NUS Pro-chancellors,
Chairman and members of the NUS Board of Trustees,
Mr SR Nathan,
Distinguished guests, colleagues, students, alumni and friends.

For those interested in the future, Delphi in Greece should hold a special place. This is because the Delphic oracle was known far and wide in the ancient world for her powers of prophesy. I stopped over in Delphi, while backpacking through Greece in 1983.

The hostel I stayed in had only one other guest - a middle-aged astrologer from Yorkshire. In the evenings, dinner was served on the balcony and over retsina wine, I learnt from him how astrologers tried to divine the future. During the day, I explored the archaeological site, trying to imagine how the Delphic Oracle might have worked.

My next brush with oracles came a few years’ later while I was travelling in West China. I saw a fascinating display of ancient oracle bones in Lanzhou and read about how Shang dynasty diviners used them to answer questions about future events.

Despite all this early exposure to divining the future, when our Board Chairman asked me last year to consider what the future might hold for NUS, I thought it was best not to mention my experience with astrologers and oracles.

Instead, we held a Board Retreat and went through a scenario planning exercise.
The Retreat started with a talk by our Trustee, Mr Peter Ho.

He framed his remarks around the innovator’s dilemma posed by renowned Harvard professor Clayton Christensen, who posited that “successful organisations are doomed to fail in the longer term because there is tremendous inertia to change a formula that has worked well.”

To stretch our thinking, Peter Ho asked these provocative questions:

How does NUS avoid getting to a Clayton Christensen moment?

Success is not pre-ordained: Is NUS’ trajectory a straight line to the top? Or might it become ballistic, subject to the law of gravity?

It is true that NUS is successful on several fronts.

We attract the large majority of the best students from Singapore, and top students from abroad. We have a strong critical mass of outstanding faculty, and broad-based research excellence. NUS is widely respected as a dynamic, innovative university, and a pioneer of new approaches in education, research and enterprise.

Our global reputation is strong as one of the top 2 universities in Asia, and among the top 25 universities in the world, according to the recent Times Higher Education World University Rankings 2014-2015 as well as the 2014/2015 Quacquarelli Symonds (QS) World University Rankings.
In the 2014 Academic Ranking of World Universities, which only considers research impact, NUS jumped 23 places to 111th, the highest placing for a Singapore university to date, with strong improvements in Economics/Business, Social Sciences, Natural Sciences & Mathematics and Physics.

Last month, the Academic Ranking of World Universities released an alternative set of ARWU rankings in which the criteria of Nobel prizes and Fields Medals was removed. In this ranking, NUS moved up 41 spots to 70th in the world. The ranking also places NUS among the top 10 universities that have the largest rise in their positions after excluding the Nobel Prize and Fields Medals “Award Factor”.

The entire NUS community has contributed to these achievements. I would like to recognise, in particular, the superb leadership and contributions of our Board and my senior colleagues, Provost Tan Eng Chye, Deputy President (Research and Technology) Barry Halliwell, Deputy President (Administration) Joseph Mullinix, CEO Enterprise Lily Chan and Vice President (Research Strategy) Ho Teck Hua.

Reflecting on the questions posed by Peter Ho, I believe there are key parts of the existing NUS formula that continue to be vital for our success. We must keep a very strong focus on these. They include:

our singular and powerful emphasis on talent;
continual educational innovation;
building global research peaks; and

leap-frogging forward through strategic partnerships with top institutions here and overseas.

However, even as we continue to build on these, it is also true that we must make strategic adjustments to other parts of the NUS formula, to give fresh impetus to our progress and further steepen the trajectory of our growth.

This is needed because our external environment is changing profoundly and competition is even more intense. In particular, our good progress must not make us complacent, but instead drive us to reach for even higher peaks of excellence.
So, which parts of the NUS formula should we seek to transform?

One way to think about this key question is to return to the NUS Vision, which is to be a “Leading Global university centred in Asia, influencing the future”.

