TUM Asia

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digest

July - September 2015 Issue

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director's message

As our world continues to advance, we witness the wonders of engineering, science, and technology playing important roles in shaping and improving our lives. Following the vision of our parent university, we at TUM Asia try to continuously give back to the society by investing in the next generation. As Singapore celebrates its Jubilee birthday in August, our contribution to Singapore's success would not have been possible without the 50 years of strong bilateral relations between Germany and Singapore.

TUM Asia recently celebrated the official campus launch at the new SIT@SP Building. With new and bigger facilities, we continue to reaffirm our commitment to Singapore through our industry relevant programmes and a new exclusive scholarship. To learn more about the SG50 scholarship, flip to pages 4 to 7.

In line with the topic of commitment, TUM Asia ran its third and final run of the "Building The Future" project, which was initially launched at our 10th anniversary celebrations in 2012. This project provided an opportunity of a lifetime for two pre-university students from underprivileged families to visit the TUM campus in Munich, Germany. Both beneficiaries were able to work in state-of-the-art laboratories on a project that they felt would benefit Singapore. I was pleased to learn that the beneficiaries came home inspired and encouraged by what they have learnt. Read about their experience on pages 8 to 9.

We also had the great opportunity to hear from Martin Hayes, President of Robert Bosch SEA, on the impact that Bosch has had not only on the rest of the world, but also in Singapore. As a leading global supplier of technology and services, Bosch is constantly and actively shaping the society by developing ground-breaking and innovative technologies. To learn more about Robert Bosch SEA's contributions to Singapore's developments, turn to pages 10 to 11.

Last but not least, TUM Asia had the pleasure of jointly organising a scientific dinner talk with the German Academic Exchange Service (DAAD), given by Prof. Thomas Hofmann, Senior Vice President of TUM. This talk was meant to bring more awareness of the food industry to Singapore. Turn to pages 14 and 15 to learn more about the importance of a scientific dinner talk.

We hope that you will enjoy this issue as much as we do. The team at TUM Asia would like to wish Singapore a very Happy Birthday! We look forward to many years of further investments, partnerships and friendships in Singapore.

Yours Sincerely,

Dr. Markus Wächter
Managing Director, TUM Asia

New Campus, Greater Commitment To Singapore

> **With a new campus, we pledge to continue to empower talented individuals.**

Dr. Markus Wächter
Managing Director, TUM Asia

Photo: Playground Pictures

This article was contributed by student writers, Jonathan Ong and Tan Xin Yi (both whom are standing at the front of the picture on the bottom right), in collaboration with TUM Asia

On the 24th of April, TUM Asia was joined by staff, students, and established guests to celebrate the official opening of its new campus at Singapore Institute of Technology at Singapore Polytechnic (SIT@SP). Prior to the start of the event, guests were invited to the cocktail reception.

The event kicked off with congratulatory speeches by representatives from the key organizations that have contributed to TUM Asia's success. They include Ambassador of the Federal Republic of Germany to Singapore, His Excellency Dr Michael Witter; Vice President for External Relations, Singapore Institute of Technology, Associate Professor Yee Fook Cheong; Deputy Principal of Singapore Polytechnic, Mr Lim Peng Hun; Senior Vice President for Research and Innovation at TUM, Professor Thomas F. Hofmann, and Managing Director of TUM Asia, Dr Markus Wächter.

"TUM Asia, a pioneering project that took its first step 12 years ago, is now taking its next step into the future."
Professor Thomas Hofmann

TUM Asia also reaffirmed its commitment to Singapore by launching a new exclusive scholarship to commemorate 50 years of bilateral relations between Germany and Singapore, as well as Singapore's jubilee year, also commonly known as SG50. The new SG50 Scholarship will be exclusively awarded to four Singaporeans: two who enrol in the Masters programmes, and two for those enrolling in Bachelor programmes. The Scholarship, which will fully cover the tuition fees of the scholars, is also TUM Asia's commitment to the next generation to shape the future through holistic and practical education, combining German engineering and Asian relevance.

Following the speeches, a ribbon cutting ceremony commenced followed by a lion dance and a campus tour led by TUM Asia's students. Jonathan and Xin Yi, two of the students leading one of the groups, were responsible to bring the industry guests around the various facilities.

