarked on an organisational excellence journey, to seek process improvements, raise the standard of our administration and achieve operational efficiency.

As a community, NUS continues to contribute our hearts and hands in serving the wider community. The NUS Day of Service returned for its second edition on 9 Sep 2017, which saw almost 2,000 NUS students, alumni and staff participate in a slew of community service programmes across Singapore and overseas, touching the lives of more than 5,000 beneficiaries.

NUS has made remarkable progress, and we will continue to shape the future.



Professor Tan Eng Chye
NUS President



Mr HsIEH Fu Hua
Chairman
Board of Trustees

Appointed on: 1 January 2017

Mr Hsieh serves on the boards of a number of non-profit organisations. He chairs the National Gallery Singapore as well as the Stewardship Asia Centre, and is also Chairman-Designate of the National University Health System. In business, he is the Chairman of ACR Capital Holdings Pte Ltd and adviser to the Prime Partners Group, which he co-founded. He is a board director of GIC. Previously, Mr Hsieh served as Group Managing Director of BNP Prime Peregrine Group Hong Kong, CEO of Singapore Exchange, President of Temasek Holdings and Chairman of United Overseas Bank. Mr Hsieh was appointed to the NUS Council in 2003, and later NUS Board, for nine years. He is an alumnus of the NUS Business School.



Ambassador CHAN Heng Chee
Ambassador-at-Large
Ministry of Foreign Affairs

Appointed on: 1 April 2012

Ambassador Chan is Chairman of the Lee Kuan Yew Centre for Innovative Cities in the Singapore University of Technology and Design, Chairman of the National Arts Council, Member of the Presidential Council for Minority Rights, Deputy Chairman of the Social Science Research Council, Member of the Constitutional Commission 2016, Member of the Executive Board of the Chinese Cultural Centre, Member of the Advisory Council of Temasek Foundation Connects and Member of the Yale-NUS Governing Board. She is Global Co-Chair of the Asia Society. She was Singapore's Ambassador to the United States, Singapore's Permanent Representative to the United Nations, High Commissioner to Canada and Ambassador to Mexico. She holds a PhD in Political Science from the National University of Singapore. She has received honorary degrees from Britain and Australia.

Dr CHEONG Koon Hean
Chief Executive Officer
Housing & Development Board (HDB)

Appointed on: 1 April 2013

Dr Cheong is a board member of the HDB, the Deputy President and Council member of the International Federation for Housing and Planning, and a Member of the Singapore Sustainability Academy Advisory Board, NUS School of Design and Environment Advisory Committee and the NUS Engineering Advisory Board. She was also formerly Chief Executive Officer of the Urban Redevelopment Authority. She serves on several international expert panels and is the Chairman of the nominating committee of the Lee Kuan Yew World City Prize. A Colombo Plan scholar, she holds a First Class Honours degree and University Gold Medal in Architecture and a Doctor of Architecture *honoris causa* from the University of Newcastle and a Master's degree in Urban Development Planning from University College London. She is the Tan Swan Beng Endowed Professor in Nanyang Technological University, the 5th SR Nathan Fellow, Fellow (Life) of the Singapore Institute of Architects and Honorary Fellow of the Singapore Institute of Planners.



Mr GOH Choon Phong
Chief Executive Officer
Singapore Airlines

Appointed on: 1 April 2015

Mr Goh has been CEO of Singapore Airlines since 1 January 2011. He is Board Director of SIA Engineering Company and is Chairman of Budget Aviation Holdings Pte Ltd, which owns and manages the SIA Group's low-cost unit Scoot. He is a member of the Board of Governors of the International Air Transport Association (IATA), and was its Chairman between June 2017 and June 2018. Mr Goh is also a member of the Massachusetts Institute of Technology Presidential CEO Advisory Board and is Independent Director on the Board of Mastercard Incorporated. He holds a Master of Science degree in Electrical Engineering and Computer Science and three Bachelor of Science degrees, in Computer Science & Engineering, Management Science and Cognitive Science, from the Massachusetts Institute of Technology.





Mr GOH Yew Lin
Managing Director
G.K. Goh Holdings Ltd

Appointed on: 1 April 2008

Mr Goh is Managing Director of Singapore-listed G.K. Goh Holdings Ltd, an investment company with operations in aged care, and in business services. He is Chairman of Seatown Holdings Pte Ltd, Yong Siew Toh Conservatory of Music and Singapore Symphonia Company Limited, and is Deputy Chairman of the National Arts Council. He also serves on the boards of Temasek Holdings (Private) Limited and Trailblazer Foundation Ltd. Mr Goh holds a Bachelor of Science (Economics) degree from the University of Pennsylvania.



Dr Noeleen HEYZER
Social Scientist and
Former United Nations
Under-Secretary-General

Appointed on 1 August 2013

Dr Heyzer, a social scientist, is currently a member of the United Nations (UN) Secretary General's High Level Board on Mediation and Conflict Prevention. She was Under-Secretary General of the UN (2007-2015) and the first woman to serve as the Executive Secretary of the UN Economic and Social Commission for Asia and the Pacific since its founding in 1947. She was the first woman from outside North America to head the United Nations Development Fund for Women becoming its longest serving Executive Director for 13 years. She was also the United Nations Secretary General's Special Adviser for Timor-Leste. She has served on numerous boards and advisory committees of international organizations and received numerous international awards for leadership. She holds a Bachelor of Arts (Upper Honours) and a Master of Science from University of Singapore and a PhD from Cambridge University.



Mr Peter HO Hak Ean
Senior Advisor
Centre for Strategic Futures

Senior Fellow
Civil Service College

Appointed on: 1 April 2011

Mr Ho is the Senior Advisor to the Centre for Strategic Futures and a Senior Fellow in the Civil Service College. He is Chairman of the Urban Redevelopment Authority of Singapore, the Social Science Research Council, the Singapore Centre on Environmental Life Sciences Engineering, and the Campus for Research Excellence and Technological Enterprise Governing Council. He is a member of the Lee Kuan Yew School of Public Policy Governing Board. He was Head of Civil Service, Permanent Secretary (Foreign Affairs), Permanent Secretary (Defence) and the inaugural Chairman of the Maritime and Port Authority of Singapore. Mr Ho holds a Bachelor of Arts (Honours) in the Engineering Tripos and a Master of Arts from the University of Cambridge.

Professor HO Teck Hua
Senior Deputy President and Provost
Tan Chin Tuan Centennial Professor
National University of Singapore

Appointed on: 1 January 2018

Prof Ho is a board member of the National University Health System, a member of the board of directors of the National Environment Agency, a board member of the Defence Science and Technology Agency, a fellow at the Civil Service College and chair of a research advisory panel for the Land Transport Authority. He is also the Executive Chairman of AI Singapore, a national research and development programme, and Chairman of the Singapore Data Science Consortium. Prof Ho holds a Bachelor's degree in electrical engineering with first class honours, a Master's degree in computer and information sciences from the National University of Singapore, and a Master's degree and PhD in decision sciences from the Wharton School of the University of Pennsylvania.



Mdm Kay KUOK Oon Kwong
Director
Shangri-La Hotel Limited

Appointed on: 1 April 2008

Mdm Kuok is Managing Director of Shangri-La Hotels (M) Berhad, Executive Chairman of Allgreen Properties Limited, and Director of Kuok (Singapore) Limited. She is the Chairman of the Board of National Healthcare Group, TTSH Community Fund and Yale-NUS College Governing Board. She is also Director of the Wildlife Reserves Singapore Conservation Fund and Director of The Courage Fund Ltd. She is a Barrister-at-Law from Gray's Inn London.



Mr LAI Chung Han
Second Permanent Secretary (Education)
Ministry of Education

Appointed on: 19 June 2017

Mr Lai is Second Permanent Secretary (Education) and Second Permanent Secretary in the Ministry of Home Affairs. He was formerly Chief of the Republic of Singapore Navy (RSN) from Aug 2014 to Jun 2017. Some of his appointments in the RSN included Commanding Officer of the missile corvette RSS Valiant and Fleet Commander. He was also Director (Policy) and Deputy Secretary (Policy) in the Ministry of Defence (MINDEF) prior to his appointment as Chief of Navy. Mr Lai holds a Bachelor of Arts (First Class Honours) in Economics from University of Cambridge and a Master of Public Administration from Harvard University.





Mr LEE Ming San
Founder and Managing Director
One North Capital Pte Ltd
Appointed on: 1 April 2018

Mr Lee is Director of the Viva Foundation for Children with Cancer and Seatown Holdings Pte Ltd. He is a member of the Governing Board of Duke-NUS Medical School, where he also chairs its Finance & Investment Committee and its Development Committee. He is also a member of the Investment Committee of the National Council of Social Service. He holds a Master of Arts in Economics from Cambridge University and is an associate member of the Institute of Chartered Accountants in England and Wales.



Mr Michael LIEN Jown Leam
Executive Chairman
Wah Hin and Company
Appointed on: 1 April 2009

Mr Lien is Executive Chairman of Wah Hin, the Lien Family Office. He is Director of United Overseas Bank Limited. He was Board Director of Temasek Holdings from 2010 to 2018. He was Managing Director of Morgan Stanley and headed its Singapore corporate finance business up to 2002. He previously served at Singapore's Ministry of Trade and Industry. Mr Lien is also the founder of Leap Philanthropy. Mr Lien was a Colombo Plan Scholar and holds a Bachelor of Economics (First Class Honours) degree, with majors in Finance and Econometrics from Monash University, Australia.



Mr Andrew LIM Ming-Hui
Partner
Allen & Gledhill LLP
Appointed on: 1 April 2012

Mr Lim is Co-Head of Corporate Mergers & Acquisitions at Allen & Gledhill. He is currently a Director of Singapore Press Holdings Limited, Jurong Engineering Limited, Singex Pte Ltd and a member of the NUS Law Advisory Council. He also serves on the Board of the Committee for Private Education (a Committee of the SkillsFuture Singapore Board). Mr Lim graduated from the National University of Singapore with a Bachelor of Laws degree and a Master of Laws degree. He is a Fellow of Singapore Institute of Directors.

Mr LOH Chin Hua
Chief Executive Officer and Executive Director
Keppel Corporation Limited
Appointed on: 1 April 2016

Mr Loh is the Executive Chairman of Keppel Land Ltd and Chairman of several companies within the Keppel Group including Keppel Offshore & Marine Ltd, Keppel Infrastructure Holdings Pte Ltd, Keppel Telecommunications & Transportation Ltd and Keppel Capital Holdings Pte Ltd. He is a board member of the Singapore Economic Development Board and a council member of the Singapore Business Federation. A Colombo Plan Scholar with a Bachelor in Property Administration from the Auckland University and a Presidential Key Executive Master of Business Administration from the Pepperdine University, Mr Loh is also a CFA® charterholder.



Mr Chaly MAH Chee Kheong
Former Chief Executive Officer
Deloitte Asia Pacific
Appointed on: 1 April 2015

Mr Mah retired as Chief Executive Officer of Deloitte Asia Pacific and Chairman of Deloitte Singapore. He is the Chairman of Singapore Accountancy Commission, Singapore Tourism Board, Accounting Advisory Board of NUS Business School and Netlink NBN Management Pte Ltd. He also serves on the Boards of Economic Development Board, the Monetary Authority of Singapore and Capitaland Limited. He graduated with a Bachelor of Commerce degree from the University of Melbourne. He is an associate member of the Institute of Chartered Accountants in Australia, a fellow member of CPA Australia as well as the Institute of Singapore Chartered Accountants.



Mr NG Wai King
Managing Partner
WongPartnership LLP
Appointed on: 1 April 2015

Mr Ng is Managing Partner of WongPartnership, and maintains an active mergers and acquisitions, and private equity practice. He is Director of Singapore Institute of Directors, Wah Hin and Company Private Limited and Capitaland Commercial Trust Management Limited as well as a board member of Home Nursing Foundation. He graduated from the National University of Singapore with a Bachelor of Laws honours degree where he was awarded the AV Winslow Prize. He subsequently obtained a Master of Laws degree from Columbia University School of Law where he graduated as a Harlan Fiske Stone Scholar.





Professor TAN Eng Chye
President
National University of Singapore
Appointed on: 1 January 2018

Prof Tan is Board Member of the Agency for Science, Technology and Research, Defence Science & Technology Agency, Bizlink Centre, and NUS High School of Mathematics and Science. He sits on the International Advisory Council of the Southern University of Science and Technology in China. He is also a past Board Member of Defence Science Organisation Laboratories, National Institute of Education, and Infocomm Development Authority of Singapore. Prof Tan holds a First Class Honours degree in Mathematics from the National University of Singapore and PhD from Yale University.



Mr Phillip TAN Eng Seong
Director
EQ Insurance Company Ltd
Appointed on: 1 April 2008

Mr Tan is Director of EQ Insurance Company Ltd and is currently serving on the boards and the audit, finance and investment committees of a number of statutory and charitable bodies. He is a Fellow of the Institute of Chartered Accountants in England and Wales, and a Fellow of the Institute of Certified Public Accountants of Singapore.



Mr Abdullah TARMUGI
Member of the Presidential Council for Minority Rights and Former Speaker of Parliament
Appointed on: 1 April 2012

Mr Tarmugi is a member of the Presidential Council for Minority Rights, former Speaker of Parliament, Singapore, and former Minister of Community Development and Sports. He is also Independent Director for the Islamic Bank of Singapore, GuocoLand Ltd, Goodhope Asia Holdings Ltd and Summit Power International Ltd. He holds an Honours degree in Social Science from the University of Singapore and a postgraduate Diploma (Merit) in Urban Studies from the University of London under the Commonwealth Scholarship.

Dr Leslie TEO Eng Sipp
Chief Economist and Director, Economics & Investment Strategy
GIC Private Limited
Appointed on: 1 April 2016

Dr Teo is Director of the Economics and Investment Strategy Department and Chief Economist at GIC Private Limited. Prior to joining GIC, he was Deputy Division Chief in the Asia Pacific Department at the International Monetary Fund and Head of the Financial Surveillance Division at the Monetary Authority of Singapore. He is also Vice President of the Economic Society of Singapore and a board member of the Pacific Pension and Investment Institute. Dr Teo holds a Bachelor of Arts from the University of Chicago, US and PhD in Economics from the University of Rochester, US. He is a certified Financial Risk Manager and CFA® Charterholder.



Ms Elaine YEW Wen Suen
Member of Global Executive Committee
Egon Zehnder
Appointed on: 1 April 2014

Ms Yew is a member of Egon Zehnder's Global Executive Committee. Apart from her executive committee responsibilities, she works with clients on senior level search and leadership development, specifically in succession planning for C-level and board roles. She chairs the Industry Advisory Board for the NUS Centre for Future-Ready Graduates. She also serves on the Board of Workforce Singapore and the Board of Governors of the Convent of the Holy Infant Jesus group of schools, amongst various other board and advisory board roles in Singapore and overseas. She has a Bachelor of Arts Honours degree in English and Drama from the University of Kent, UK and Master's degree in Business Administration from INSEAD, France.



SENIOR MANAGEMENT



Prof Tan Eng Chye
President



Prof Ho Teck Hua
Senior Deputy President and Provost
Tan Chin Tuan Centennial Professor



Prof Chen Tsuhan
Deputy President
Research and Technology
Distinguished Professor



Dr Lily Chan
Chief Executive Officer
NUS Enterprise



Mr John Wilton
Deputy President
Administration and Finance



Prof Freddy Boey
Senior Vice President
Graduate Education & Research Translation



Prof Bernard C Y Tan
Senior Vice Provost
Undergraduate Education
Shaw Professor in Information Systems and Analytics



Prof John Eu-Li Wong
Senior Vice President
Health Affairs
Isabel Chan Professor in Medical Sciences



Prof Yong Kwet Yew
Senior Vice President
Campus Infrastructure



Mr Tommy Hor
Chief Information Technology Officer



Mr Nicholas Kong
Chief Investment Officer



Ms Jenny Lee
Vice President
Endowment and Institutional Development



Prof Susanna Leong
Vice Provost
Lifelong Education



Mr Lim Kin Choo
Vice President
Finance
(Until 30 September 2018)



Prof Florence Ling
Vice Provost
Student Life



Prof Philip Li-Fan Liu
Vice President
Research & Technology



Prof Phoon Kok Kwang
Vice Provost
Academic Personnel



Mr Tan Kian Woo
Vice President Designate
Finance
(From 3 September 2018)



Ms Tan Yee Deng
Vice President
Human Resources



Prof Andrew Wee
Vice President
University and Global Relations



Mrs Ovidia Lim-Rajaram
Chief Communications Officer



Ms Diane C Fletcher
Chief Legal Officer and General Counsel

CALENDAR OF EVENTS

1 AUGUST 2017 – 31 JULY 2018



1



2



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6

AUGUST 2017

1 NUS students continued the annual tradition of NUS Students' Union Rag and Flag event, raising more than \$400,000 for 21 charity programmes supported by the Community Chest. Guest-of-Honour Mr Ong Ye Kung, then Minister for Education (Higher Education and Skills) and Second Minister for Defence, graced the occasion.

2 The inaugural sustainABLE NUS Showcase, a two-day exhibition and carnival which featured NUS' initiatives to become a greener campus, was graced by Guest-of-Honour Mr Masagos Zulkifli, Minister for the Environment and Water Resources. The showcase presented the University's sustainability initiatives in four areas – operations, research and education, community engagement and partnerships.

SEPTEMBER 2017

3 The second Raffles Dialogue titled "Human Well-being and Security in 2030: The Critical Role of Innovation" brought together global scholars and practitioners to analyse areas of concern on human well-being and security, particularly for the Asia-Pacific. Dr Susilo Bambang Yudhoyono, former President of Indonesia, gave the keynote address at the Dialogue's opening dinner, sharing his experience on governance and the state of world affairs.

4 Some 2,000 NUS staff, students and alumni took part in a host of community service activities across Singapore and overseas on the second NUS Day of Service. The event reached out to more than 5,000 beneficiaries in a total of 42 projects, twice that of the previous year. The activities covered wide-ranging causes from health and environment to public education, and benefitted the elderly, children, youth as well as those with special needs.

OCTOBER 2017

5 NUS Faculty of Law commemorated 60 years of legal education with an anniversary dinner attended by Guest-of-Honour Mr Sundaresh Menon, Singapore's Chief Justice and NUS Law alumnus. In conjunction with the celebrations, *The Lamp of the Law: 60 Years of Legal Education at NUS Law*, a special anniversary book detailing the growth of the Faculty, was launched at the event.

6 The Centre for Pro Bono & Clinical Legal Education at NUS Faculty of Law was launched by Senior Minister of State for Law and Finance Ms Indranee Rajah. Bringing together the work of NUS Pro Bono Office and the Faculty's clinical legal education programmes, the Centre develops best practices and prepares law students for real-world practice by exposing them to the challenges of delivering quality legal service while serving the disadvantaged in the community.

NOVEMBER 2017

7 The University welcomed its 10th Chancellor Madam Halimah Yacob, President of the Republic of Singapore, with a lunch reception held in her honour. To commemorate the special occasion, NUS launched its official flower, the *Papilionanda National University of Singapore*. The bright apricot-hued orchid reflects the strength and vitality of NUS and shares its ancestry with *Papilionanthe Miss Joaquim*, Singapore's national flower.