Today NUS is already widely regarded as a leading global university with the special Asian academic expertise, insights and connections that make us centred in Asia.

However, even as we build further as a “global university centred in Asia”, I believe the time has now come for us to put a transformative focus on the latter part of our vision, that is on “influencing the future”.

This may sound overly ambitious, so please let me explain what I mean.

And I would like to do so through the perspective of an occasional artist.

When I start on a new painting, I often don’t have a fixed idea of the exact way the final painting would look. Instead, as one major part of the painting is finished, it creates new possibilities which shape the way I would paint the next section, and eventually how the completed work would appear.

To illustrate, here is a sequence of photos of a Chinese ink painting I did last month, which I developed in three parts.

Three parts, because I wanted to use these as a metaphor for the 3 big areas which NUS should further develop that can significantly contribute to influencing the future related to them – in other words, to make use of NUS’ present strengths to paint exciting new parts of the future.

I started with this tall solid peak – you could think of it as the broad based foundations of excellence which you have helped NUS build over the years.
For the first part, I changed the trees at the side of the mountain into boulders, and added a series of ascents leading to a peak from which eagles soar.
Part TWO - I extended the base of the mountain, added a forest to its top and created a thriving settlement of houses around it.

Finally, for part THREE, I inserted a flat-topped mountain to the right with lush terraces supporting a busy market.

In an analogous way, I believe NUS should help “paint the future” by re-doubling our commitment and efforts in three big areas.
First, further strengthen our emphasis on preparing future-ready graduates.

Second, make NUS the most vibrant university enterprise ecosystem in Asia, and a key contributor to Singapore’s global aspirations in this area.

Third, translate and apply our research in transformative ways, especially in strategic areas for Singapore.

Future-ready Graduates:

Let me now speak about PART ONE – doing even more to ensure our graduates are future-ready.

One of the most important ways NUS can influence the future is through our graduates and alumni.

Our university is proud that for more than a century, our graduates have been leaders in so many fields, and played key roles in the transformation of Singapore and the wider region. An outstanding example is our eminent alumnus, Mr SR Nathan, the Sixth President of Singapore, who has kindly graced this event with his presence.
Yet, for NUS to **continue** playing this role successfully, we need to adapt our education to better prepare our graduates for a very different and faster-paced future. In particular, there are three important global trends that we must pay close attention to. These are:

- job polarisation;
- massification of higher education; and
- employer-reported skills mismatches in fresh graduates.

**Job polarisation is a well-described phenomenon in the US and Europe.**

This figure shows job growth in the US over 3 decades¹.

![Change in U.S. Employment By Skill Group](image)

As we can see, there was robust growth in high-skill and low-skill jobs.

Most of us here would be happy that academics and research scientists are in the high-skill job category, together with doctors, financial managers, and other professionals. I believe that even university Presidents might qualify for this category.

Middle–skill jobs, however, only grew very modestly. In fact, during recessions, most of the jobs lost were in this category.

The key point here is that routine jobs that don’t require much flexibility or abstract thinking, are likely to be replaced by automation and computerisation.²
In contrast, jobs requiring complex problem solving and interactions, and deep skills, are likely to grow. For example, those with the skills to create or improve technology, or to use it effectively in their work, such as engineers, software developers, and financial analysts will be in strong demand.\(^3\)

These major changes in the nature of work are taking place against the backdrop of rapid massification of higher education.

By 2020, China and India alone are projected to have 65 million students in tertiary education.\(^4\) In Singapore, by 2020, four out of ten Primary One students will be able to study in our local universities.

This means that many more graduates will enter a future job market where the types of jobs available will change at a much faster pace. Universities will need to ensure that their graduates would have the appropriate knowledge, qualities and skills to succeed in these circumstances.

Yet, in a recent study by McKinsey, employers around the world reported a gap between the skills that they need and what they were seeing in fresh graduates.\(^5\)

The practice of training individuals with the specific skills for a particular job is of course an ancient one.