"My partner and I took turns in explaining the different purposes of the various rooms; a small tutorial room allows for more interactions and a lecture hall would be used for a mass lecture."
Tan Xin Yi
Student, Bachelor of Science in Chemical Engineering

For some of the campus guides, having to talk to a big group of strangers was a challenging situation for them. "At first, I felt very nervous having to face such a big audience. However, as the tour went on, I was able to overcome my fear. I felt that this was a good experience as I learnt to be confident in public speaking", mentioned Xin Yi. "Not only was I able to express my views as a student of TUM Asia, I was given the privilege of exchanging conversations with respectable people in the industry who were very knowledgable in their fields of expertise", commented Jonathan.

After the campus tour, the guests were treated to German food and beer. Everyone had a memorable time celebrating the partnerships and success of TUM Asia.

"Being a part of this event allowed me to have a greater understanding of how unique TUM Asia is and interacting with esteemed guests gave me more confidence of how my education is shaping me to contribute my part back to society."
Jonathan Ong
Student, Bachelor of Science in Electrical Engineering & Information Technology

Prof. Hoffman (left) pictured with Dr. Wächter (right)

Photos: Playground Pictures

Building The Future

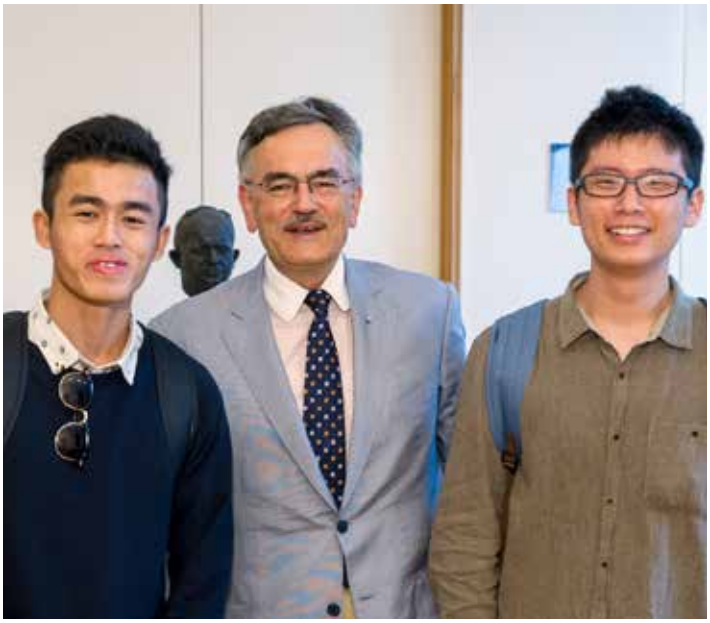
Indra (left) and Malcom (right)

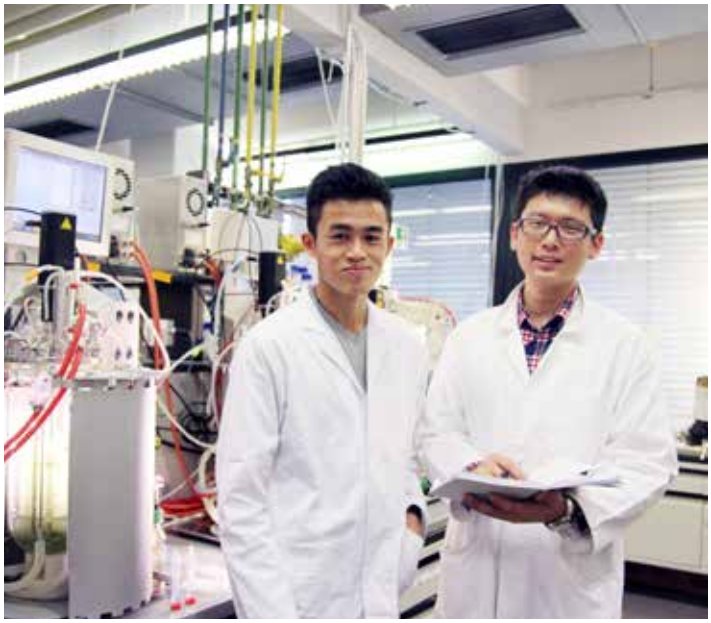
Throughout the years since the establishment of Technische Universität München (TUM) in 1868, TUM has remained committed to innovative progress in scientific and engineering fields that in turn benefit the society. As a premier research institution that adheres to the vision of its parent university, TUM Asia saw it fitting to continue to give back to the community by investing in the future generation.