8 The Chua Thian Poh Community Leadership Centre was launched at NUS University Town in the presence of Guest-of-Honour Mr Teo Chee Hean, Deputy Prime Minister and Coordinating Minister for National Security. The Centre aims to promote greater interaction and collaboration among NUS students, alumni, social service organisations as well as other stakeholders through discussions, research on social and community issues and community development workshops.

9 Fifteen exceptional alumni were lauded at the NUS Alumni Awards 2017, a biennial event which recognises former NUS students who have excelled in their chosen fields and made a difference to their alma mater, society and the world. Former Chairman of the NUS Board of Trustees Mr Wong Ngit Liong, Chairman and CEO of Venture Corporation, received the Eminent Alumni Award for his exemplary service to NUS, his achievements in industry and his spirit of public service.

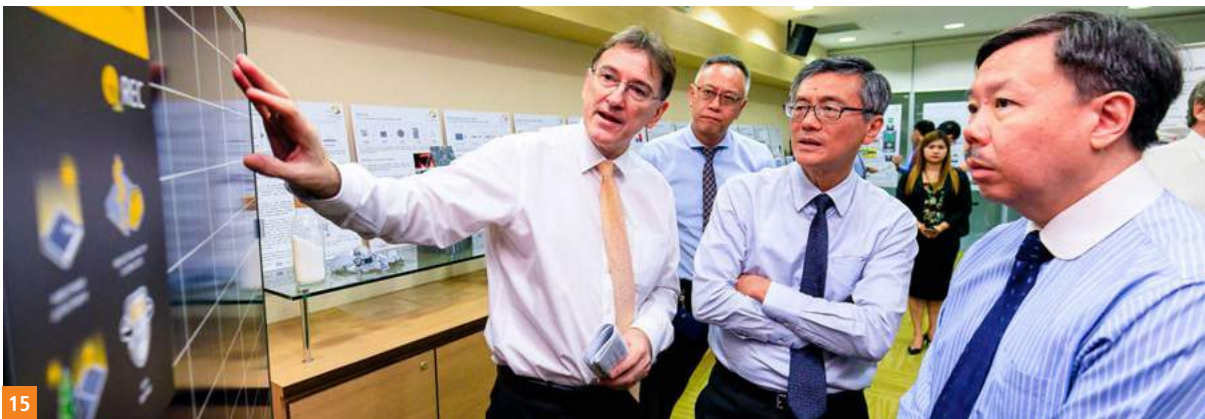
10 The University held an appreciation lunch for former NUS Chancellor Dr Tony Tan Keng Yam, thanking him for his dedicated service to NUS for the last six years as Singapore's 7th President, and Chancellor of NUS. An NUS alumnus, Dr Tan was a lecturer at the Departments of Physics and Mathematics. In 1980, he was appointed NUS Vice Chancellor, the youngest person to hold this position in the history of the University.

11 BLOCK71 Suzhou, a new initiative by NUS (Suzhou) Research Institute and NUS Enterprise, was launched by Minister for Finance Mr Heng Swee Keat, in Suzhou, China. The new initiative will enable NUS to expand its presence in China and help Singapore companies explore business opportunities. BLOCK71 Suzhou is the latest addition to the BLOCK71 global network, which has already been established in Singapore, San Francisco and Jakarta.



CALENDAR OF EVENTS

1 AUGUST 2017 – 31 JULY 2018



JANUARY 2018

12 The University held a lunch reception to thank former NUS President Professor Tan Chorh Chuan for his nine-year appointment as NUS' 4th President, and to welcome Prof Tan Eng Chye as its new President. Prof Tan Chorh Chuan was conferred the title of University Professor, NUS' highest academic appointment, in recognition of his contribution to the University.

MARCH 2018

13 NUS Faculty of Arts and Social Sciences (FASS) honoured Emeritus Senior Minister Goh Chok Tong with the Distinguished Arts and Social Sciences Alumni Award (Lifetime Achievement) for his outstanding contributions to the Faculty, the University and the nation, as well as his resolute support of education and research in the social sciences. The award was presented at the FASS STARS Awards 2018 (FASS Service, Teaching, Alumni, Research, Long Service Awards).

14 A record number of delegates – 2,200 from 58 countries – attended the Asia-Pacific Association for International Education 2018 Conference & Exhibition, which was led by NUS, and co-hosted with three other Singapore universities. The four-day conference brought together professionals in higher education from around the world to discuss and share ideas on the theme "The Impact of the Fourth Industrial Revolution on Higher Education in the Asia Pacific".

APRIL 2018

15 The Solar Energy Research Institute of Singapore commemorated its 10th anniversary with a day-long celebration including an exhibition showcasing their various research projects, guided lab tours, engaging talks and a movie screening. The Institute has expanded to house some 220 staff, including scientists, engineers, technicians and postgraduate students, and has become one of the 10 largest solar laboratories in the world.

CALENDAR OF EVENTS

1 AUGUST 2017 – 31 JULY 2018

APRIL 2018

16 Tembusu College at NUS held its annual Formal Dinner to mark the end of the academic year and celebrate their students' achievements, with Singapore President and NUS Chancellor Madam Halimah Yacob as Guest-of-Honour. The event was attended by some 500 Tembusu College students, faculty and staff as well as international students staying at the College.

17 Eusoff Hall at NUS, which turned 60 in 2018, raised close to \$500,000 for current and future needy Eusoff students, through its Diamond Jubilee celebrations comprising a dance production, fun fair, golf tournament and gala dinner.

JUNE 2018

18 WIL@NUS Corporate Laboratory, a new \$110 million research facility jointly established by NUS, Asia's leading agribusiness group Wilmar International Limited (Wilmar), and the National Research Foundation Singapore (NRF) was launched at NUS. Minister for Finance Mr Heng Swee Keat who is Chairman of NRF was Guest-of-Honour at the event.

JULY 2018

19 The Honourable Justice Chao Hick Tin, Senior Judge of the Supreme Court of Singapore, was conferred the Honorary Doctor of Laws by Singapore President and NUS Chancellor Madam Halimah Yacob at the NUS Commencement Ceremony 2018. Justice Chao was honoured for his contributions to the legal sector as well as public and community service.

20 The Grab-NUS AI Lab — Grab's first major AI laboratory and NUS' first AI laboratory with a commercial partner — was launched at NUS with Guest-of-Honour Minister for Education Mr Ong Ye Kung in attendance. Mr Ong also witnessed the signing of the Research Collaboration Agreement between NUS President Professor Tan Eng Chye and Co-Founder and Group CEO of Grab Mr Anthony Tan at the event.



Innovation and Impact

NUS is a leading global university, which offers a comprehensive approach to education, research and entrepreneurship. The University does this by nurturing future-ready graduates, engaging in high-quality research that transforms lives, and creating a vibrant innovation and entrepreneurship ecosystem in Singapore and Southeast Asia. It is with the support of these three pillars -- education, research and entrepreneurship -- that we aim to build a stronger economy, community and society.

NUS provides a transformative educational experience that offers a global outlook that is rooted in Asia. Aside from gaining broad and deep knowledge inside the classroom, students can pursue internships at deep-tech start-ups and take classes at prestigious partner universities in some of the most exciting cities around the world.

For our faculty and researchers, the University provides a base where they can undertake the multidisciplinary research that has made NUS a thought leader in Asia. We particularly emphasise research on active ageing; Asian studies; biomedical sciences and translational medicine; energy and environmental and urban sustainability solutions; finance and risk management; materials science; maritime studies; and the smart nation.

Our educational programmes and research activities complement our efforts to stay ahead in entrepreneurship education and technology entrepreneurship. The University provides platforms and programmes such as BLOCK71 and the NUS Start-Up Runway, where our faculty and students can advance innovation and entrepreneurship, commercialise technological developments, and further our synergies with industry.

The recently established Innovation 4.0 building (i4.0) symbolises the integration of education, research and entrepreneurship at NUS. It is a hub where complementary research programmes and institutes are co-located to facilitate collaborations and enable the creation of spin-offs from our digital R&D efforts. Several national research programmes have been brought together at i4.0, including AI Singapore, the Singapore Data Science Consortium, and the National Cybersecurity R&D Laboratory. The building also houses the corporate laboratories we have set up in collaboration with Grab and Singtel, as well as international research centres such as the NUS-Tsinghua Extreme Search Centre.

As a community, NUS' talented academics, researchers, staff, students and alumni work together in the spirit of innovation and enterprise to pursue excellence in education, research and entrepreneurship to shape the future. Through the synergies we have developed across these pillars, NUS aims to create distinctive, high-impact value by transforming our society and helping to build a better world.



Learning for Life

NUS students are trained to build on what they learn, and with creative thinking, develop innovative ideas and strategies to make an impact.

At NUS, students are offered many avenues of learning, encouraged to continue acquiring knowledge, and guided to build meaningful careers in the rapidly changing world of the 21st century.

ENHANCING UNDERGRADUATE EDUCATION

More carefully curated and diverse academic pathways

In Academic Year (AY) 2017/2018, NUS introduced 55 new Double Major and 31 new Major-Minor combinations, bringing the total number of subject combinations to 180. The broader selection of carefully curated courses aims to create multiple pathways for students while preparing them for a lifetime of diverse careers. This is in line with our goal to have 50% of each NUS cohort trained in more than one discipline within the next five years.

Computational thinking for all undergraduates

To ensure that graduates are ready to meet the needs of the digital future, we spearheaded an initiative in AY2017/18 to embed computational thinking, a key 21st century skill, in our undergraduate degree programmes. This was implemented for some 6,300 undergraduate students, where students could contextualise such a skill within their own discipline. For example, the Department of Architecture introduced three courses: performance-based design, building information modelling and spatial computational thinking, while the Faculty of Science designed a module to teach higher-order computational problem solving skills customised for scientists.

ENSURING ACCESS TO AN NUS EDUCATION

New bonus point scheme

In February 2018, NUS announced a new scheme to award up to 1.25 bonus points to undergraduate applicants' first choice programme. The bonus points, applicable to programmes not requiring a pre-entry interview, would be added to the student's University Admission Score. This would help applicants have a better chance of studying subjects they are truly passionate about. It also augments NUS' efforts to go beyond grades as the sole admissions criteria, similar to most of the top schools abroad.

Additional scholarships

The University believes strongly that talented students should benefit from a transformative education regardless of financial background. Upholding this approach, NUS announced in February 2018 that an additional 200 bond-free scholarships would be given to talented and deserving undergraduates, bringing the total number of NUS scholarships to 430 per year. These scholarships will complement the current comprehensive suite of financial assistance programmes.

INTRODUCING NEW PROGRAMMES

Liberal Arts and Medicine pathway

In January 2018, Yale-NUS College and Duke-NUS Medical School jointly launched a new pathway for liberal arts graduates planning to pursue a career in medicine. The new pathway aims to shape future clinicians who appreciate the interconnectedness of the sciences, social sciences and humanities in medical practice. The students will be trained in the art of inquiry, enabling them to think and reason in a way that leads to greater cross-fertilisation of ideas and new solutions in healthcare. Students on the pathway, which started in August 2018, will go through four years of undergraduate education at Yale-NUS College, followed by postgraduate studies at Duke-NUS Medical School.

Programmes in Science

In February 2018, the Faculty of Science announced the launch of three new undergraduate degree programmes, to add to the wide range of courses offered in the Faculty. These courses include the first veterinary studies degree programme in Singapore, which will be offered as a Concurrent Degree Programme (CDP) with the University of Melbourne. The new CDP, offered by the Department of Biological Sciences, will teach specialised theoretical, practical and clinical skills in veterinary medicine and veterinary science and allow students to obtain a Bachelor's degree in Science and a Doctor of Veterinary Medicine in an accelerated 5.5 years.

Another new degree programme, also offered by the Department of Biological Sciences, is the Joint Degree Programme with the University of Dundee (UoD). This programme will equip students with drug discovery and design expertise and provide hands-on training through UoD's partnerships with leading pharmaceutical and biotechnology companies.

The third new programme is the new Pharmaceutical Science major offered by the Department of Pharmacy, which will address the growing demand for skilled professionals who can work across the entire continuum of the pharmaceutical business. Graduates will be able to build a career in the pharmaceutical, biomedical and consumer healthcare sectors.

Second Major in Innovation and Design

Building on the success of the Design Centric Programme, which was later renamed the Innovation and Design Centric Pathway, the Faculty of Engineering introduced a Second Major in Innovation and Design in AY2017/18. The enhancement of this second major takes the programme beyond the various engineering disciplines; engineering undergraduates now have the opportunity to apply their design thinking skills alongside non-engineering students. Together, they will learn to create engineering solutions that integrate perspectives from the social sciences, computing, business and entrepreneurship. It is also one step closer to giving students a real opportunity to work on projects which impact the community.

New Executive Master's Programme

In June 2018, NUS Business School announced the launch of a new Executive Master of Science in Investments and Portfolio Risk Management programme, which will commence in April 2019. Graduates from the programme are expected to become well-trained in harnessing technological disruption to solve real world problems in finance and investing, using financial technology and data science. The programme is developed by NUS Business School's Centre for Asset Management Research and Investments and will be taught by an interdisciplinary team of experts from finance, engineering, technology, computer science and economics.

GAINING A GLOBAL PERSPECTIVE

We offer a comprehensive list of global programmes for students, ranging from the flagship semester- or year-long Student Exchange Programme (SEP) to short-term summer/winter programmes, research attachments and study trips, aimed at developing NUS students into culturally savvy global citizens.

Student Exchange Programme

In AY2017/18, NUS sent 2,212 students overseas on the SEP and played host to 2,163 incoming exchange students. These numbers were a record high. There were 342 unique partner universities spanning 43 countries across the globe.

The first Tri-SEP was set up with McGill University in Canada and the University of Glasgow in Scotland. Two students participated in the Tri-SEP where they spent

one semester at McGill University and one semester at the University of Glasgow taking modules which complemented their majors.

Two new university-wide SEP agreements were established, with Osaka University in Japan and with the University of Alaska Fairbanks in the United States

Study Trips for Engagement and EnRichment programme

The Study Trips for Engagement and EnRichment (STEER) programme provides students with opportunities to better understand societal and developmental changes in fast-evolving regions through immersive and engaging academic, cultural and networking activities.

In AY2017/18, a total of 363 students participated in 20 STEER programmes across three continents. There were six inaugural trips, to Cambodia and Taiwan in December 2017; to Nepal, Uzbekistan, Malaysia and Indonesia in May 2018; and to Bosnia and Herzegovina, Croatia, Montenegro, Serbia and Kosovo in June 2018. These new STEER offerings supplemented other trips to Botswana, China, India, Indonesia, Kuwait, Myanmar, Nepal, Oman, Thailand and the United Arab Emirates.

Summer learning and research attachment

More than 1,100 students took part in some 100 international summer programmes, research attachments and network programmes in the year of review. NUS has established new partnerships with world-class institutions such as Yale University, University College London and the University of Glasgow to increase the choice of locations and subjects for summer programmes.

FOSTERING THE SPIRIT OF CONTINUING AND LIFELONG EDUCATION**Lifelong Learning Initiative for NUS Alumni**

Between 1 August 2017 and 30 July 2020 NUS Alumni are invited to study up to two free modules under the Lifelong Learning Initiative for NUS Alumni (LLINA), offered by the School of Continuing and Lifelong Education (SCALE).

In AY2017/18, NUS alumni could choose from 167 modules spanning a wide range of subject areas from computing and engineering to science and business. The majority were at postgraduate levels but the selection also included undergraduate modules. LLINA attracted an overwhelming number of applications over the first two runs, with close to 15,000 applications for about 1,600 places.

NUS Lifelong Learners Initiative

The NUS Lifelong Learners (NUS L³) initiative, to be administered by SCALE, was announced in March 2018, with the objective of ensuring that NUS graduates have ready access to the skills-based, industry-relevant courses necessary to remain competitive in the job market. Under this initiative, NUS student enrolment will be valid for 20 years, starting from the point of admission.

From August 2018, NUS L³, will offer a catalogue of NUS Continuing Education and Training courses, covering selected Industry Transformation Map sectors, such as manufacturing, modern services and domestic essential services and matching the eight priority and emerging skills areas identified under the SkillsFuture Series: Data Analytics, Finance, Tech-Enabled Services, Digital Media, Cyber Security, Entrepreneurship, Advanced Manufacturing and Urban Solutions. Course content will be largely delivered through blended-learning pedagogies, which combine traditional teacher-led classroom instruction with independent student learning outside the classroom using online materials.

PREPARING STUDENTS FOR A CAREER

Career Catalyst

In AY2017/18, NUS piloted Career Catalyst, a new programme on career preparedness, for 600 undergraduates. This 12-week course guided students in designing their personalised career roadmaps and equipped them with the essential skills to effectively develop and market themselves by looking at three areas: “Knowing Yourself”, “Building Your Brand” and “Telling Your Story”. To ensure that this programme responds to current industry trends, the Centre for Future-ready Graduates (CFG) incorporated inputs from employers into topics such as the future of jobs, employability skills and personal branding. In addition to workshops and e-seminars, the programme took students out of the classroom to apply their learning to real-life scenarios by networking with business professionals and attending industry events.

Roots & Wings

Roots & Wings 1.0, aimed at helping students develop soft skills such as self- and interpersonal-awareness, completed its 5th successful run with more than 1,400 students in AY2017/18 Semester 2. In addition to the existing facilitated workshops at the beginning and end of the semester, CFG also conducted additional opt-in workshops for around 290 students who found face-to-face sessions more effective than e-learning in deepening their knowledge and applying their soft skills. The feedback from the workshops was very positive; 90% of the participants either “agreed” or “strongly agreed” that the content was relevant and that they learnt useful knowledge and skills.

In partnership with the Department of Psychology, CFG will launch a refined Roots & Wings programme in AY2018/19, to be delivered as a series of bite-sized courses for greater flexibility and student engagement.

NUS Career Fest 2018

In January/February 2018, CFG hosted the University’s largest career fair to date. It was attended by up to 10,000 students and alumni, with exhibitions by 272 employers from 21 industries and more than 100 executives supporting students with vocational activities and talks. This year’s event went beyond the traditional format of a recruitment fair by opening up new innovative ways for students to engage with and learn from industry professionals. For example, “C-Suite Coffee Talks” allowed students to interact with industry senior executives in an intimate 15-person setting; the “Human Library” connected students with high-flying individuals from various walks of life to discuss topics such as resilience and student entrepreneurship; and “Dress for Success” offered complimentary consultations on dressing professionally.

GOOD SHOWING IN UNIVERSITY RANKINGS

NUS continued to do well in the various university rankings, standing out in particular among Asian universities.

World university rankings

NUS has risen four places to be ranked 11th globally in the **Quacquarelli Symonds (QS) World University Rankings 2019**. It is named as Asia’s best university and is also placed in the top 1% of the world’s top universities. Despite the stiff competition among top institutions in the QS World University Rankings, the NUS brand remained strong and the University was ranked 11th in academic reputation for the second year running.

The University also moved up two places to 22nd in the world in the **Times Higher Education (THE) World University Rankings 2018**, marking its best performance since that ranking began in 2004. It also continues to occupy the top position in Asia, its third consecutive year as Asia’s best. This year, NUS made improvements on several fronts — teaching and research reputation, research productivity, research income and research influence (measured by the number of citations). NUS is also among the world’s top 20 universities in research, teaching and international outlook.