In the Tang dynasty for example, to be selected for the military, you had to be able to shoot arrows while riding a horse. In addition, you had to be 6-feet tall and able to carry 5 bushels of rice 30 paces.\(^6\)

The Tang Office of Supreme Medicine ran structured training programmes which taught students the skills of medical practice. Here are two of the more exotic examples from a book by Charles Benn.\(^7\)

“For tiger bites – wash the wound liberally with molten iron.”
To staunch bleeding from a wound inflicted by a metal weapon, mix pollen from cattail and angelica, mix with ale and ingest. Or plaster with spiderwebs, or apply human semen, or drink 10 pints of urine”.

Today, we are lucky that tiger bites are rare and modern treatments come in somewhat more palatable forms.

In relation to the modern day worker, however, there is a serious point I would like to stress.

Training in the specific knowledge and skills for a particular job MUST be combined with the development of a set of general skills and qualities that apply across job-sectors. This will enable the individual to innovate and excel in a specific job, while being equipped to take on new types of jobs of a different nature, if necessary.

These skills include critical thinking, intellectual breadth, cross-cultural effectiveness, strong communications ability, and personal qualities such as initiative, inner resilience, teamwork (inclusiveness) and integrity, what I have termed “iNUS qualities”.

Indeed, the skills rated most highly by employers in the McKinsey report included work ethic, teamwork, communications, problem-solving and hands-on training in the discipline.  

While the three global trends of job polarisation, massification of higher education, and skills mismatches are not fully in play in Singapore yet, NUS has already started work in recent years to help ensure that our graduates will be prepared for such a future.

This morning, I would like to share a big-picture summary of how all these different educational programmes fit together and the areas for further emphasis.

Rigour, critical thinking, and our distinct global-Asian approach, remain at the core of teaching in our Schools, but going forward, we will further deepen the involvement of industry and employers in our regular curricular reviews.
We are expanding the use of technology-enhanced learning, and creating many more experiential learning opportunities to allow our students to develop iNUS qualities. So far, we have launched 15 internal Blended Learning Online Courses (iBLOCs) and these have worked well. However, we need to accelerate the pace of adoption of technology-enhanced learning and to intensify its transformative impact on our teaching. To drive this, we will earmark an additional $5 million to the Learning Innovation Fund – Technology (LIF-T) under the Provost’s Office.

This year, we also launched the grade-free first semester system.

This is meant to encourage our students to choose their courses based on their learning needs and interests, rather than on optimising their grades. We hope our students will explore, experiment and discover their passion through the courses they take and co-curricular activities they pursue.

This dovetails with our plans to introduce a new General Education framework in AY2015. It will provide sets of modules which are more coherently designed to further broaden our students’ intellectual base along 4 themes, namely:

- Human Cultures
- Quantitative Reasoning
- Thinking and Expression
- Singapore Studies

Over and above these, we are putting a major focus on three areas that will help NUS students better identify their career interests and develop more job-sector specific skills.

For a start, the NUS Career Centre has been repositioned as the Centre for Future-ready Graduates. We will be providing about $5 million more each year for the Centre’s work, as it grows to its steady state.

One major issue is that many students are not familiar with the range of possible job opportunities and their requirements, or only think about these very late. To address this, the Centre will provide more personalised career advising from Year 1. This will ensure that students will have ample time to understand their own career interests, and to pick the appropriate mix of courses and internships to prepare for these. In
addition, the Centre is substantially enhancing and expanding its career preparation programmes, and adding new leadership development courses.

**Well designed project-based work** can be a powerful way for students to acquire deep skills in an area, while developing useful general skills and qualities.

A good example is the NUS FSAE (Formula-Society of Automotive Engineers) project. Our Faculty of Engineering started this in 2001, because some students wanted to build a Formula race-car for the intervarsity competition in the US. Each year, the students build a new car from scratch, and this requires them to master specific skills in various branches of engineering. But the students also gain many general skills in the process, in terms of exposure to other academic disciplines, as well as the experience of managing a limited budget and short time-lines, and the need to work as a team and with many external parties.