Asia Pacific university rankings

NUS has been recognised as Asia’s top university in the 2018 edition of the **THE Asia University Rankings**, retaining its position for the third year running. It improved its scores in almost all areas, picking up extra points for its teaching, research, citation impact and knowledge transfer. The University has also topped the 2018 **THE Asia-Pacific University Rankings** released in June 2018 — the second time the University has achieved the accolade since the category was introduced in 2017.

The University was placed 10th in the latest **Reuters Top 75: Asia Pacific’s Most Innovative Universities** rankings, moving up one place from last year. This prestigious list recognises educational institutions in the Asia Pacific region which are doing the most to advance science, invent new technologies and power new markets and industries. NUS is the highest ranked educational institution outside Northeast Asia and is also the only university in Singapore to be placed among the top 10 universities in the list.

11th
Quacquarelli Symonds
World University
Rankings 2019

22nd
Times Higher Education
World University
Rankings 2018

1st
THE Asia University
Rankings

World university rankings by subject

NUS is the only Asian university to gain a position in the QS list of the 10 best universities worldwide, with 11 subjects attaining a top-10 ranking in the **QS World University Rankings by Subject 2018**. The University is also ranked in the top 50 for 34 subjects out of the 48 disciplines analysed by QS. NUS is Asia's best in 16 subjects, covering areas such as Anthropology, Architecture / Built Environment, Business & Management Studies, Chemistry, Computer Science & Information Systems, Nursing and Pharmacy & Pharmacology.

The **THE World University Rankings 2018 by Subject** saw NUS ranked among the world's top 20 in four subjects — Business and Economics, Computer Science, Engineering and Technology, and Physical Sciences. The University was ranked 8th in the world for Engineering and Technology.

Other rankings

The **Global University Employability Ranking 2017** published by *Times Higher Education* placed NUS 16th globally and 4th in Asia. The University is also the only Singapore university to be among the world's 20 best universities for producing employable graduates.

NUS climbed three places to 24th position globally in the **THE World Reputation Rankings 2018**. This annual ranking lists the world's most prestigious universities, based on academic insights from over 10,000 experienced, published scholars worldwide. Universities are ranked according to their reputation in teaching, research, knowledge transfer and international outlook.

CONTRIBUTING TO THOUGHT LEADERSHIP IN EDUCATION

Always striving to stay ahead of emerging trends in teaching and learning, NUS was proud to host three meetings of thought leaders in education from Singapore and across the world.

Inaugural SoTL-Asia Conference 2017

In September 2017, NUS hosted the inaugural Scholarship of Teaching and Learning (SoTL)-Asia Conference. The key aim of the conference was for members of the SoTL circle to gain a better understanding of SoTL and to provide mentorship to educators in Singapore, Asia and beyond. Over 60 participants representing universities in Singapore, Malaysia, Hong Kong, Japan and the Middle East attended the event.

National Conference on Technology-Enhanced Learning 2017

NUS hosted the second National Conference on Technology-Enhanced Learning, titled "Technology, Faculty Engagement and Student Learning: Expanding Mindsets and Changing Culture in Higher Education" in November 2017. The two-day conference brought together educators and policymakers in Singapore to discuss the challenges and opportunities associated with adopting new digital technologies in the classroom. Experts shared perspectives on how IT innovation can help in developing learning systems and new models of teaching that complement educators' subject knowledge. Participants also examined the changing role of institutions of higher education, the support needed to develop the knowledge and skill sets of teachers, the benefits and challenges of learning technologies as well as new developments and trends.

Asia-Pacific Association for International Education 2018 Conference & Exhibition

In March 2018, NUS was the lead host, in collaboration with Nanyang Technological University, Singapore Management University and Singapore University of Technology and Design, for the four-day Asia-Pacific Association for International Education 2018 Conference & Exhibition. Themed "The Impact of the Fourth Industrial Revolution on Higher Education in the Asia Pacific", the event attracted 2,200 delegates from 58 countries.

NUS hosted the presidents, vice-chancellors and rectors of various higher education institutes at a roundtable themed "Future-ready graduates: Three big ideas for nurturing students at your university". The session uncovered some common experiences across the institutions, such as work-study integration, encouraging entrepreneurship, increasing employability and collaborative learning.

At the Provosts' Plenary session, the provosts of the four co-hosting universities discussed how the changes would affect Singapore's higher education landscape and initiatives that could help students meet future challenges. Smaller sessions on topics such as "Empowering Future-Ready Graduates" and "Technological Advances Impacting Internationalisation in Higher Education" also gave participants opportunities to network and take part in more in-depth discussions.

NEW DEGREE PROGRAMMES IN AY2017/18

JOINT, DOUBLE, AND CONCURRENT DEGREE PROGRAMMES WITH OVERSEAS UNIVERSITIES

Double Degree Programmes

- Master of Science in Real Estate, NUS and Master in Business Administration, Renmin University of China
- Master in Public Policy, NUS and Master in European Affairs, Institute d'Etudes Politiques de Paris (Sciences Po)
- Master of Laws (International Arbitration and Dispute Resolution), NUS and Master of Laws (International Dispute Settlement), University of Geneva

Concurrent Degree Programmes

- Bachelor of Computing (Honours) in Information Systems, NUS and Master in Engineering and Technology Innovation Management, Carnegie Mellon University

NEW DEGREE PROGRAMMES IN NUS

Bachelor's Degree Programmes

- Bachelor of Technology (Civil Engineering) (School of Continuing and Lifelong Education)

Master's Degree Programmes

- Master of Arts in Chinese Culture and Language (Faculty of Arts and Social Sciences)
- Master of Science in Food Science and Human Nutrition (Faculty of Science)
- Master in International Affairs (Lee Kuan Yew School of Public Policy)

Doctoral Degree Programmes

- Doctor of Engineering (Faculty of Engineering)
- Doctor of Philosophy in Integrated Biostatistics and Bioinformatics (Duke-NUS Medical School)



Finding the right Solutions

Our multidisciplinary researchers push frontiers, implement innovative ideas and make discoveries that change lives across the world.

RESEARCH

NUS continues to push the boundaries with wide ranging and impactful research that gains recognition and contributes to a better world.

In 2017, our researchers published 9,789¹ papers, while in Financial Year (FY) 2017 some 625² new projects were launched, 1,287² projects completed and 248³ collaborative research agreements signed.

Once again, in recognition of the meaningful impact of NUS research, generous funding was made available so that such work could continue. In FY2017, NUS received more than \$740 million⁴ in research funds from the Ministry of Education (MOE), the National Research Foundation (NRF), the Agency for Science, Technology and Research (A*STAR), and other granting agencies, an amount similar to that of the previous financial year.

MAJOR EXCITING BREAKTHROUGHS

Academic Year (AY) 2017/18 once again saw NUS researchers publishing exciting and important findings in leading journals.

a. On-chip electronic-plasmonic transducers

A team, led by Associate Professor Christian Nijhuis from the Department of Chemistry, has developed electronic-plasmonic transducers which are able to directly convert electrical signals into plasmonic signals (and vice versa), and can potentially operate at optical frequencies with high efficiency. The device can be used to bridge high-speed photonics with nanoscale electronic circuitry. The research, published in *Nature Photonics* in September 2017, is the first to couple two electronic-plasmonic transducers with a plasmonic waveguide and demonstrate an electron-to-plasmon conversion efficiency greater than 10%. The advantage over existing technologies is that as no light sources are needed to excite the plasmons and the new transducers are not diffraction limited, they are small enough for on-chip applications. Four patents have been filed and the team is collaborating with industry partners to integrate the device with existing technologies.

b. Useful nano-ribbons from speeding nano-droplets

Synthesis of ultrathin semiconductors such as monolayer molybdenum disulphide has attracted tremendous interest for its potential use in improving the performance of nanoelectronic devices. The ability to synthesise such materials with a desired geometry would facilitate their manufacturing process and implementation in high-density integrated circuits.

A paper published in *Nature Materials* in April 2018 reports that a team from the Department of Physics, the Department of Chemistry and the Centre for Advanced 2D Materials, led by Assistant Professor Goki Eda, has discovered a way to grow nano- and micro-ribbon structures of molybdenum disulphide that are only three atoms thick and on average hundreds of nanometres wide. The method involves the reaction of sulphur vapour with a mixture of molybdenum trioxide and sodium chloride salt at ~700°C on a clean crystal surface. The researchers found that the salt reacts with molybdenum trioxide to yield a compound containing sodium, molybdenum and oxygen in various atomic ratios. This compound melts and forms small droplets at the growth temperature (~700°C). The droplets then react with sulphur to form ultrathin ribbon-like molybdenum disulphide, strikingly different in structure from the typical product of salt-free growth, which is triangular and hexagonal in shape.

The researchers demonstrated that high-performance microscopic transistors can be fabricated from the individual ribbons, allowing simple device fabrication without

the need for the extra patterning step normally required when other synthesis methods are used.

c. Environment-friendly building material

A research team led by Associate Professor Kua Harn Wei from the Department of Building has developed an innovative and environment-friendly technique to enhance building structures using biochar recycled from saw dust. Adding a small amount of dry biochar powder into cement improves the strength and water tightness of mortar and concrete. The added biochar alters the conditions in the mixture and enhances its curing and hardening. In their experiments, the researchers found that improvements in the early strength and impermeability of concrete and mortar mixtures can reach up to 20% and 50% respectively.

The new technique allows early removal of formwork, which saves substantial construction time and cost. Furthermore, biochar “locks” carbon, which would otherwise be released into the atmosphere by decay or by incineration of the saw dust, into the structure. The use of this technology is therefore a novel and innovative way to store carbon in buildings while recycling some of the large amount of wood waste generated in Singapore and at the same time strengthening building structures. The research has been published in various concrete and cement journals, such as *Concrete and Cement Composites*, *Journal of Materials for Civil Engineering*, and *Construction and Building Materials*.

¹ Data extracted from the SCOPUS online database and updated as at 29 June 2018. Figure represents all publications including articles, conference papers, and reviews.

² Figures reflect the number of new projects that commenced and completed in FY2017. Figures derived from SAP PS as at 27 June 2018.

³ Figures updated as at 24 April 2018.

⁴ Data updated as at 30 April 2018.

d. Improving blockchain scalability with “sharding”

Blockchain technology allows users to connect their computing infrastructure into an open “consensus computer”, facilitating transactions without any centralised operator. Existing blockchain protocols process tens of transactions per second, while consuming massive computational power.

Assistant Professor Prateek Saxena and a group of researchers from the School of Computing (SOC) have developed a new protocol to greatly improve the transaction processing capacity of blockchains. The protocol, based on a novel concept called “sharding”, is the first to increase throughput as computation power contributed to it grows and can be 100 times faster than existing protocols. The work was published in the proceedings of the *ACM Conference on Computer and Communications Security 2016*, one of the leading scientific publication avenues for computer security research.

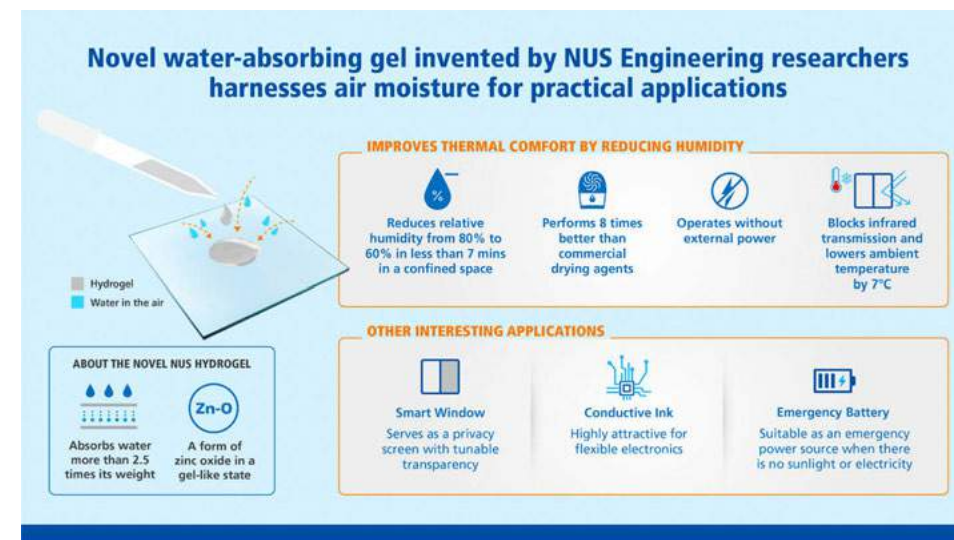
The team has commercialised the technology via Zilliqa Research, a start-up established in Singapore in 2017, which features a host of advances for a safer and faster next-generation blockchain platform. Zilliqa raised about \$30 million in January 2018, drawing wide-scale investments, and has been featured in international media as one of the newest cryptocurrency unicorns. It has a growing community base of over 50,000 members and has invited researchers worldwide for collaborations.

e. Depression and Internet-related addiction

There is considerable concern about addiction to Internet use, online gaming and online social networking among young adults, particularly because such addiction can often be associated with depression.

This phenomenon was investigated in China, Singapore, and the United States in a project led by Professor Catherine Tang So-Kum from the Department of Psychology. Assessing 3,267 undergraduate students on various Internet-related addictions and depressive symptoms, it was found that addiction does indeed exist – male students were more addicted to Internet use and online gaming, whereas female students were more addicted to online social networking. Compared with students in the United States, Chinese and Singaporean students were more addicted to Internet use and online social networking but less addicted to online gaming. Depression among students with addiction to various Internet-related behaviours was highest in China.

The study highlights that Internet-related addiction among young adults in the Asia-Pacific region and the depression that may accompany it is a new public health concern, and strategies are needed to deal with it. Prof Tang’s research was published in the *Asia Pacific Journal of Public Health* in November 2017.



f. Novel water-absorbing gel

Assistant Professor Tan Swee Ching and his team from the Department of Materials Science and Engineering have invented a novel “hydrogel” that not only effectively dehumidifies ambient air without using any power but also harnesses the moisture in the air for a wide range of practical applications.

The unique gel, a form of zinc oxide, is cheap and easy to produce. It can absorb more than 2.5 times its weight in water, performing at least eight times better than commercial drying agents. If coated on windows, the gel blocks heat from sunlight and reduces the room temperature. Interestingly, it can also be used as conductive ink and an emergency power source generating about 1.8 volts of electricity.

The team has filed for a patent for the invention and plans to conduct further studies to advance the different applications of the hydrogel. The research findings were published in *Energy & Environmental Science* in May 2018.

g. Super-smart microchip

A research team led by Associate Professor Massimo Alioto from the Department of Electrical and Computer Engineering has developed BATLESS, an innovative microchip that can continue to operate even when the battery runs out, potentially enabling smaller and cheaper Internet of Things (IoT) devices.

A novel power management technique in BATLESS allows it to self-start and continue to function under dim light without any battery assistance, using a very small on-chip solar cell. BATLESS does this by switching between two different modes — minimum-energy and minimum-power. Running in minimum-energy mode maximises the battery lifetime when battery energy is available. When the battery is exhausted, the chip switches to the minimum-power mode, with power consumption about a billion times smaller than that of a smartphone during a phone call.

BATLESS substantially reduces the size of batteries required to power IoT devices, making them 10 times smaller and cheaper to produce. It will be a major step towards the realisation of Singapore's Smart Nation vision, as well as the global vision of IoT. The team's research was presented at the prestigious International Solid-State Circuits Conference 2018 in San Francisco in February 2018.

MAKING HEADWAY WITH COLLABORATIONS

During AY2017/18 a number of new joint research initiatives and Memoranda-Of-Understanding (MOUs) were announced, which will see NUS researchers working in tandem with various partners in many exciting fields of research.

a. Pushing the frontiers of Artificial Intelligence

In January 2018, the NUS Artificial Intelligence (AI) Innovation and Commercialisation Centre (NUSAIICC), a collaboration between NUS and the Suzhou Industrial Park Administrative Committee, was launched to promote the scientific and technological innovation, application and commercialisation of AI. The Centre will undertake collaborative research and innovation in AI to develop advanced intelligent systems and platforms to help transform and upgrade AI competencies in start-ups, small-medium enterprises and large companies. It will also provide technology incubation support and solutions to start-ups and small businesses.

In addition, NUSAIICC will promote NUS technologies, as well as identify and encourage budding start-ups to venture into the Chinese market, while NUS students can look forward to internship exposure through the collaboration.

b. Developing additive manufacturing technology in biomedical and healthcare fields

Launched in July 2017, the NUS Centre for Additive Manufacturing (AM.NUS) is jointly supported with initial funding of \$18 million from NUS, the National Additive Manufacturing Innovation Cluster and the Singapore Economic Development Board (EDB). The Centre will focus on developing and applying groundbreaking AM technology in the biomedical and healthcare fields.

With laboratories equipped to develop and apply the technology, such as 3D printing, the new centre will draw on multidisciplinary expertise from the Yong Loo Lin School of Medicine, the Faculties of Engineering, Science and Dentistry and the School of Design and Environment to boost the University's capabilities in the field of AM-enabled biomedical technology. It will play a critical role in supporting Singapore's vision of becoming a leading AM hub, and also run AM-related courses for postgraduate students, developing the local talent pool in this field.

Industry partners Creatz3D, Dou Yee Enterprises, Forefront Additive Manufacturing and Osteopore International have signed MOUs with AM.NUS.

c. Foray into space

The Faculty of Engineering (FoE) and DSO National Laboratories jointly launched the Satellite Technology and Research Centre (STAR) in January 2018 to drive Singapore's fledgling space industry and develop cutting-edge capabilities in distributed satellite systems. STAR will focus on developing multiple scalable small satellites in formation or constellation, with various sizes and weights for different applications. This provides an opportunity for Singapore to become a key player in developing new satellite technology.

Serving as a hub for research, education and commercialisation of expertise and technologies relating to the space industry, STAR will work with industry, providing expertise and state-of-the-art satellite platforms or subsystems. Scientists, engineers and industry partners will jointly innovate and create new technologies to address satellite technology challenges.

Opportunities for satellite and space-related projects at STAR will enable FoE undergraduates to work in a multidisciplinary team on real-life project applications in the space industry, a move towards developing a vibrant space innovation ecosystem with a critical mass of home-grown talent in Singapore.

d. Transforming pharmaceutical manufacturing

FoE and A*STAR have signed an MOU with leading pharmaceutical companies GlaxoSmithKline, MSD International, and Pfizer Asia Pacific in September 2017 to establish the Pharma Innovation Programme Singapore (PIPS).

The programme will lead the way in the global transformation of pharmaceutical manufacturing to create unique value for patients, for the pharmaceutical industry and for Singapore. PIPS partners will explore collaboration on pharma manufacturing technologies, supply chain management and operations, including enabling green and sustainable manufacturing through the use of bio-catalysis technologies, as well as developing a fully-automated supply chain that can predict and react to patient demands and market trends.

e. Improving the built environment

The School of Design & Environment (SDE) signed two MOUs in February 2018 – one with Kajima Corporation and another with leading global filtration specialist MANN+HUMMEL.

The MOU with Kajima Corporation is to share knowledge and research information, advance research and collaborate on areas of mutual interest such as promoting total building performance, particularly looking at sustainability and a human-centric approach to buildings and communities. The MOU with MANN+HUMMEL focuses on improving the built environment – developing solutions for better indoor air quality and promoting human health and wellness in buildings.

Both agreements also support research fellowships and student internship programmes as well as collaboration on design research on mutually agreed topics.

f. Producing healthier food and greener chemicals

The \$110 million WIL@NUS Corporate Laboratory (Wilmar) was officially launched in June 2018 by Wilmar International Limited, Asia's leading agribusiness group, NUS and the NRF.

Located at the Yong Loo Lin School of Medicine, Wilmar will conduct cutting-edge clinical nutrition and synthetic biology research to address major public health issues through the development of healthier foods and ingredients; and to design methods to produce biochemicals from natural sources with the use of microbes and enzymes for a greener and more sustainable process. Over the next five years, more than 60 researchers and PhD students will be trained at Wilmar. These researchers and students will play a critical role in supporting the growth of both the food and nutrition and synthetic biology-related industries in Singapore and Asia.

g. Transforming urban transportation

NUS has partnered with Grab to set up the Grab-NUS AI Lab at NUS in July 2018 with a joint initial investment of \$6 million to develop solutions to transform urban transportation and pave the way for smarter cities in Southeast Asia.

Apart from assisting transport authorities to monitor and optimise traffic flow, the laboratory will focus on developing algorithms to improve precision and accuracy in mapping pick-up points and localising moving vehicles, match drivers to jobs they prefer, improve driving safety, and detect traffic events and anomalies in real-time. The Grab-NUS AI Lab will initially work on improving the efficiency and reliability of transportation on Grab's platform across Southeast Asia, gradually expanding its focus to examine larger transportation challenges facing cities in South-east Asia.

Supported by EDB, a PhD programme will be introduced, allowing NUS students to not only build the relevant skills but to also apply them to real world challenges through the Grab platform.

h. Designing innovative port facilities

With the support of the Maritime and Port Authority of Singapore, NUS and the Singapore Maritime Institute have established an \$18 million Centre of Excellence in Modelling and Simulation for Next Generation Ports (C4NGP) in FoE. The Centre, launched in June 2018, aims to help Singapore's maritime and port industries to develop innovative capabilities and enhance their global competitiveness.

C4NGP will work closely with companies in Singapore's maritime and port sectors to improve their technical know-how, efficiency and productivity and to prepare them for the next phase of global competition. Over the next five years, about 20 NUS researchers in the Centre will focus on designing and building maritime systems, conduct navigational channel capacity studies to optimise movement of marine traffic and study various aspects of port terminal systems.

The Pharma Innovation Programme Singapore will lead the way in the global transformation of pharmaceutical manufacturing to create unique value for patients, for the pharmaceutical industry and for Singapore.

LICENSING AND NEW SPIN-OFFS

In FY2017, the Industry Liaison Office (ILO), which provides support for the commercialisation of NUS research, saw a record completion of 78 technology licences and 45 option and evaluation licences, including 22 new spin-offs arising from innovative technologies developed by faculty and student inventors. ILO received a total of \$2.96 million, out of which \$2.05 million is licensing income. Some of the spin-offs include:

• FlexoSense Pte Ltd

FlexoSense is a spin-off company by Professor Lim Chwee Teck from the Faculty of Engineering, which develops a resistive microfluidic pressure sensor. Its innovative product, FlexoSense insoles, can potentially minimise pressure ulcers and address the problem of diabetic foot ulcers. FlexoSense is currently going through regulatory planning and targeting to produce the first prototype within the next four years.

• Probicient Pte Ltd

Probicient, a spin-off company by Associate Professor Liu Shao Quan and PhD student Alcine Chan from the Food Science and Technology Programme in the Faculty of Science, grew out of research which yielded a probiotic beer. By incorporating gut-friendly bacteria, probiotification of beverages is beneficial to the product thus providing a healthier alternative. Probicient is working with an industry partner to introduce the novel probiotic beers in Singapore within the next two years.

• 2D Materials Pte Ltd

2D Materials, a spin-off company by Professor Antonio Castro Neto from the Centre for Advanced 2D Materials, is advancing state-of-the-art manufacturing of a spectrum of high quality graphene from monolayer to multilayer graphene. The spin-off, which has set up its operations in the new NUS wet lab incubator at Science Park II, has made its initial sales.

• Anquan Capital Pte Ltd

An innovative technology development agreement was signed between NUS and Anquan Capital, a spin-off by Assistant Professor Prateek Saxena from SoC. The company is collaborating with NUS under a grant to develop an automated end-to-end system for tracking assets within additive manufacturing production workflow using a distributed ledger technology/blockchain from Anquan Capital. The parties intend to work with 3D printing companies to independently track the real-time progress of the project from their premises.

• SenSing Pte Ltd

SenSing Pte Ltd, a spin-off by Associate Professor Sekhar Narayana Kondepudi from the School of Design and Environment, develops IoT-based smart devices such as an integrated smart sensor device which measures temperature, humidity, volatile organic compounds, carbon dioxide, noise and light physical presence. Having deployed initial prototypes in two campus buildings, SenSing plans to manufacture commercial grade smart devices and install them in commercial and residential buildings. This will provide real-time indoor space and energy analytics to help create better indoor environments to improve productivity in offices, learning in schools and wellbeing in homes and hospitals.

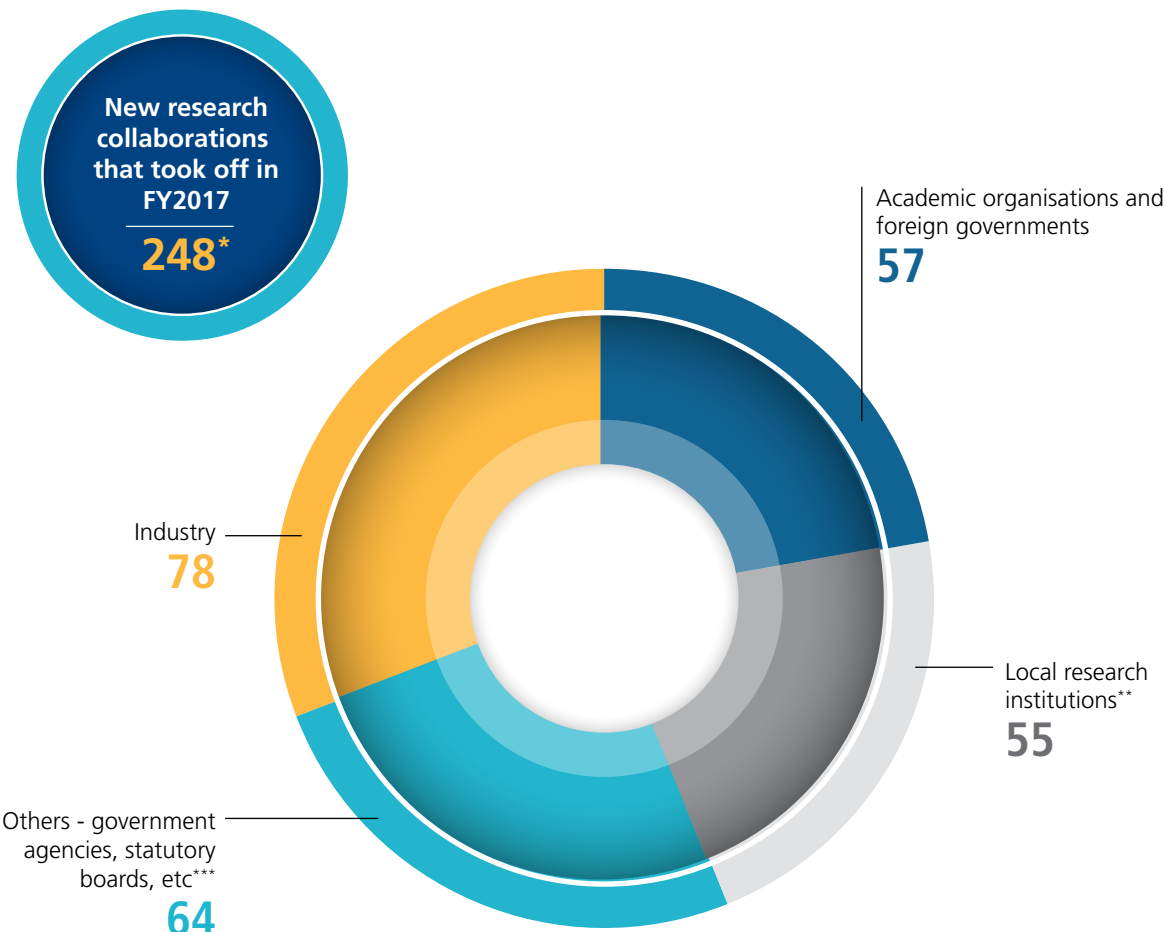
ILO handled a wide range of invention disclosures and patents in FY2017:

Invention Disclosures	304
Patent Applications	540
Patent Applications (Families*)	374
Patents Granted	119
Patents Granted (Families*)	84

Figures as at 18 July 2018

* A patent family is a collection of patent applications covering the same technical content but filed in various countries. The applications in a family are related to each other through priority (a first application in a country) claims.

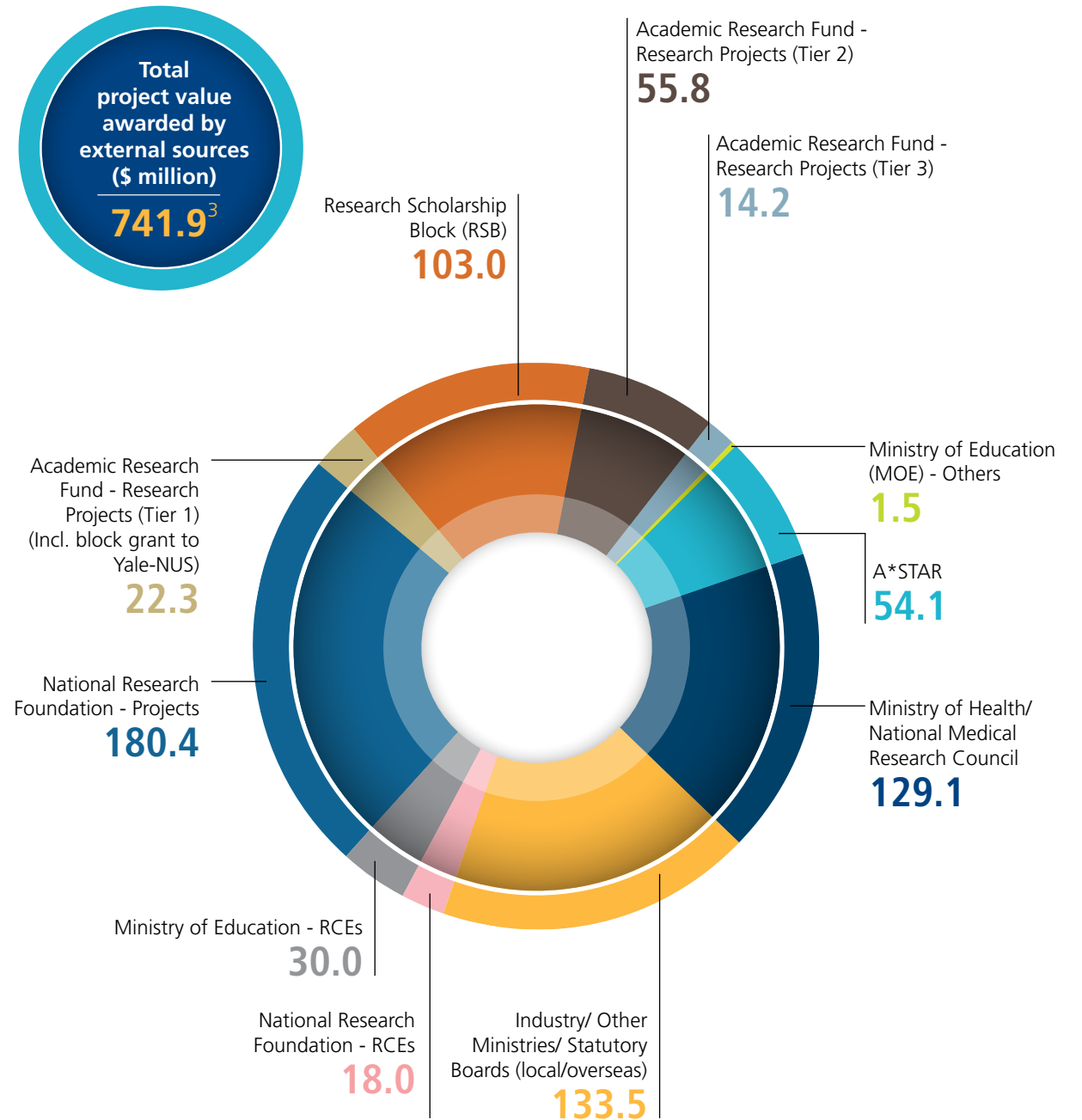
Number of papers published in international journals in CY2017 ¹	Number of new projects launched in the year ²	Number of projects completed in the year ²
9,789	625	1,287



* As a single collaboration may involve more than one partner, the individual categories do not add up to the total number of agreements signed

** Includes A*STAR research institutes and centres

*** Includes local public/restructured hospitals and charities



¹ Data extracted from the SCOPUS online database and updated as at 29 June 2018. Figure represents all publications including articles, conference papers, and reviews.

² Figures reflect the number of new projects that commenced and completed in FY2017. Figures derived from SAP PS as at 27 June 2018.

³ Figures updated as at 30 April 2018.



Igniting the Passion

The innovative seeds of today's ideas grow into flourishing realities of the future with the support of NUS' vibrant enterprise culture.

ENTREPRENEURSHIP

NUS Enterprise adds an entrepreneurial dimension by providing a supportive platform and drawing together talents, technologies and corporate partners to create local and global impact.

FLAGSHIP FESTIVAL

Organised by NUS Enterprise and unbound, innovfest unbound is the largest innovation festival in Asia. More than 13,000 entrepreneurs, brands, corporate entities, investors, tech start-ups and delegates from over 80 countries convened for the 2018 event, with notable participants including Tony Fernandes of AirAsia, Anthony Tan of Grab and Prince Andrew, the Duke of York. The two-day festival in June hosted five different stages offering a variety of panel discussions, keynote speeches and workshops, with the FutureNow stage showcasing NUS innovators and technologies.

DEVELOPING FUTURE ENTREPRENEURS

The NUS Overseas Colleges (NOC) programme immerses students in global entrepreneurial hubs, where they undertake full-time start-up internship and part-time entrepreneurial classes at prestigious partner universities. Since its inception more than 15 years ago, the programme has nurtured more than 2,500 students and led to more than 350 start-ups founded by NOC alumni.

In Academic Year (AY) 2017/18, the NOC programmes in China, Israel, Germany, Switzerland, Sweden, the United States and Singapore were attended by 290 students, with new locations announced for NOC Southeast Asia and NOC Toronto.

NOC alumni and start-up companies won over 45 awards and raised more than \$170 million (US\$130 million) in funding during the year, with significant accomplishments:

- A total of 12 NOC alumni were honoured in the following lists: "Singapore Tatler's 2018 Generation T", "2018 Forbes 30 Under 30 Asia", "2017 Peak Power" and "2017 Prestige Singapore 40 Under 40"
- Shamir Rahim, an NOC in Bio Valley alumnus was awarded "Honouree of the Spirit of Enterprise 2017" at the Spirit of Enterprise Awards Ceremony held in October 2017
- Jaga-Me was named "Social Enterprise Start-Up of the Year" at the 2017 President's Challenge Social Enterprise Award
- Lee Zhihan, an NOC in Silicon Valley alumnus and BagoSphere co-founder was named an Ashoka Fellow for his social entrepreneurship work in the Philippines
- Funding Societies raised \$32.8 million (US\$25 million) in a Series B round, as announced in April 2018

- Seedly was acquired by fellow NOC alumni start-up Shopback, as announced in May 2018
- Carousell raised almost \$113 million (US\$85 million) in a Series C round, as announced in May 2018. The start-up's marketplace app is now operational in seven countries, with over 144 million listings.

HELPING START-UPS TAKE FLIGHT

The University provides comprehensive support for affiliated start-ups and spin-offs from ideation through to execution via its NUS Start-Up Runway. In AY2017/18, more than 200 start-ups and projects were supported in incubators and incubation communities managed by NUS Enterprise on and off campus, in Singapore, Jakarta, San Francisco and Suzhou, as well as through numerous market validation and discovery programmes. More than 400 events were held at the various incubators during the year.

NUS Enterprise's current and former hot-deskers and incubatees also saw significant achievements in the year of review, raising collectively more than \$400 million (US\$300 million) in funding, growing in traction overseas and gaining recognition. The highlights include:

- Fitsense: The insurtech spin-off was acquired by Australian travel insurance provider Cover-More, as announced in December 2017

- Shopback: In January 2018, the start-up announced its expansion into Australia, as well as the addition of two R&D locations in Taiwan and Vietnam; this followed a \$34 million (US\$25 million) funding round, as announced in November 2017
- GTRIIP: The start-up secured Series A funding, as announced in January 2018. Its AI technology is currently being tested at the Grand Park City Hall hotel, where it enables guests to check-in digitally, unlock their doors, control the lighting and temperature and request assistance.
- Zilliqa: The company raised about \$30 million (US\$22 million) in their January 2018 ICO, achieving a market cap of over \$1.36 billion (US\$1 billion) in May 2018. Internal tests of Zilliqa's blockchain reveal a high throughput and relatively low energy footprint compared to Bitcoin and Ethereum.
- Zimplistic: A \$39.3 million (US\$30 million) Series C round was announced in April 2018, following a successful first year of sales for their automatic roti maker, which brought in over \$26 million (US\$20 million) in revenue
- Patsnap: The company raised about \$52 million (US\$38 million) in Series D funding, as announced in June 2018. It has raised more than \$136 million (US\$100 million) and employs more than 700 staff across Singapore, China, the UK and the US.

SIGNATURE PROGRAMMES

- a. The Lean Launchpad Singapore (LLP) market validation programme for early-stage technologies was expanded to the national-level in August 2017, with NUS serving as the central node. Two national-level programme runs have been conducted at the University, as well as a specialised run devoted to cybersecurity. More than 150 teams have participated since the programme's launch in 2013, resulting in 19 active companies and two licences granted so far.
- b. The Modern Aging programme identifies, develops and encourages start-ups that serve the needs of aging populations. In 2017, six programmes were selected for the 10-week LLP programme. In November, the three top teams were awarded seed funding to develop their products at a ceremony attended by Guest-of-Honour Dr Amy Khor, Senior Minister of State for Environment and Water Resources, and Health. The winners were Mobearlise, Finger Reader and ALO.
- c. The DBS-NUS Social Venture Challenge Asia 2018 received 870 entries from 42 countries across the region in its fifth run. Launched in April 2018, the competition kicked off with validation and business model workshops for potential participants of the competition. Corporate entities such as Accenture, the HEAD foundation and Experian provided funding, pro-bono mentorship and judging support.

FOCUS ON CORPORATE INNOVATION

In AY2017/18, NUS Enterprise launched new validation, market discovery and product development programmes to provide start-ups with opportunities in industries of strategic value to Singapore.