The FSAE project has been immensely successful and paved the way for the much larger Design Centric Programme in the Faculty. The multi-semester project work in this Programme allow the students to actively gain from the cutting-edge research being carried out by their Professors.
We will be extending such effective, project-based learning in other parts of the university.

Along the same lines, internships have also been made compulsory for students entering Engineering and Computing, and are being extended in other Schools. They will be carefully designed and implemented to make sure that our students gain specific and general skills in the process.
Taken together, these initiatives will make a big difference for our students, and help prepare them for the changing world of work ahead.

But we need to do something further, which will be much more challenging.

As Albert Einstein noted:

![Image of Albert Einstein](http://commons.wikimedia.org/wiki/File:Albert_Einstein_Head.jpg)

> Imagination is more important than knowledge.

> For knowledge is limited ...., while imagination embraces the entire world, and all there ever will be to know and understand.”

For our students to be truly future-ready, they should be in an environment that thinks boldly about the future, and imagines novel ways in which it might develop.

Earlier this week, NUS was honoured to host TechCracker 2014 together with the Li Ka Shing Foundation, Horizons Ventures and Vertex Venture Holdings. The event showcased innovative companies with cutting-edge technologies that have the potential to create wide-ranging change:

For example, one of them is using cell-culture techniques to grow leather as well as meat, which could perhaps, one day, make cows redundant.
Another company had invented eye-glasses which allow you to manipulate virtual objects and computer screens while interacting with other people, somewhat similar to what you would see in movies like Matrix or Ironman.

Companies like these may succeed in some cases, causing new business disruptions, or they may fail. The developments they trigger may be unsettling in some ways, but very exciting in others.

Regardless, for our students, there is great advantage in being part of an academic community that is close to the front-edge of nascent change, which is enterprising and imaginative in devising novel new solutions through its research.

Through this exposure, our students would hopefully be inspired to see beyond the conventional limits of the possible and to seize new opportunities to create value. NUS as a world-class research university provides such an environment and we need to find additional ways for our students to participate in, and to gain from, the cutting-edge research of our faculty. In addition, we should do even more to further enhance the entrepreneurial culture of our campus community.

**NUS as Asia’s Most Vibrant University Hub For Entrepreneurship**

This brings me nicely to PART TWO of my painting, and to our second big thrust, which is **to make NUS the most vibrant university enterprise ecosystem in Asia, and a key contributor to Singapore’s global aspirations in this area.**

It is heartening that entrepreneurship has been very much in the news of late, because this is an area where NUS has been promoting for many years, driving innovation & enterprise at both the university and regional level.

There are so many on-going initiatives that I will not attempt to describe them here. Instead, I will largely focus on what has been achieved in this space by our students and recent alumni.

In less than 10 years, this enterprising community has set up more than 350 start-up and spin-off companies. Nearly $120 million dollars have been raised in the last 5 years from venture capitalists and financial backers. Twelve companies have been acquired or sold, the most recent being Zopim.
The pipeline of promising new start-ups is also very strong. This is because of the growing and buzzing entrepreneurial ecosystem in NUS today.

Some of you may not be aware that up on the ridge, we have a lively critical mass of more than 1000 entrepreneurial students, many of whom are alumni of the NUS Overseas College programme. They work in incubators there and some stay in the NUS Enterprise House at PGP Residences.

They are supported by mentors and angel investors and in turn, attract other companies and business investors.

Just outside the NUS campus, together with partners SingTel Innov8 and MDA, NUS Enterprise has also played a key role in the success of Block 71 at Ayer Rajah Road. The Economist magazine profiled this in January 2014, in an article entitled “What entrepreneurial ecosystems need to flourish”. Block 71 was described as “the world’s most tightly packed entrepreneurial ecosystem”.

Our most important source of entrepreneurial students is the NUS Overseas College programme, which provides students the unique opportunity to intern with start-ups at entrepreneurial hubs around the world, while taking classes at our partner universities. Today we have 6 NOCs, which cater to about 200 undergraduates each year.
With these strong foundations, we are well-poised for an Enterprise take off.