Working with key partners, these initiatives include:

- Innovation Cybersecurity Ecosystem at BLOCK71 (ICE71), with Singtel Innov8, which focuses on strengthening cybersecurity, and
- Port Innovation Ecosystem Reimagined @ BLOCK71 (PIER71), with the Maritime and Port Authority of Singapore, aimed at building a vibrant maritime entrepreneurial and innovation ecosystem.

NUS Enterprise is also exploring collaboration with Singapore Airlines to promote innovation in digital aviation and the travel experience.

Other corporate innovation programmes in AY2017/18 include the Shell #IdeaRefinery, the SIA App Challenge, the Henkel Digital Innovation Challenge, Startup Autobahn Singapore, the L'Oréal Innovation Runway and the Oceans of Opportunity challenge.

The NUS Industry Roundtable event series was launched in the Singapore Science Park as part of the Industry Access Programme (IAP). The event serves as a platform for indepth discussion and exchange of knowledge between senior corporate decision makers, industry experts and academics. The IAP, which focuses on corporate innovation and the development of a "deep tech hub" in the Science Park has, in the last year, helped start-ups secure more than \$730,000 worth of business opportunities from corporate partners and government groups.

THOUGHT LEADERSHIP AND RESEARCH ON ENTREPRENEURSHIP

NUS Enterprise has also conducted entrepreneurship-related research projects such as:

- a. Integrated system for mapping knowledge transfer at NUS: A two-year project co-funded by a grant from the Ministry of Education, will develop Transferring Academic Knowledge and Expertise at NUS (TAKE-NUS), an integrated database and analytics system. TAKE-NUS will map, measure and quantify the research outcomes and impact made by individual NUS researchers.

- b. Study on Research Orientation and Academic Entrepreneurship: Supported by an NUS Business School HSS Seed Fund grant, the NUS Entrepreneurship Centre (NEC) conducted a pilot study looking at research orientations of NUS researchers in science, technology, engineering and mathematics (STEM) faculties. Focusing on two quadrants of Stokes' classification of scientific research, furthering scientific knowledge (Edison quadrant) and solving practical problems (Pasteur quadrant), and using scientometrics data, this study shows that NUS faculty in different quadrants achieve different results in terms of technology commercialisation.

Following this project, NEC has received a grant from the Ng Teng Fong Charitable Foundation for a joint study with Tsinghua University in China. This collaboration will use Stokes' framework to benchmark quadrant composition in the two universities and examine the drivers of successful industry engagement among leading Pasteur and Edison quadrant scientists.

The new NUS Industry Roundtable cover series provides a platform for indepth discussion and exchange of knowledge between senior corporate decision makers, industry experts and academics.

SPOTLIGHT ON SOUTHEAST ASIA

As Southeast Asia's innovation and entrepreneurship scene becomes more intense, NUS and Singapore are positioned to serve as a key gateway for the region. The University is increasing student familiarity with Southeast Asia, forging new connections with some of the best regional talent and start-ups, and providing key regional insights through its research and thought leadership initiatives.

- a. The NOC Southeast Asia programme was launched in AY2017/18 to expose NUS students to entrepreneurial opportunities within the region. In a pilot programme, conducted in December 2017 through the University Scholars Programme–NUS Enterprise Innovation Immersion Programme, some 14 students travelled to Jakarta to study innovation in Indonesia in the context of its social, cultural, political and economic environment.
- b. The NUS Enterprise Summer Programme brings high-calibre international students to Singapore for a two-week immersive introduction to the country's innovation and entrepreneurship scene, conducted through a combination of lectures, company visits and interactive activities. In 2018, the programme saw the largest intake so far, with a significant portion of the participating 110 students coming from ASEAN countries and key regional universities.

- c. BLOCK71 Jakarta, a partnership between NUS Enterprise and the Salim Group which was launched in 2017, hosted more than 35 companies in its first year of operation. Approximately half of these companies originated in or are expanded from Singapore, including NOC companies 99.co, Circles.Life, and Viddsee.

- d. The alpha version of TechID, a start-up ecosystem portal for Indonesia was released in June 2018 to map the tech entrepreneurship landscape in Jakarta, Bandung and Yogyakarta. It serves as an information exchange node for Singapore to access these Indonesian markets and as a data source for research on ASEAN entrepreneurship ecosystems. The initial release features close to 700 Indonesian start-ups in the three cities.

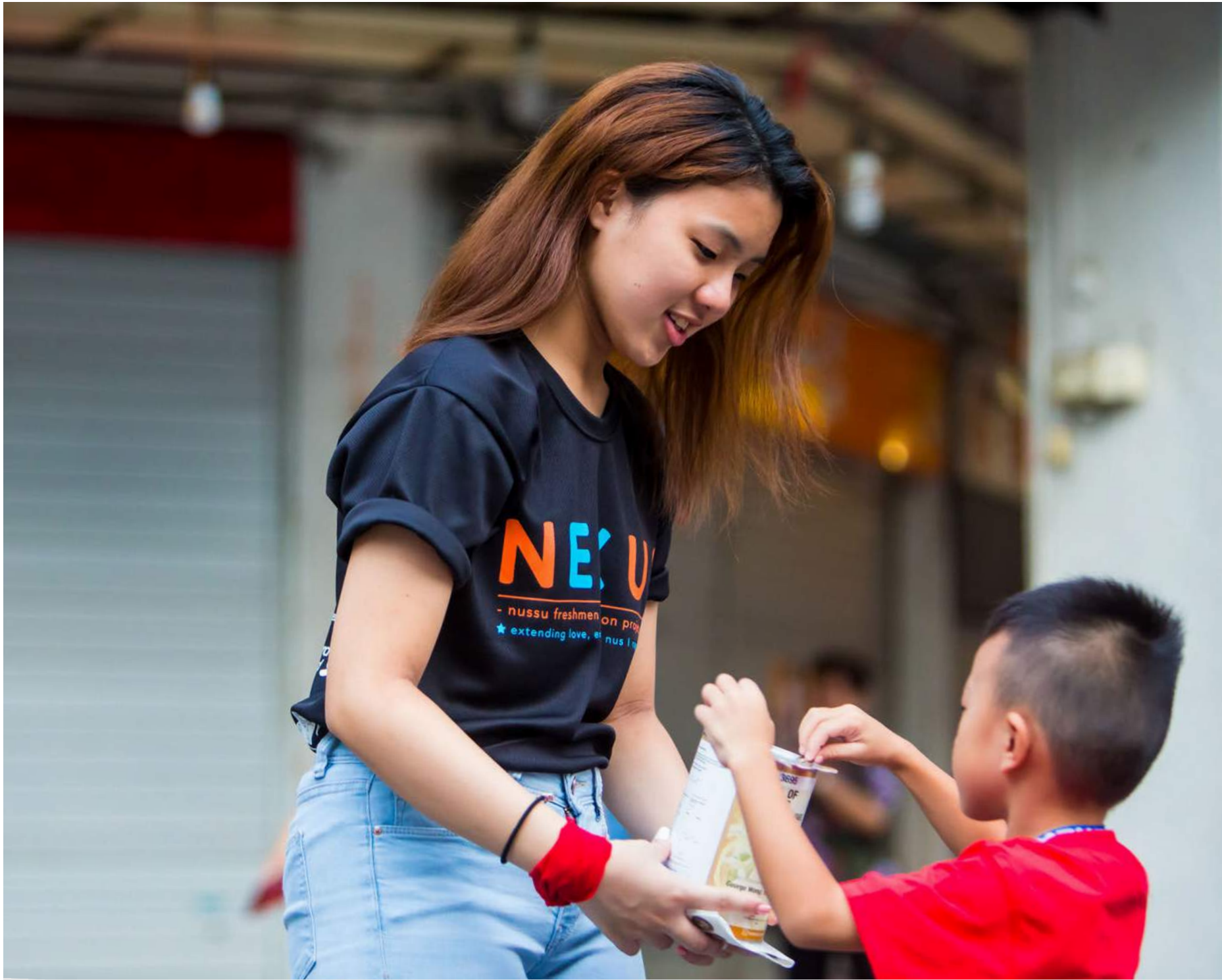
The TechID portal builds on TechSG, a smart information platform which provides the most comprehensive and up-to-date directories of tech start-ups and their interconnectivity. This platform was developed jointly by NUS Enterprise and Wonderlabs, an NUS incubatee in 2016.

On a more global level, NUS Enterprise has provided new overseas opportunities for start-ups, including BLOCK71 Suzhou and the recent NUS Innovation & Entrepreneurship Exchange with Tsinghua X-Labs in China. Other current exchanges exist with Japan, Hong Kong, Thailand and Malaysia.



EXPLORING ENTREPRENEURIAL EDUCATION IN JAKARTA

The first batch of 15 students embarked on the NOC Southeast Asia programme in May 2018. The three-month programme is specifically targeted at developing innovative solutions to real-world challenges faced by Southeast Asian companies, cultivating entrepreneurial talents familiar with and capable of operating within the region, as well as increasing the cultural appreciation of our closest neighbours. Starting in Indonesia, students will work with innovative start-ups and be part of the drive that changes the society we live in.



Service beyond Self

NUS students strive to fulfil needs they see in the world around them, both at home and overseas.

Our students continue to reach out to the wider community, at home and overseas, helping to improve the lives of those less fortunate and working towards a better environment for future generations.

ENGAGING AS A COMMUNITY

NUSSU Rag and Flag 2017

The much loved annual Rag and Flag event organised by the NUS Students' Union (NUSSU), in its 60th year, raised more than \$400,000 in August 2017. The proceeds went towards 21 charity programmes supported by the Community Chest. With the theme "Reminisce and Flourish", Rag Day 2017 aimed to remind freshmen of Rag and Flag's initial altruistic purpose, urging them to continue the legacy of generosity and excellence by contributing to the underprivileged in the wider society. The good work carried on after Rag Day as various student groups continued working with their chosen beneficiaries.

NUS Day of Service

The second annual NUS Day of Service was held in September 2017 with almost 2,000 students, staff and alumni taking part to give back to the community. A total of 42 activities was held over the day-long event – double last year's number – touching the lives of over 5,000 beneficiaries in Singapore and overseas. Activities included food

donation to those less fortunate, work on the environment, providing free dental and health advice, teaching computer skills to the intellectually challenged, entertaining foreign workers and disadvantaged young people as well as events organised by overseas alumni in New Zealand, Bangladesh, India, China and Indonesia.

ENHANCING HEALTH AND WELLNESS

Neighbourhood Health Service 2017

Students from the Yong Loo Lin School of Medicine (NUS Medicine) and the Department of Social Work took part in the annual Neighbourhood Health Service exercise, a student-led initiative which aims to identify elderly and lower income residents who may not be able to take good care of their health and reconnect them to the healthcare system. The screening, which has been expanded to include more than 20 issues, including fall risk, mental health assessment and referrals to social organisations where necessary, was introduced to Kampong Glam for the first time in October 2017. The students also conducted door-to-door visits for residents who faced difficulties leaving their homes.

Photography exhibition on cancer survivors and healthcare workers

In early 2018, students from KE Vision, King Edward VII Hall's photography group, worked with the National Cancer Institute of Singapore (NCIS) to create a photography exhibition showcasing inspirational stories of cancer survivors and dedicated healthcare workers. The exhibition aims to raise awareness of the difficulties of living with cancer, while delivering a message of hope and perseverance. At the same time, it highlights the essential role of healthcare workers in improving patients' wellbeing. The exhibition will be displayed at various clinics, hospitals and libraries throughout 2018, before becoming part of the NCIS' permanent collection.

Working with Singapore Association of the Visually Handicapped

Under PGP House's "Frugal Innovation & Sustainable Living" initiative, residents have been interacting with the visually-handicapped at the Singapore Association of the Visually Handicapped (SAVH) since April 2018. They also learned about Touch Art, which allows the visually-impaired to use their sense of touch to create art, and saw how people with a physical disability could overcome their challenges to express themselves. The project has since evolved, with residents participating in various activities, such as fund-raising, promoting awareness of SAVH and its Flag Day.

Looking Through the Silver Mirror

A first ever student-led interfaculty collaboration between students from NUS Medicine, Faculty of Arts and Social Sciences, School of Design and Environment and Yale-NUS College led to the publication of *Looking Through the Silver Mirror* in June 2018. This book tells the stories of the lives of seniors from a multireligious, multiracial group of charities, and reflections by the students who interviewed them, through the perspective of healthcare workers in training. The project underlined the importance of a holistic approach to caregiving and aimed to foster understanding between young and elderly Singaporeans.

Xin Qing Rong Ji: The Dream Composition

The annual *Xin Qing Rong Ji: The Dream Composition* is a regional bilingual song-writing competition open to tertiary student songwriters. In January 2018, NUS' King Edward VII Hall Productions committee partnered with Kwangtung Hui Kuan, a Chinese clan association, and the Singapore Chinese Cultural Centre to organise a performance where participants of the competition showcased their songs to patients from hospice care institutions. The event provided an opportunity for the students to work with multiple stakeholders and business partners as well as gain a greater awareness of the needs of the elderly.

The *Looking Through the Silver Mirror* project underlined the importance of a holistic approach to caregiving and fostering understanding between young and elderly Singaporeans.

FEEDING THE COMMUNITY

Walk for Rice

Members of Ridge View Residential College (RVRC) and Prince George's Park Residences (PGPR) participated in the annual NTUC FairPrice Walk for Rice, in collaboration with the South East Community Development Council (CDC). For every 200 metres walked, South East CDC and NTUC FairPrice sponsored one bowl of white rice and one bowl of brown rice for underprivileged families in the district. In October 2017, PGPR hosted two Walk for Rice sessions, at HortPark and the South Ridges, and MacRitchie Park and Tree Tops, while RVRC hosted a session at Mount Faber. Almost 400 staff and students participated in the walks, raising 24,121 bowls of rice.

Pack-a-Meal

In December 2017, students from the Faculty of Science Volunteer Corps collaborated with Kraft-Heinz and international relief organisation Rise Against Hunger, to host Pack-A-Meal with the aim of making the holiday season a more joyful one for some underprivileged communities. During the event – a first of its kind in Singapore – 200 students, staff and alumni sorted, weighed and packed rice, grains and dried vegetables into 80,000 packets, each providing food for six people, to be sent to needy families in Cambodia and the Philippines.

SUSTAINING THE ENVIRONMENT

STEP-NUS Sunburst Environment Programme

Over 100 secondary school students from across Southeast Asia learnt how small environmental changes can significantly affect fragile ecosystems at the STEP-NUS Sunburst Environment Programme in November 2017. Students enjoyed a series of lectures by scientists from Scripps Institution of Oceanography at the University of California, San Diego and site visits to nature reserves to better understand and appreciate the environment. Organised annually by the Singapore Technologies Endowment Programme (STEP) in partnership with the NUS Climate Change and Sustainable Environment Research Initiative hosted by the Tropical Marine Science Institute and the Lee Kong Chian Natural History Museum at NUS, the programme aims to inspire participants to take positive actions towards protecting their environment throughout their lives.

Save Our Water campaign

NUS marked World Water Day, 22 March 2018, with a variety of activities to raise awareness about the importance of the responsible use of water, and methods of conservation. The residents of RVRC took part in a water conservation exercise, where water was cut off for the entire day, and also showcased their water conservation features, including a bioswale, retention pond and rainwater harvesting tank.

An exhibition in University Town gave an overview of water conservation across the University. One exhibit highlighted research jointly conducted by the Institute of Water Policy at the Lee Kuan Yew School of Public Policy and the Department of Economics on a smart shower meter system. This meter system was installed in 70 showers in RVRC, and at the end of the four-month trial, it was found that about five litres of water per person was saved.

OUR LIONHEARTED STUDENTS

In September 2017, the NUS Civil Defence Lionhearter Club was officially launched as a university interest group. The students, known as Lionhearters, were trained by the Singapore Civil Defence Force (SCDF) in basic first aid, basic firefighting, cardiopulmonary resuscitation and automatic external defibrillator procedures, to enable them to provide first response in an emergency. They plan to work with Faculties, residential colleges and halls of residence to make NUS an emergency-prepared campus and contribute to the SCDF 2025 vision of creating a nation of lifesavers. The Lionhearters will also be involved in community projects under SCDF, assisting in Emergency Preparedness Days to share lifesaving knowledge with members of the community as well as serve in overseas humanitarian relief projects.



"Trees N Trunks" 2017

In December 2017, some 20 students from the NUS Rotaract Club's "Trees N Trunks" special project engaged in conservation and community projects in three villages within Chiang Mai, Thailand. They helped to maintain and upkeep the Elephant Nature Park, a rescue and rehabilitation centre for elephants, and also planted 1,000 banana trees to provide a food source for gibbons which were under threat by human encroachment, in the rainforests around Nongmontha Village. They also paved roads, helped to construct dams and distributed donated items at a lunch they had organised for the village school.

IMPACTING COMMUNITIES

NUS Volunteer Symposium

In collaboration with the Office of Student Affairs, students from the NUS Volunteer Network organised the NUS Volunteer Symposium in March 2018, which focused on cultivating empathy and encouraging collaboration. Fifty student leaders from various NUS volunteering groups discussed the theme of “Effective Volunteerism”, and shared their volunteering experiences. There was an interactive panel discussion with experts from the social service sector, followed by a “Trash to Cash” simulation run by Etch Empathy, a non-profit social enterprise, in which participants would experience the struggles and stresses in the daily lives of the less fortunate, thus developing more empathy towards beneficiaries.

Youth Ecosperity Dialogue

In June 2018, the School of Continuing and Lifelong Education and the Global Relations Office organised Youth Ecosperity Dialogue 2018, a student event under the umbrella of Ecosperity (“ecology” and “prosperity”), an organisation pushing the frontiers of sustainable development. Students from local universities interacted with students from other parts of Southeast Asia and discussed challenges and possible solutions

for a sustainable future. Participants were encouraged to share what they have learnt about sustainability, innovation, ecology and ecological prosperity in their respective communities and to ensure that their achievements as working adults would follow best practices for sustainable growth.

Global Citizens Conference

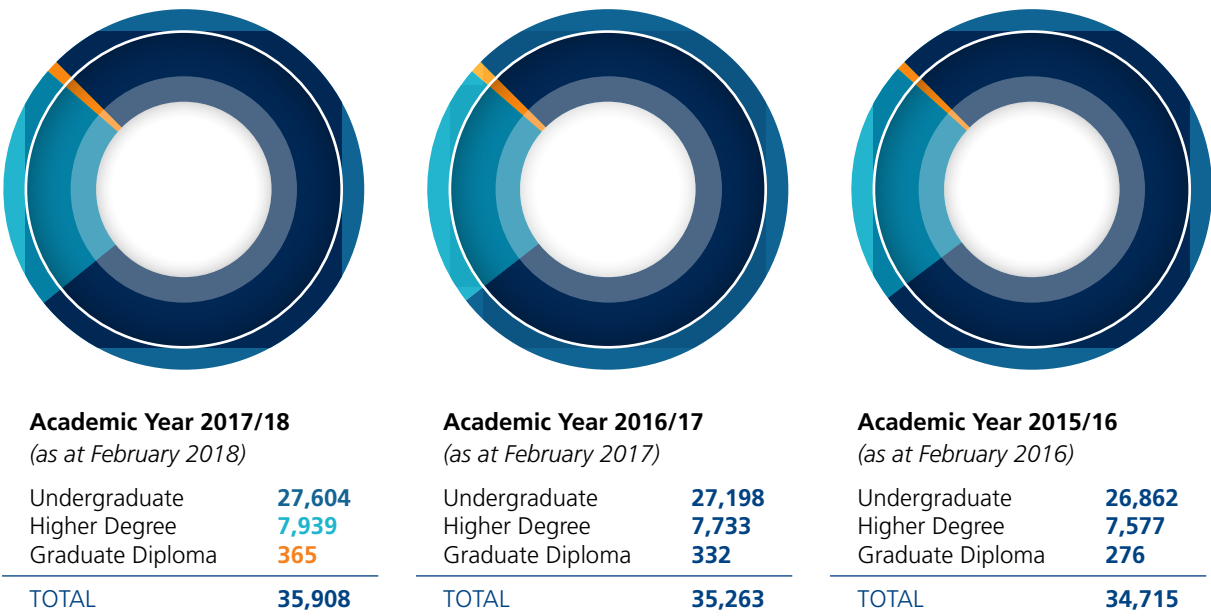
The Global Citizens Conference is an initiative by student volunteers of NUSSU’s Global Relations Unit. Themed “Global Progression”, the conference was held from 15 July to 21 July 2018, and attended by both local and international students from various disciplines seeking to better understand global social issues and find solutions to inspire change towards progress for everyone. Participants examined five topics – Cyber Sphere, Environment, Economy, Public Health and Mental Wellness – and contributed their unique experiences and ideas during discussions with invited NGOs, social entrepreneurs and speakers.



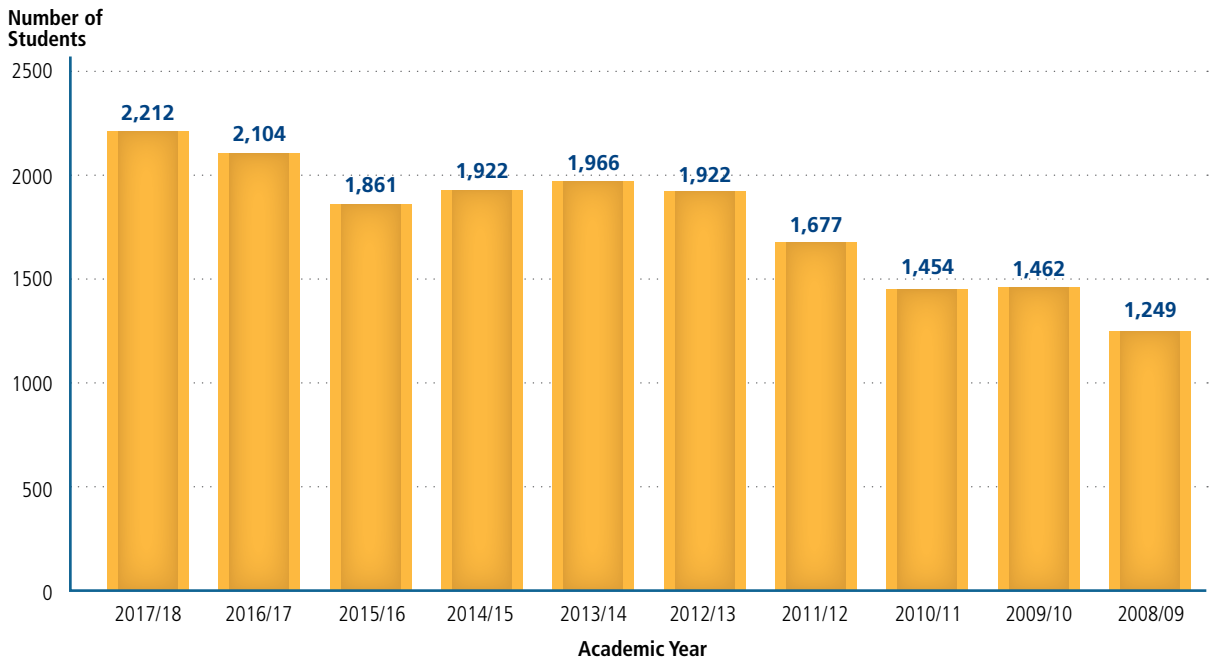
AIMING FOR A ZERO WASTE CAMPUS

In her zealous quest to minimise the use of disposables across campus, Year 4 Arts and Social Sciences student Pamela Low embarked on a campaign to encourage the NUS community to adopt a zero waste lifestyle. She organised the Zero Waste Roadshow at The Deck canteen, which led to the fruit juice stall changing from a 100% disposable to a semi-disposable operation, where drinks would be served in reusable cups. She also worked with the Office of Housing Services to discontinue the use of disposables for takeaway meals in halls of residence. Pamela’s efforts were duly recognised and she was presented with the #OCBCCares Fund for the Environment award.

PROFILE OF STUDENTS

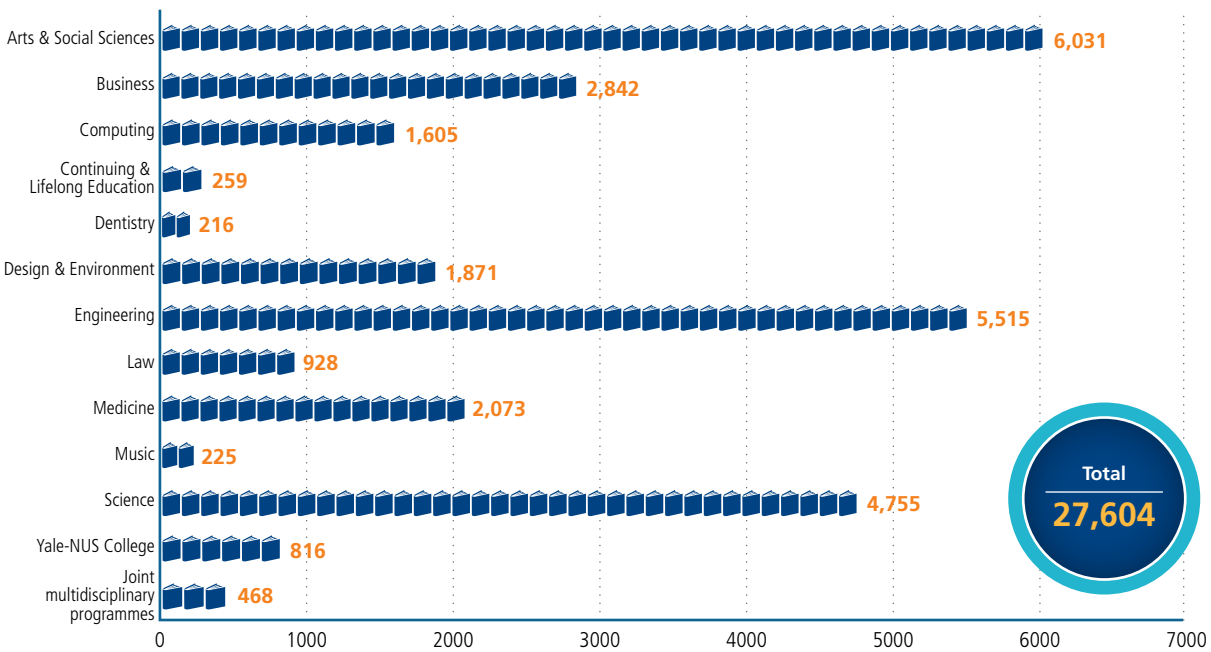


NUS STUDENTS ON STUDENT EXCHANGE*

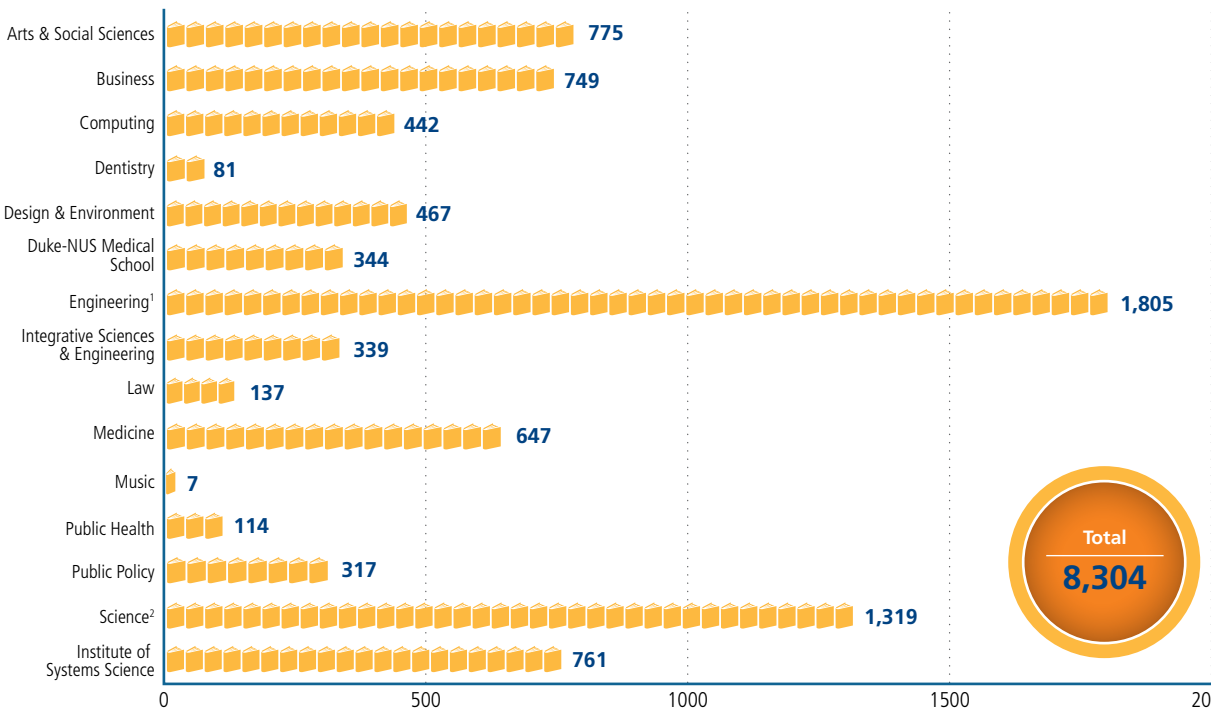


* Undergraduate students on student exchange with overseas partner universities

UNDERGRADUATE ENROLMENT 2017/18 (AS AT FEBRUARY 2018)



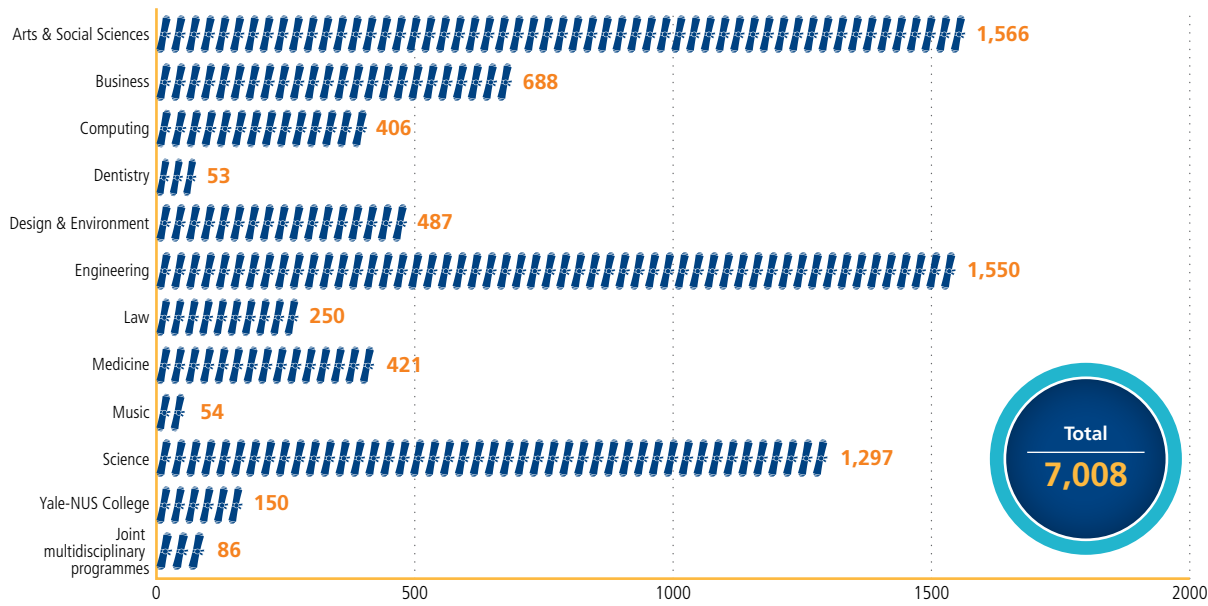
GRADUATE STUDENT ENROLMENT 2017/18 (AS AT FEBRUARY 2018)



¹ Includes Temasek Defence Systems Institute figures

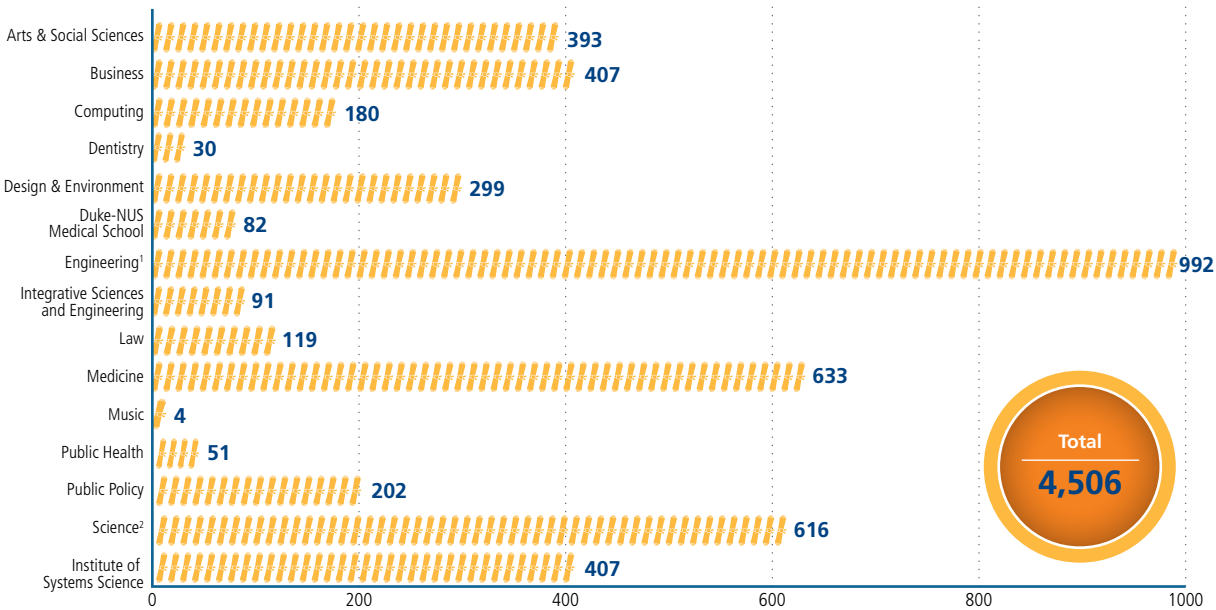
² Includes Risk Management Institute figures

PROFILE OF CLASS OF 2018 (FIRST DEGREE GRADUATES)*



* Figures correct as at 11 July 2018 and are based on degrees conferred between 1 July 2017 and 30 June 2018. Double degree graduates are counted towards both their home and second faculties.

PROFILE OF CLASS OF 2018 (HIGHER DEGREE & GRADUATE DIPLOMA GRADUATES)*

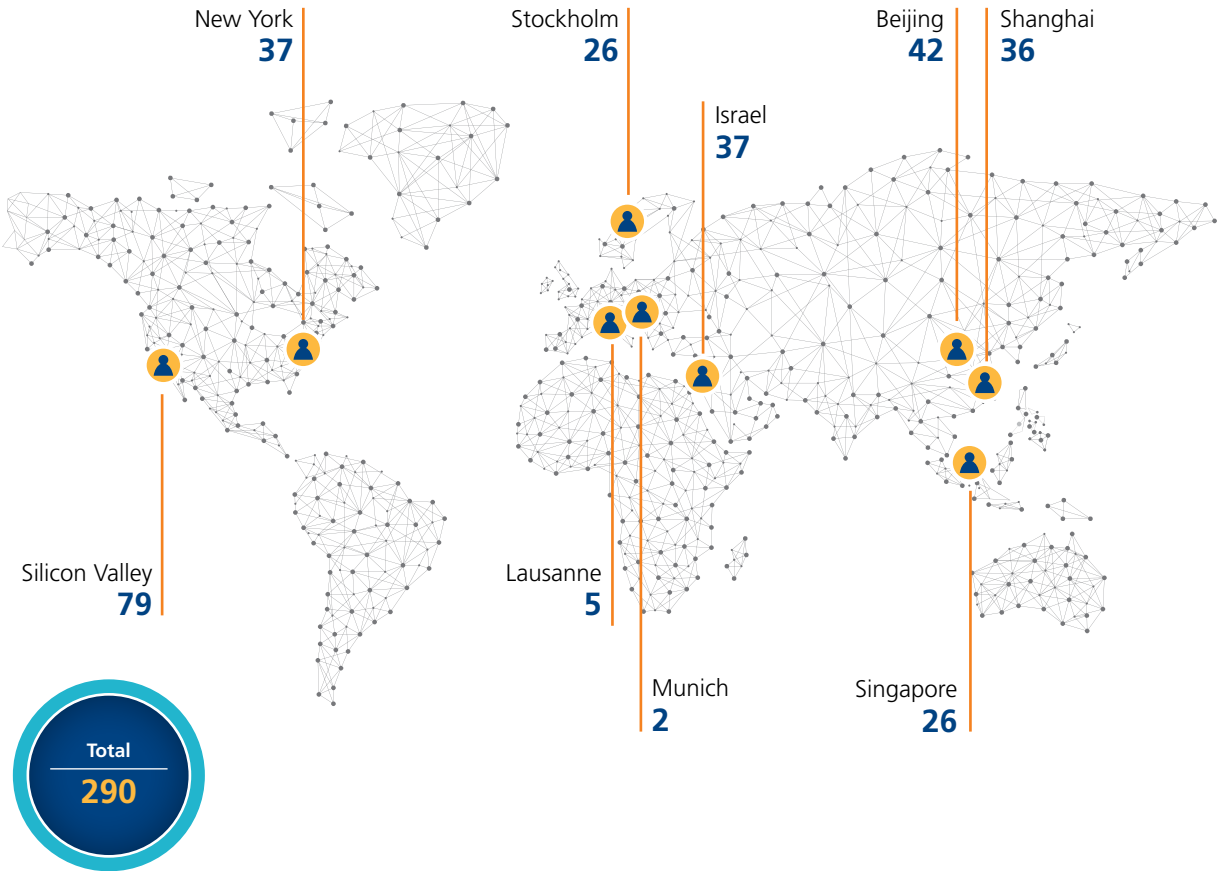


* Figures correct as at 11 July 2018 and are based on degrees and graduate diplomas conferred between 1 July 2017 and 30 June 2018.