This morning, in the interests of time, I will just cover our plans for growing the student enterprise community and ecosystem in NUS.

We will expand our NOC locations from 6 to 8, and raise the number of NOC students to 300 each year.

To cope with the rising demand to house NUS start-ups, we will increase our incubator capacity on campus, and grow the entrepreneurial student community to more than 2500.

At the same time, NUS is taking up additional space at Block 71, to cater to the rising number of start-ups supported by NUS Enterprise at this site.

Most NUS start-ups will grow within Singapore, but some will need to scale up much more quickly based on facilitated access to much larger markets. To enable this, NUS Enterprise will enhance its existing NUS Launchpad@Silicon Valley and establish the NUS-Block71@Silicon Valley in San Francisco in collaboration with SingTel Innov8 and IDA. We will also grow the NUSLaunchpad@Suzhou based out of our Research Institute there.
To drive these thrusts, an additional $10 million will be invested in the work of NUS Enterprise.

To appreciate the practical impact of all these, I would like to relate what NUS Computer Science alumnus, Wu Wenxiang, told me over lunch recently, about his experience as one of the founders of Zopim.

In the early days, in 2007 and 2008, he and his fellow co-founders were forced to work out of any empty room they could find in the PGP Residences. Then, a Manager from NUS Enterprise found them some rent-free space in one of our incubators which allowed them to speed up their work.

Zopim was one of the first NUS-incubated companies to use our launchpad in Silicon Valley. There they were able to market their product to several business partners, and quickly increase their new sign-ups. This year, one of these partners, Zendesk, acquired Zopim for a reported US$30 million.

In addition to these efforts to boost student entrepreneurship, parallel work involving NUS faculty and graduate students, is also in progress.
NUS Enterprise has intensified its scouting for promising but early NUS Intellectual Property, expanded its work on IP mapping and bundling, and substantially strengthened the support provided to commercialise the IP. We are also shifting our focus beyond the ICT (Information & Communications Technology) sector, to other types of technology-driven start-ups and spin-offs.

NUS faculty have been increasingly active in commercialising their Intellectual Property, including spinning off 60 companies. Several such as Clearbridge Biomedics and ViSenze are making very exciting progress towards wider spread application and commercialisation.

**Making NUS a leading university hub for entrepreneurship and start-ups in Asia, is a highly strategic goal.**

It will position NUS as a magnet for promising entrepreneurial students and faculty. It will help draw investors, venture capitalists and business partners, as well as large high-tech corporations for potential acquisitions. In turn, this would facilitate the commercialisation of NUS IP and promote the culture of academic entrepreneurship on campus.

**Very importantly, it would enable our university to be a major contributor to Singapore’s plan to create a vibrant and productive enterprise ecosystem, one which spawns innovation and creates new economic opportunities and jobs.**

**Transforming Nus’ Translational Impact:**

I move now to Part THREE of my painting, which was to add a flat-topped mountain to the right with lush terraces supporting a busy market.

This is a rather literal allusion to NUS’ third big thrust which is to influence the future by substantially growing the translational impact of our research.

In research, NUS has achieved broad-based excellence and is among the world’s leaders in several fields. This work is valuable because it advances the frontiers of knowledge, and nurtures and inspires talented students and researchers.
Our research expertise and discoveries are also being applied to create additional value by advancing one or more of the following:

WEALTH, that is economic development;

HEALTH, that is improving health and the diagnosis and treatment of disease; and

SOCIAL GOOD and POLICY.

I want to stress that world-class basic research strengths are crucial for NUS and Singapore, because they open up unique opportunities for great translational impact, in ways that would otherwise not be possible.

This is in contrast to just focusing on more short-term, applied and commissioned research.