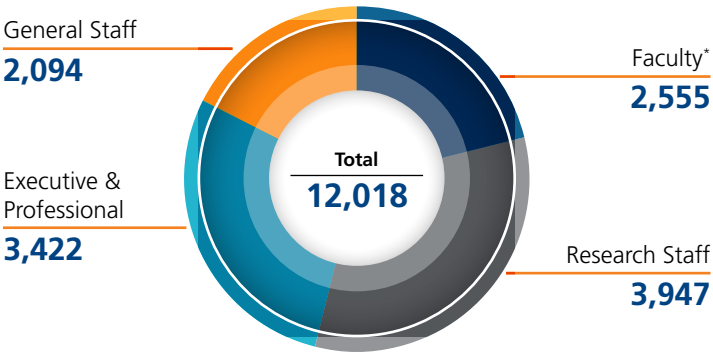
¹ Includes Temasek Defence Systems Institute figures

² Includes Risk Management Institute figures

NUS STUDENTS AT NUS OVERSEAS COLLEGES FOR ACADEMIC YEAR 2017/18 (AS AT JULY 2018)



PROFILE OF NUS FACULTY AND STAFF (AS AT JULY 2018)



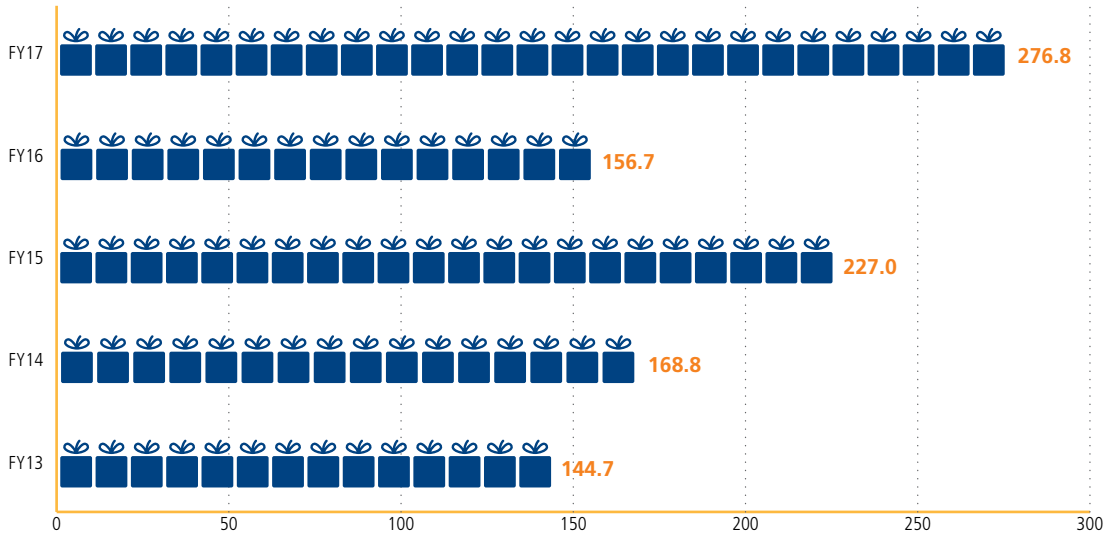
Note: Figures are Full Time Equivalent and exclude staff on honorary appointments

* Faculty includes tenurable faculty and other teaching staff

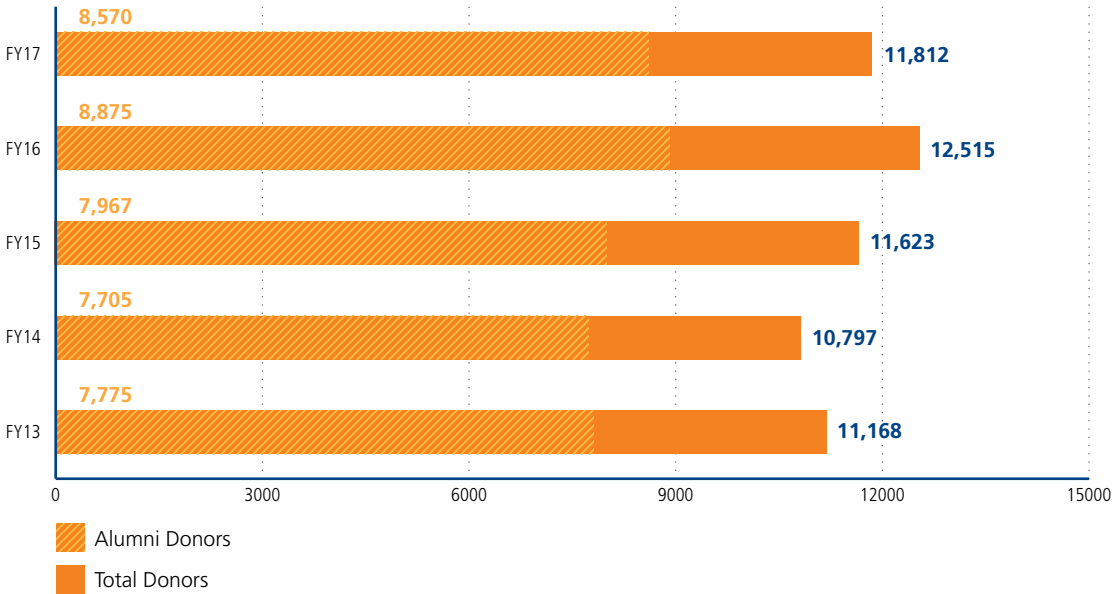
BENEFACTIONS

The University is grateful to our donors for their generous gifts of S\$276,841,560 in Financial Year 2017 (1 April 2017 to 31 March 2018)

GIFT RECEIPTS
(S\$ MILLION)

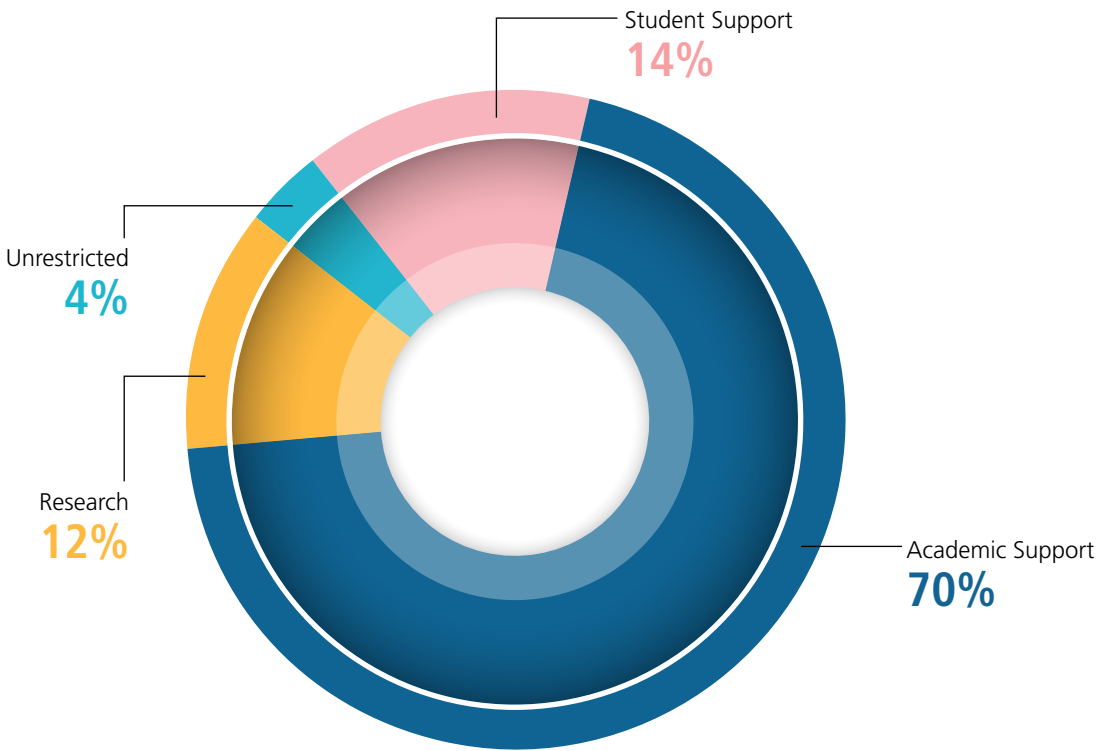


NUMBER OF DONORS



At the time of publication, gift receipts for FY17 are unaudited and exclude Singapore government matching grants.

GIFTS BY PURPOSE
(BASED ON GIFT RECEIPTS)



IN ACADEMIC YEAR 2017/18,
4,646 undergraduates
RECEIVED FINANCIAL SUPPORT

3,036
BURSARIES

1,610
SCHOLARSHIPS

WE ESTABLISHED
6
NEW NAMED PROFESSORSHIPS

WE NOW HAVE
113
NAMED PROFESSORSHIPS
MADE POSSIBLE BY BENEFACTORS

INTRODUCTION

NUS is committed to a high standard of corporate governance and has always recognised the importance of good governance as being critical to the effective performance and operation of the University. Good governance is also crucial in realising its vision of being a leading global university, shaping the future, excelling in teaching, research, enterprise, thought-leadership and public service. The University has accordingly put in place a corporate governance structure with comprehensive and clear lines of reporting, responsibility and accountability.

OUR GOVERNANCE EVALUATION CHECKLIST

In addition to the application of good governance practices as a corporate entity, we have as an institution of public character (“IPC”), adopted best practices in key areas of governance that are closely aligned to the principles enunciated in the Code of Governance for Charities and Institutions of a Public Character (the “Code”). In line with the disclosure requirement by the Charity Council that all IPCs are required to disclose the extent of their compliance with the Code, NUS’ Governance Evaluation Checklist can be found at the Charity Portal website www.charities.gov.sg.

OUR BOARD OF TRUSTEES

The NUS Board of Trustees comprises 21 members appointed by the Minister for Education, and is chaired by Mr Hsieh Fu Hua. Our Board of Trustees includes respected business/industry leaders, academics, entrepreneurs, and professionals from the public and private sectors. Members are appointed on the strength of their calibre, experience, stature, ability to contribute to the oversight and development of the University, as well as strategic networking relationships they bring which are of strategic importance to the University. Profiles of the Board members are found on pages 6 to 13 of the Annual Report.

The Board of Trustees is responsible for ensuring that the University acts in the furtherance of its objectives in education and research, and properly accounts and safeguards the funds and assets of the University. The Board of Trustees works closely with the management and stakeholders of the University to shape the vision, chart the major directions, and develop programmes and initiatives to produce a strong and enduring impact for the University, and for Singapore and beyond.

To support the Board of Trustees in discharging its functions, Board committees have been formed as dictated by corporate, operational and business needs pursuant to the Constitution of the University. There are six Board committees, namely, the Executive Committee, Audit Committee, Campus Planning and Development Committee, Investment Committee, Nominating Committee, and Remuneration Committee. These Board committees assist the Board of Trustees to provide oversight of the University and to facilitate decision making. Membership of the Board Committees is carefully selected to ensure an equitable distribution of responsibility among Board members and promote the effectiveness of each committee’s focus and contribution. Where necessary, non-Board members who have expertise in their respective fields are also co-opted to enhance the deliberations and decision making process of some of the Board Committees.

The present composition of the Board Committees is as follows:

EXECUTIVE COMMITTEE

Mr Hsieh Fu Hua (Chairman)
Prof Tan Eng Chye
Prof Ho Teck Hua
Dr Cheong Koon Hean
Mr Peter Ho Hak Ean
Ms Kay Kuok Oon Kwong
Mr Andrew Lim Ming-Hui
Mr Loh Chin Hua
Mr Phillip Tan Eng Seong

REMUNERATION COMMITTEE

Mr Hsieh Fu Hua (Chairman)
Mr Peter Ho Hak Ean
Mr Lai Chung Han
Mr Chaly Mah Chee Kheong
Mr Ng Wai King
Mr Abdullah Tarmugi
Ms Elaine Yew Wen Suen

AUDIT COMMITTEE

Mr Phillip Tan Eng Seong (Chairman)
Mr Chaly Mah Chee Kheong
Mr Ng Wai King
Mr Abdullah Tarmugi
Mr Eddie Chau (Co-opted)

INVESTMENT COMMITTEE

Mr Goh Yew Lin (Chairman)
Prof Ho Teck Hua (Prof Tan Eng Chye as alternate)
Mr Lee Ming San
Mr Michael Lien Jown Leam
Mr Andrew Lim Ming-Hui
Dr Leslie Teo Eng Sipp
Mr George Raymond Zage III (Co-opted)

CAMPUS PLANNING AND DEVELOPMENT COMMITTEE

Mr Peter Ho Hak Ean (Chairman)
Prof Tan Tan Eng Chye (Prof Ho Teck Hua as alternate)
Dr Cheong Koon Hean
Mr Lee Ming San
Mr Raymond Woo (Co-opted)
Mr Siew Man Kok (Co-opted)
Mr Wong Fong Fui (Co-opted)

NOMINATING COMMITTEE

Ms Kay Kuok (Chairperson)
Mr Hsieh Fu Hua
Prof Tan Eng Chye
Mr Phillip Tan
Mr Peter Ho Hak Ean
Mr Andrew Lim
Dr Cheong Koon Hean
Mr Loh Chin Hua

OUR SENIOR MANAGEMENT

Management functions and day-to-day operations of the University are led by the Senior Management of the University, headed by the President Professor Tan Eng Chye with effect from 1 January 2018. The President is the University's Chief Executive Officer. Details of the management team can be found at its website www.nus.edu.sg.

OUR POLICIES AND PROCEDURES TO MANAGE CONFLICTS OF INTEREST

Board members and staff are required in their respective capacities to act at all times in the best interest of the University. Policies and procedures are designed to prevent and address potential conflict-of-interest situations while promoting ethical business conduct of officers and staff in line with the strong focus of the University on integrity.

NUS' Constitution contains provisions for the management and avoidance of conflicts of interest by members of its Board of Trustees. Such provisions include (a) permitting a Board member to be interested in any transaction with NUS provided that the member has declared the nature of the interest to the Board of Trustees and abstains from participating in the Board's decision in respect of the transaction concerned, (b) permitting a Board member, or a firm associated with the member, to act in any professional capacity for the University and to be remunerated for professional services as if the Board member was not a Trustee, and (c) permitting a Board member to be reimbursed for out-of-pocket expenses, travelling and other expenses properly incurred by the Board member in attending and returning from meetings of the Board of Trustees, any of its committees, or any general meeting of the University or otherwise in connection with the affairs of the University. NUS' Constitution expressly stipulate that Board members shall not receive any remuneration for services rendered by them as members of the Board of Trustees.

In addition, the Board of Trustees has adopted the practice of requiring every Board member to annually review and refresh their independence by disclosing to the Nominating Committee whether there are any factors that will affect the member's independence in the decision making process of the Board.

The University's terms of business and code of conduct for staff include a Conflict of Interest Policy which all staff members must observe and comply with. In accordance with the current Policy, staff must ensure that their private activities and interests do not conflict with their professional obligations to the University. Where there is potential violation of a prohibition, the staff member shall make a full disclosure and may request for an exception. Approval for an exception will be at the discretion of the University. In addition, in compliance with the University's prevailing policy on conflict of interest and other related policies, staff are reminded annually to declare any potential conflict for resolution.

OUR WHISTLE-BLOWING POLICY

Being an institution of higher learning, the University has the added responsibility of ensuring that all University staff uphold a high standard of integrity to maintain the trust and confidence our students and their parents have in our ability to deliver the best programmes to them. Thus, the University is committed to steward our resources responsibly by maintaining an ethical culture, one of integrity and compliance with laws, regulations and standards. The Whistleblowing Policy is intended to provide a channel for the reporting of actual or suspected wrongdoings committed by any University staff and contractors for investigation and corrective action as well as assurance that the whistleblower will be protected from reprisals for whistleblowing in good faith.

NATIONAL UNIVERSITY OF SINGAPORE AND ITS SUBSIDIARIES

(INCORPORATED IN SINGAPORE. REGISTRATION NUMBER: 200604346E)

SUMMARY FINANCIAL STATEMENTS PREPARED FROM THE AUDITED FINANCIAL STATEMENTS FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

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IMPORTANT NOTE

The Summary Financial Statements as set out on pages 81 to 89 contain only a summary of the information in the full financial statements. The Summary Financial Statements do not contain sufficient information to allow for a full understanding of the results and the state of affairs of the Group and the Company.

For further information, the full financial statements and the Auditor’s Report on those statements should be consulted. Readers who require a copy of the full financial statements can contact the Company’s Office of Financial Services, University Hall, Tan Chin Tuan Wing #03-02, 21 Lower Kent Ridge Road, Singapore 119077, Tel: 6516 1981. The full financial report can also be viewed at the Company’s website: <http://www.nus.edu.sg/annualreport/>.

TRUSTEES’ STATEMENT

The Trustees are pleased to present their statement to the members together with the summary financial statements of the National University of Singapore (“the Company”) and its subsidiaries (collectively, “the Group”), which comprise the statements of financial position of the Group and the Company as at 31 March 2018 and the statements of comprehensive income of the Group and the Company, and related notes. These are derived from the audited financial statements of the Company and its subsidiaries for the year then ended.

OPINION OF THE TRUSTEES

In the opinion of the Trustees,

- a) the summary financial statements has been derived and presented consistently, in all material respects with the audited financial statements of the Group and of the Company for the year ended 31 March 2018; and
- b) at the date of this statement there are reasonable grounds to believe that the Company will be able to pay its debts when they fall due.

TRUSTEES

The Trustees of the Company in office at the date of this report are:

Mr Hsieh Fu Hua – Chairman	Mr Lee Ming San
Professor Tan Eng Chye	Mr Michael Lien Jown Leam
Ambassador Chan Heng Chee	Mr Andrew Lim Ming-Hui
Dr Cheong Koon Hean	Mr Loh Chin Hua
Mr Goh Choon Phong	Mr Chaly Mah Chee Kheong
Mr Goh Yew Lin	Mr Ng Wai King
Dr Noeleen Heyzer	Mr Phillip Tan Eng Seong
Mr Peter Ho Hak Ean	Mr Abdullah Tarmugi
Professor Ho Teck Hua	Dr Leslie Teo Eng Sipp
Mdm Kay Kuok Oon Kwong	Ms Elaine Yew Wen Suen
Mr Lai Chung Han	

ARRANGEMENTS TO ENABLE TRUSTEES TO ACQUIRE SHARES AND DEBENTURES

Neither at the end of nor at any time during the financial year was the Company a party to any arrangement whose objects are, or one of whose object is, to enable the Trustees of the Company to acquire benefits by means of the acquisition of shares or debentures of the Company or any other body corporate.

TRUSTEES' STATEMENT

TRUSTEES' INTERESTS IN SHARES OR DEBENTURES

The Company is a public company limited by guarantee and does not have a share capital.

At the end of the financial year, the Trustees of the Company have no interest in the share capital (including any share options) and debentures of the Company's related corporations as recorded in the register of the directors' shareholdings kept by the Company's related corporations under Section 164 of the Singapore Companies Act.