Over the years, I have back-packed through many parts of China. Each time, I marvel at its achingly beautiful mountains, secluded villages, remote ravines and exotic towns.
In many places, the remarkable inventiveness of the ancient Chinese is also abundantly on display. Indeed, China was responsible for many inventions which were “world-firsts”, the best known ones being paper, printing, the compass and gunpowder.

I was particularly fascinated by descriptions of the early use of gunpowder in Chinese warfare. Some of the weapons had wonderful names such as the “hundred aimed bow-like arrow shooter” (百矢弧箭 bǎi shǐ hú jiàn) and the 烧贼迷目神火毬 (shāo zéi mí mù shén huǒ qiú) “bandit burning vision-confusing magic fire ball”.

It is not entirely clear how effective these weapons were, although a passage from the history of the Song dynasty described the effect of a cannon used in a seige:

“He lit it and a clap of thunder was heard, the walls crumbled, and smoke covered the sky. Many soldiers outside died of fright.”

Despite its history of impressive achievement, this leadership in science and technology was not sustained into modern China. The reasons are complex.
I recently had a fascinating discussion about this with our eminent historian of China, Professor Wang Gungwu. He felt that one contributory factor was that the ancient Chinese developed many new technologies which they refined empirically but they did not generally pursue the underlying scientific bases nor develop the theoretical underpinnings for them.

This contrasts sharply with the later development of the modern scientific method in Europe, where basic science and its application are intimately entwined.

So how would NUS go about transforming the translational impact of our research?

Even as we continue to build further on our research strengths, we will identify strategic areas, where we will proactively work with our local partners and industry to grow major clusters of translational programmes which can have a much larger impact.

I would like to illustrate what I mean with 3 examples which have started well and which we intend to build further:

First, WEALTH: contributing to economic development by growing strategic R&D clusters, such as in the Offshore and marine engineering sector.

Today, Singapore is the largest builder of jack-up rigs\(^8\) and Keppel is the world leader in design and construction of these sophisticated structures.

However, as oil-rigs are being deployed in much harsher environments, with huge waves or arctic conditions, the R&D challenges are much more complex and harder to solve.
The $75 million Keppel-NUS Corporate Lab launched last year, with support from the National Research Foundation, will help address this. The collaboration leverages NUS’ research strengths in a broad range of areas. Teams of NUS and Keppel researchers are working together on challenging R&D questions. Through these, we hope to help Keppel develop innovative real-world solutions, while making major novel basic research discoveries.

To develop the cluster further, NUS is working with A*STAR to design and construct a state-of-the-art deep-ocean basin research facility on the NUS campus, with funding from the National Research Foundation. This national facility will boost Singapore’s R&D in this area and draw significant global and local industry collaborations. The resulting cluster of R&D partnerships should further raise Singapore’s position as a key hub in this important economic sector.
Beyond offshore and marine engineering, NUS will adopt the same approach to work with major industry and partners in Singapore, to build similar clusters around areas where NUS has world-class research strengths.

A key new initiative is the setting up of a Centre for Healthcare Innovation and Medical Engineering (CHIME). This centre will have an initial funding of $15 million, and is anchored by our Schools of Medicine, Engineering and Computing, and the National University Health System. It will focus on developing innovative healthcare technologies that can address the needs of functional ageing, working very closely with industry, ASTAR and many key local partners. CHIME will bring ideas and problems from the clinic to the laboratory, and devise solutions that will go to industry and patients.

To provide the R&D, prototyping and testing facilities needed by the Centre, NUS will be constructing a new research building in the Faculty of Engineering, at the site of the current Visitor’s Lodge. The new building will also enable us to link the DSI building with adjacent Engineering facilities, creating a functionally integrated complex for research, teaching and student project work.
Second, HEALTH and WEALTH – NUS improving the diagnosis, prevention and treatment of diseases, while contributing to economic development.

Ten years’ ago, I travelled to Tibet to catch the local horse races in Naksu.

Along the way, I stopped in a small town where I caught a performance by some Shaolin monks. It was quite amazing – they hit each other on the heads with staves, and I took this photo of one of them bending an iron rod with his throat.
At the end of the show, I gave them a small tip and as I was leaving, two of the monks ran after me and shouted, “stop sir, you have a very bad back. We can tell by the way you walk and we can treat it with our kungfu”. I stopped to talk to them because I do have a bad back problem and thought this was an impressive display of predictive medicine.

But then, the monks went on to say “by the way, we can tell that your liver is in bad shape and there is also a problem with your kidneys.”

That was when I decided to beat a quick retreat – the last thing I wanted was to have to try to escape while being treated by two Shaolin monks who could bend iron rods with their throats.

Closer to home, impressive and real advances in predictive or precision medicine are being made in NUS and the National University Health System (NUHS).

In 2008, after 6 years of basic research in the field, the Dean of the NUS Yong Loo Lin School of Medicine, Yeoh Khay Guan, led the formation of a large Consortium involving NUHS, ASTAR institutes, Duke-NUS Graduate Medical School, National Cancer Centre and hospitals in Singapore, to tackle the problem of stomach cancer.

In Singapore and our region, one out of 50 men and one of 100 women are at risk of developing stomach cancer. This is often diagnosed late, leading to poor outcomes.
The only way to detect the cancer early is to introduce a scope into the stomach but there were several problems to overcome:

It would be more cost-effective to only scope those at high-risk of stomach cancer, but how do we identify these individuals?

Very early stomach cancers are hard to see using normal scopes, so how can these be detected more reliably?

Finally, when early cancers are detected, what is the best way to remove them?

Khay Guan’s consortium has pioneered important advances in all these areas. They have found a number of markers which identify high-risk individuals.

Working with NUS engineering Professors and with industry, they have developed novel scopes which allow the detection of very early stomach cancers. One of the team members, NUS/NUHS Professor Lawrence Ho worked with NTU engineering collaborators to develop a robotic system that can remove early cancers through the scope, without the need for open surgery.
Khay Guan’s team has followed a group of 3000 high-risk people with annual scopes and have detected and removed 21 Stage Zero and Stage One cancers so far.

The Consortium has published more than 150 scientific papers, spun off 2 medical device companies, and attracted more than $20 million of collaborations with a range of industry partners.

Another great example is the Translational and Clinical Research Flagship programme led by Associate Professor Chong Yap Seng from the NUS Yong Loo Lin School of Medicine and NUHS. This unique programme is producing cutting-edge results with the potential to change clinical management in conditions such as diabetes and depression during pregnancy. It has also received more than $28 million of industry funding, and attracted industry leaders in nutrition such as Nestle, Abbott and Danone to set up research teams here to collaborate with the programme. We will be working hard with our partners to grow this sector substantially.
Third, SOCIAL GOOD, POLICY and IMPACT: NUS making important contributions that help address issues of significance to Singapore and the world.

I would highlight here, an example of important work NUS is doing in the area of risk resilience and mitigation.

Under the visionary leadership of Prof Duan Jin-Chuan, the NUS Risk Management Institute has created a unique “public good” Credit Research Initiative. This provides the probabilities of default for more than 60,000 companies in 106 economies on a daily basis and makes the results freely accessible.

This ground-breaking initiative has influenced work in this field, and attracted collaborations with several financial institutions.

Even more exciting, the International Monetary Fund (IMF) has been working with RMI to develop a stress testing system centred on our corporate default prediction model and RMI’s database.

The IMF and RMI are expected shortly to enter into a formal research agreement on this stress testing system and its further development. The IMF is looking to adopt RMI’s stress testing system into its Financial Sector Assessment Program, which
involves periodic assessments of systemic stability of its member countries, including the 29 jurisdictions that have been deemed systemically important financial systems and which are assessed every 5 years.

The 2008 global financial crisis has underscored the critical importance of ensuring global financial stability. It is very heartening that NUS, through the pioneering work of RMI, can make a contribution towards the achievement of this vital goal.

There are several other areas where NUS can make similar contributions, by enhancing the translational impact of our research. These can draw on our strengths in social policy innovation and in Asia-related studies across NUS.