On behalf of the Trustees



MR HSIEH FU HUA
Trustee

17 September 2018



PROFESSOR TAN ENG CHYE
Trustee

INDEPENDENT AUDITOR'S REPORT TO THE TRUSTEES OF NATIONAL UNIVERSITY OF SINGAPORE

OPINION

The summary financial statements of National University of Singapore (the "Company") and its subsidiaries (the "Group"), which comprise the statements of financial position of the Group and the Company as at 31 March 2018 and the statements of comprehensive income of the Group and the Company, and related notes, are derived from the audited financial statements of the Company and its subsidiaries for the year then ended. We expressed an unmodified audit opinion on those financial statements in our report dated 26 July 2018.

In our opinion, the accompanying summary financial statements are consistent, in all material respects, with the audited financial statements and the Trustee's Statement of the Company and its subsidiaries for the year ended 31 March 2018 from which they are derived and comply with the requirements of Section 203A of the Companies Act, Chapter 50 (the Act) and the regulations made thereunder applicable to summary financial statements.

SUMMARY FINANCIAL STATEMENTS

The summary financial statements do not contain all the disclosures required by the Financial Reporting Standards in Singapore. Reading the summary financial statements and the auditor's report thereon, therefore, is not a substitute for reading the audited financial statements and the auditor's report thereon. The summary financial statements and the audited financial statements do not reflect the effects of events that occurred subsequent to the date of our report on the audited financial statements.

OTHER INFORMATION

Management is responsible for other information. The other information comprises the information included in the annual report but does not include the summary financial statements and our auditor's report thereon.

Our opinion on the summary financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the summary financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the summary financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

INDEPENDENT AUDITOR’S REPORT TO THE TRUSTEES OF NATIONAL UNIVERSITY OF SINGAPORE

MANAGEMENT’S RESPONSIBILITY FOR THE SUMMARY FINANCIAL STATEMENTS

Management is responsible for the preparation of the summary financial statements in accordance with Section 203A of the Act. In preparing the summary financial statements, Section 203A of the Act requires that the summary financial statements be derived from the annual financial statements and Trustees’ Statement of the Company and its subsidiaries for the year ended 31 March 2018, and be in such form and contain such information so as to be consistent with the audited financial statements.

AUDITOR’S RESPONSIBILITY

Our responsibility is to express an opinion on whether the summary financial statements are consistent, in all material respects, with the audited financial statements based on our procedures, which were conducted in accordance with Singapore Standard on Auditing (SSA) 810 (Revised), Engagements to Report on Summary Financial Statements.



ERNST & YOUNG LLP

Public Accountants and
Chartered Accountants

Singapore
17 September 2018

STATEMENTS OF FINANCIAL POSITION

AS AT 31 MARCH 2018

	GROUP		COMPANY	
	31 March 2018	31 March 2017	31 March 2018	31 March 2017
	S\$'000	S\$'000	S\$'000	S\$'000
NON-CURRENT ASSETS				
Subsidiary companies	–	–	128	128
Associated companies	131,822	127,512	77,330	77,161
Fixed assets	3,477,796	3,482,295	3,475,741	3,479,820
Investment properties	41,463	–	41,463	–
Intangible assets	10,645	8,325	10,644	8,317
Available-for-sale investments	5,903	6,416	3,881	4,518
Student loans (repayable after 12 months)	5,087	6,880	5,087	6,880
Long-term loan to subsidiary company	–	–	250	250
Prepayments (to be utilised after 12 months)	85	197	85	197
Total Non-Current Assets	3,672,801	3,631,625	3,614,609	3,577,271
CURRENT ASSETS				
Student loans (repayable within 12 months)	2,401	2,647	2,401	2,647
Debtors	676,660	509,307	674,718	507,714
Consumable stores	605	575	347	333
Deposits and prepayments (to be utilised within 12 months)	51,928	45,521	51,449	45,023
Amounts owing from subsidiary companies	–	–	883	921
Investments at fair value through income or expenditure	8,804,856	7,977,964	8,804,856	7,977,964
Derivative financial instruments	81,863	16,007	81,863	16,007
Cash and cash equivalents	128,286	160,502	105,420	137,696
Total Current Assets	9,746,599	8,712,523	9,721,937	8,688,305
TOTAL ASSETS	13,419,400	12,344,148	13,336,546	12,265,576

The accompanying notes form an integral part of these financial statements.

STATEMENTS OF FINANCIAL POSITION
AS AT 31 MARCH 2018

	GROUP		COMPANY	
	31 March 2018	31 March 2017	31 March 2018	31 March 2017
	S\$'000	S\$'000	S\$'000	S\$'000
CURRENT LIABILITIES				
Creditors and accrued expenses	300,919	283,725	298,556	281,623
Provisions for employee leave liability	105,522	103,341	102,975	100,895
Grants received in advance	448,007	391,305	444,154	387,225
Deferred tuition and other fees	87,518	72,608	87,464	72,354
Derivative financial instruments	5,602	40,864	5,602	40,864
Amounts owing to subsidiary companies	–	–	26,904	26,156
Fixed rate notes (due within 12 months)	250,000	250,000	250,000	250,000
Total Current Liabilities	1,197,568	1,141,843	1,215,655	1,159,117
NON-CURRENT LIABILITIES				
Fixed rate notes (due after 12 months)	750,000	750,000	750,000	750,000
Deferred capital grants	1,886,417	1,954,006	1,884,466	1,951,671
Total Non-Current Liabilities	2,636,417	2,704,006	2,634,466	2,701,671
TOTAL LIABILITIES	3,833,985	3,845,849	3,850,121	3,860,788
NET ASSETS	9,585,415	8,498,299	9,486,425	8,404,788
FUNDS AND RESERVES				
ACCUMULATED SURPLUS				
– Designated General Funds	2,833,978	2,619,993	2,751,730	2,546,661
– Restricted Funds	2,632,550	2,147,333	2,616,283	2,127,632
	5,466,528	4,767,326	5,368,013	4,674,293
ENDOWMENT FUNDS	4,077,118	3,730,027	4,076,686	3,729,595
FAIR VALUE RESERVE	273	910	263	900
REVALUATION RESERVE	41,463	–	41,463	–
TRANSLATION RESERVE	33	36	–	–
TOTAL FUNDS AND RESERVES	9,585,415	8,498,299	9,486,425	8,404,788
Funds managed on behalf of the Government Ministry	305,456	298,375	305,456	298,375
Represented by:				
Net assets managed on behalf of the Government Ministry	305,371	298,674	305,371	298,674
Amount payable to (receivable from) Government Ministry	85	(299)	85	(299)
	305,456	298,375	305,456	298,375

The accompanying notes form an integral part of these financial statements.

STATEMENTS OF COMPREHENSIVE INCOME
FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

GROUP	DESIGNATED GENERAL FUNDS		RESTRICTED FUNDS		TOTAL	
	2018	2017	2018	2017	2018	2017
	S\$'000	S\$'000	S\$'000	S\$'000	S\$'000	S\$'000
OPERATING INCOME						
Tuition and other related fees	483,521	468,201	–	–	483,521	468,201
Other income	235,889	237,149	230,564	99,155	466,453	336,304
	719,410	705,350	230,564	99,155	949,974	804,505
OPERATING EXPENDITURE						
Expenditure on manpower	941,674	923,349	400,052	369,883	1,341,726	1,293,232
Depreciation and amortisation expenditure	78,332	82,624	280,552	264,232	358,884	346,856
Other operating expenditure	471,323	436,136	541,159	550,178	1,012,482	986,314
	1,491,329	1,442,109	1,221,763	1,184,293	2,713,092	2,626,402
Operating deficit	(771,919)	(736,759)	(991,199)	(1,085,138)	(1,763,118)	(1,821,897)
Net investment income	122,836	93,774	497,313	535,153	620,149	628,927
Share of results (net of tax) of associated companies	7,575	2,000	(3,434)	(1,517)	4,141	483
Deficit before Grants	(641,508)	(640,985)	(497,320)	(551,502)	(1,138,828)	(1,192,487)
GRANTS						
Operating Grants :						
Government	717,391	702,379	572,267	593,775	1,289,658	1,296,154
Others	6,223	8,389	250,677	255,135	256,900	263,524
Deferred capital grants amortised	28,559	30,403	271,960	259,289	300,519	289,692
	752,173	741,171	1,094,904	1,108,199	1,847,077	1,849,370
SURPLUS FOR THE YEAR BEFORE TAX	110,665	100,186	597,584	556,697	708,249	656,883
Income tax	(6)	–	–	–	(6)	–
SURPLUS FOR THE YEAR	110,659	100,186	597,584	556,697	708,243	656,883
OTHER COMPREHENSIVE INCOME:						
Items that may be reclassified subsequently to income or expenditure:						
Exchange differences on translating foreign operations	(3)	(20)	–	–	(3)	(20)
Change in fair value of available-for-sale investments	–	–	(637)	(255)	(637)	(255)
Transfer of fair value reserve on sale of available-for-sale investments to income or expenditure	–	–	–	(636)	–	(636)
Surplus on the revaluation of buildings transferred to investment properties	41,463	–	–	–	41,463	–
OTHER COMPREHENSIVE INCOME FOR THE YEAR, NET OF TAX	41,460	(20)	(637)	(891)	40,823	(911)
TOTAL COMPREHENSIVE INCOME FOR THE YEAR	152,119	100,166	596,947	555,806	749,066	655,972

The accompanying notes form an integral part of these financial statements.

STATEMENTS OF COMPREHENSIVE INCOME

FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

COMPANY

	DESIGNATED GENERAL FUNDS		RESTRICTED FUNDS		TOTAL	
	2018	2017	2018	2017	2018	2017
	S\$'000	S\$'000	S\$'000	S\$'000	S\$'000	S\$'000
OPERATING INCOME						
Tuition and other related fees	478,726	463,508	–	–	478,726	463,508
Other income	232,224	234,079	230,564	99,155	462,788	333,234
	710,950	697,587	230,564	99,155	941,514	796,742
OPERATING EXPENDITURE						
Expenditure on manpower	917,953	900,812	400,052	369,883	1,318,005	1,270,695
Depreciation and amortisation expenditure	77,707	81,960	280,552	264,232	358,259	346,192
Other operating expenditure	463,223	428,125	541,159	550,178	1,004,382	978,303
	1,458,883	1,410,897	1,221,763	1,184,293	2,680,646	2,595,190
Operating deficit	(747,933)	(713,310)	(991,199)	(1,085,138)	(1,739,132)	(1,798,448)
Net investment income	122,244	92,467	497,313	535,153	619,557	627,620
Deficit before Grants	(625,689)	(620,843)	(493,886)	(549,985)	(1,119,575)	(1,170,828)
GRANTS						
Operating Grants :						
Government	694,713	681,037	572,267	593,775	1,266,980	1,274,812
Others	4,716	6,797	250,677	255,135	255,393	261,932
Deferred capital grants amortised	28,003	29,789	271,960	259,289	299,963	289,078
	727,432	717,623	1,094,904	1,108,199	1,822,336	1,825,822
SURPLUS FOR THE YEAR BEFORE TAX	101,743	96,780	601,018	558,214	702,761	654,994
Income tax	–	–	–	–	–	–
SURPLUS FOR THE YEAR	101,743	96,780	601,018	558,214	702,761	654,994
OTHER COMPREHENSIVE INCOME:						
Items that may be reclassified subsequently to income or expenditure:						
Change in fair value of available-for-sale investments	–	–	(637)	(255)	(637)	(255)
Transfer of fair value reserve on sale of available-for-sale investments to income or expenditure	–	–	–	–	–	–
Surplus on the revaluation of buildings transferred to investment properties	41,463	–	–	–	41,463	–
OTHER COMPREHENSIVE INCOME FOR THE YEAR, NET OF TAX	41,463	–	(637)	(255)	40,826	(255)
TOTAL COMPREHENSIVE INCOME FOR THE YEAR	143,206	96,780	600,381	557,959	743,587	654,739

The accompanying notes form an integral part of these financial statements.

NOTES TO THE SUMMARY FINANCIAL STATEMENTS

FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

1 GENERAL

The Company (Registration Number 200604346E) is incorporated in Singapore as a public company limited by guarantee and its registered office and place of business is located at 21 Lower Kent Ridge Road Singapore 119077.

The Company is principally engaged in the advancement and dissemination of knowledge, and the promotion of research and scholarship.

The consolidated financial statements of the Group and the statement of financial position, statement of comprehensive income and statement of changes in funds and reserves of the Company as of and for the year ended 31 March 2018 were authorised for issue in accordance with a resolution of the Trustees on 26 July 2018.

2 SIGNIFICANT ACCOUNTING POLICIES

ADOPTION OF NEW AND REVISED STANDARDS - In the current financial year, the Group has adopted all the new and revised FRSs and Interpretations of FRS ("INT FRS") that are relevant to its operations and effective for annual periods beginning on or after 1 April 2017, including the Amendments to FRS 7 Disclosure initiative. The adoption of these new/revised FRSs and INT FRSs does not result in changes to the Group's and Company's accounting policies and has no material effect on the financial statements for the current or prior years.

The Group has not adopted the following standards that have been issued but are not yet effective:

Description	Effective for annual periods beginning on or after
FRS 115 Revenue from Contracts with Customers	1 January 2018
FRS 115 Amendments to FRS 115: Clarifications to FRS 115 Revenue from Contracts with Customers	1 January 2018
FRS 109 Financial Instruments	1 January 2018
FRS 116 Leases	1 January 2019
Improvements to FRSs (December 2016)	
(a) FRS 101 First-time Adoption of Financial Reporting Standards	1 January 2018
(b) FRS 28 Investments in Associates and Joint Ventures	1 January 2018
Amendments to FRS 40: Transfers of Investment Property	1 January 2018
Amendments to FRS 109: Prepayment Features with Negative Compensation	1 January 2019
Amendments to FRS 28: Long-term Interests in Associates and Joint Ventures	1 January 2019
Improvements to FRSs (March 2018)	
(a) FRS 111 Joint Arrangements	1 January 2019
(b) FRS 23 Borrowing costs	1 January 2019
Amendments to FRS 110 and FRS 28: Sale or Contribution of Assets between an Investor and its Associate or Joint Venture	To be determined

NOTES TO THE SUMMARY FINANCIAL STATEMENTS

FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

2 SIGNIFICANT ACCOUNTING POLICIES (cont'd)

At the date of authorisation of these financial statements, the management has considered and anticipated that the adoption of the FRSs, INT FRSs and amendments to FRS that were issued but not effective until future periods will have no material impact on the financial statements of the Group and the Company in the year of their initial adoption, except for FRS 109, FRS 115 and FRS 116. The nature of the impending changes are described below.

FRS 109

FRS 109 introduces new requirements for classification and measurement of financial assets, impairment of financial assets and hedge accounting, and is effective for annual periods beginning on or after 1 January 2018. Financial assets are classified according to their contractual cash flow characteristics and the business model under which they are held. The impairment requirements in FRS 109 are based on expected credit loss model and replace FRS 39 incurred loss model.

The Group plans to adopt the new standards on the required effective date without restating prior periods' information and recognises any difference between the previous carrying amount and the carrying amount at the beginning of the annual reporting period at the date of initial application in the opening retained earnings.

The Group has performed a preliminary assessment of adopting FRS 109 based on currently available information. This assessment may be subject to changes arising from ongoing analysis, until the Group adopts FRS 109 in 2018.

The Group has assessed that the application of FRS 109 will have no material impact to the Group except for the expected credit losses on all of its debt securities, loans and trade receivables and financial guarantees, either on a 12-month or lifetime basis

The Group expects to apply the simplified approach and record lifetime expected losses on all trade receivables.

FRS 115 Revenue from Contracts with Customers

FRS 115 establishes a five-step model for revenue arising from contracts with customers. Under FRS 115, revenue is recognised at an amount that reflects the consideration which an entity expects to be entitled in exchange for transferring goods or services to customers. The new standard is effective for annual periods beginning on or after 1 January 2018.

The Group has performed a preliminary impact assessment of adopting FRS 115 based on currently available information. This assessment may be subject to changes arising from ongoing analysis until the Group adopts FRS 115 in 2018.

The Group plans to apply the changes in accounting policies retrospectively to each reporting year presented, using the full retrospective approach.

The Group has assessed that the application of FRS 115 will have no material impact on the Group's revenue recognition procedure, except for certain scholarship expenses which meet the definition as consideration payable to customer which will be accounted for as a reduction of the tuition fee revenue.

NOTES TO THE SUMMARY FINANCIAL STATEMENTS

FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

2 SIGNIFICANT ACCOUNTING POLICIES (cont'd)

FRS 116 Leases

FRS 116 requires lessees to recognise most leases on balance sheets to reflect the rights to use the leased assets and the associated obligations for lease payments as well as the corresponding interest expense and depreciation charges. The standard includes two recognition exemption for lessees – leases of 'low value' assets and short-term leases. The new standard is effective for annual periods beginning on or after 1 January 2019.

The Group is currently assessing the impact of the new standard and plans to adopt the new standard on the required effective date.

NOTES TO THE SUMMARY FINANCIAL STATEMENTS
FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

3 RELATED PARTY TRANSACTIONS

Parties are considered to be related if one party has the ability to control the other party or exercise significant influence over the other party in making financial and operating decisions.

The Group receives grants from the Ministry of Education (MOE) to fund its operations and is subject to certain controls set by MOE.

Hence, other government-controlled enterprises are considered related parties of the Group. Many of the Group's transactions and arrangements are with related parties and the effect of these on the basis determined between the parties is reflected in these financial statements. For related parties debtors and creditors balances, the terms of these balances are disclosed in the respective notes to the financial statements.

There were transactions with corporations in which certain trustees have the ability to control or exercise significant influence.

Details of significant balances and transactions between the related parties are described below:

	GROUP		COMPANY	
	2018	2017	2018	2017
	S\$'000	S\$'000	S\$'000	S\$'000
Government-controlled enterprises and companies within the Group				
Balances				
Debtors	578,060	436,205	577,633	435,889
Amount owing by subsidiary companies	-	-	883	921
Long-term loan to subsidiary company	-	-	250	250
Creditors and accrued expenses	2,017	914	2,017	914
Amount owing to subsidiary company	-	-	26,904	26,156
Deferred capital grants	1,547,795	1,597,937	1,546,922	1,596,968
Grants received in advance	415,056	365,906	408,931	360,135
Transactions				
Endowed donations	5,313	290	5,313	290
Non-endowed donations	13,262	27,257	13,262	27,257
Other income	28,162	20,858	28,162	20,858
Other operating expenditure	129,988	70,255	129,988	70,255
Operating/capital grants received	2,013,327	2,040,753	1,990,459	2,019,229
Corporations in which trustees have the ability to control or exercise significant influence (including donations received from trustees)				
Balances				
Debtors	107	175	107	175
Creditors and accrued expenses	27	14	27	14
Transactions				
Endowed donations	1,776	752	1,776	752
Non-endowed donations	44,253	2,451	44,253	2,451
Other income	1,506	1,018	1,506	1,018
Other operating expenditure	1,213	1,210	1,213	1,210
Operating/capital grants received	206	139	206	139

NOTES TO THE SUMMARY FINANCIAL STATEMENTS
FOR THE FINANCIAL YEAR ENDED 31 MARCH 2018

4 KEY MANAGEMENT PERSONNEL COMPENSATION

The compensation for twenty-two (2017: twenty-one) key management personnel (includes the remuneration of an executive trustee) are as follows:

	GROUP AND COMPANY	
	2018	2017
	S\$'000	S\$'000
Short-term benefits	13,004	14,174
Post-employment benefits	222	241
	13,226	14,415





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