Our Faculty of Law is also well-poised to do so. Amongst others, its research centres in Law and Business, Asian Legal Studies, and International Law, can contribute much to the legal sector developments in Singapore and our region.

**In summary, transforming the translational impact of NUS’ research will substantially unleash the societal and economic advancement potential of our research strengths. Beyond our major contributions to advancing the frontiers of knowledge and nurturing research talent, this will further and considerably enhance the value that NUS brings to Singapore and the world,**

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**NUS 110, SG50**

This commitment and tradition of service to the advancement of our country has been one of 2 consistent themes in our university’s history since our founding in 1905. The other is our unwavering dedication to excellence and aspirations to global prominence.

For example, in 1949, Malcolm MacDonald, the first Chancellor of one of our predecessor institutions, the University of Malaya at Singapore, said at its Foundation ceremony:
“We have faith that this university can serve far more than local purpose, that its fame will grow until it takes its high place among the seats of learning which bind all peoples...”

Malcolm John MacDonald
First Chancellor of the University of Malaya at Singapore (1949-1961)

In 1965, President Yusof Ishak noted in his installation speech as the Chancellor of the University of Singapore that:

“Our University must be constantly alive to the needs of our society if it is to fulfil its role. .......

And if we do our best, the University of Singapore will be as illustrious as the name of this new nation already is in several fields of administration and enterprise.”

President Yusof Ishak
Chancellor of the University of Singapore (1965-1970)
In 2015, NUS will mark its 110th anniversary and celebrate Singapore’s 50th Anniversary as an independent republic.

The NUS community has worked very hard and we have come a long way very quickly, over the past 5 decades. Yet, past performance is no guarantee of future success.

Having come this far, we have to think carefully about the changes we have to make to ensure that NUS is well-positioned for a volatile and complex future.

As we all know, it is extremely hard to predict the future.

The Delphic Oracle was successful, in part, because the suppliants had to decide how to interpret her prophesies. There is a well-known example of Croesus, the King of Lydia, who asked the Oracle if he would defeat the Persians. ⁹

The Oracle replied: “If Croesus crosses the river Halys, a great power will be destroyed.”

Croesus thought this was a very positive response. He enthusiastically crossed the river Halys to attack the Persians, and suffered a huge defeat which destroyed his great army.

Once again, the Delphic Oracle had been proven right.

For NUS to do well in the future, there are key parts of the current NUS formula which we must keep building on. These include:

Growing the size and quality of our talent pool;

Leading in educational innovation;

Heightening our world-leading research peaks;

Developing strategic partnerships.

But the next big inflexion in NUS’ upward trajectory will require us to do this, and substantially more, to transform other parts of the NUS formula, to help influence the future.
In particular, we must do even more to ensure that our graduates are future-ready; to make NUS the most vibrant university enterprise ecosystem in Asia; and to transform the translational impact of NUS research, working closely with local partners and industry.

All these will not be easy.

The Mustard Seed Garden Manual of Painting\textsuperscript{10} first published in China in the 17\textsuperscript{th} Century, has this advice for painters:

“If you aim to dispense with method, learn method.

If you aim at facility, work hard.

If you aim for simplicity, master complexity.”

To this, I venture to add one more line:

“If you aim to predict the future, use your present to create the future”.

NUS has shown through our past efforts and achievements, a strong sense of imagination; a powerful determination to succeed, a huge capacity for hard work, and the boldness and ability to adapt and transform ourselves to excel.

Today, we are well-poised to make use of our considerable present strengths to paint exciting new parts of the future.

With the leadership, commitment and efforts of our Board, faculty, staff, students, alumni, benefactors, partners and friends, we are indeed well positioned to push much further forward and upward, to make NUS, a leading global university, centred in Asia INFLUENCING THE FUTURE.

Thank you.

All images © National University of Singapore including photos from President Tan Chorh Chuan’s own collection (unless otherwise stated).
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