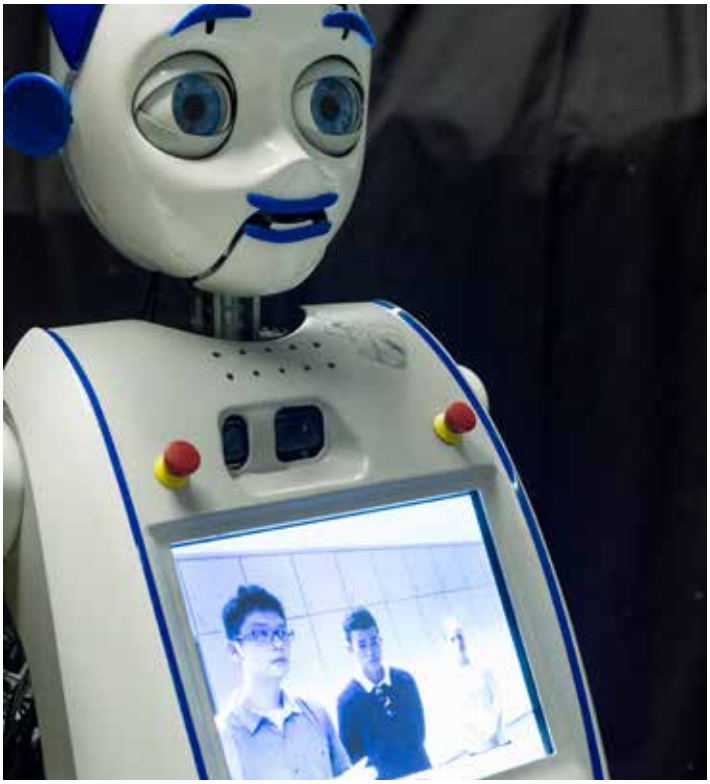
As part of TUM Asia's 10th Anniversary celebrations, TUM Asia partnered with The Straits Times' School Pocket Money Fund (STSPMF) to launch the "Building the Future" project in December 2012. This project, which was scheduled to run for three years, aims to inspire the youth in Singapore by showing them that the future is in their hands. Each year, two post-secondary students under the STSPMF scheme were given the opportunity of a lifetime to visit TUM's home campus in Munich, Germany, and were exposed to the possibilities of working in the science and engineering fields from conducting experiments to interacting with nobel laureates. By immersing these beneficiaries in the environment of a highly reputable German university, TUM Asia strives to show them how they can make a difference in society with their own capabilities and ideas.

With 2015 being the last year of this project, as well as the year that Singapore celebrates its jubilee year, this year's two beneficiaries, Indra and Malcom, had to discover a project that they wanted to explore that they felt would benefit Singapore's society. Indra decided to embark on a project involving industrial chemistry. Malcom, on the other hand, chose to further develop a current project he is involved with into a larger scale. His project consists of using algae as a self-sufficient food source for fish.

During this trip, the beneficiaries not only toured and experienced the different faculties in TUM, but were also able to visit the Allianz Arena stadium and the Deutsches Museum; the world's largest museum of science and technology. While staying with separate host families, both beneficiaries were able to live independently and experience life in Germany, while bonding together.







Photos: Astrid Eckert

INDUSTRY SPOTLIGHT

Bosch

In this issue of Industry Spotlight, we speak to Martin Hayes, president of Bosch in Southeast Asia, to learn more on how engineering, science and technology has benefitted society, but particularly how Bosch has impacted Singapore's industry and the society as a whole.

Photo: Bosch

We understand that Bosch is the leading global supplier of technology and services. Could you tell us more about Bosch's core components in Singapore and what is their impact?

Mr. Hayes: Bosch has been present in Singapore since 1923. To-date, its operations are divided into the four business sectors of Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building technology. While most will be familiar with Bosch through its consumer-facing portfolio of automotive aftermarket products, power tools, and home appliances, a significant portion of Bosch's impact on Singapore actually happens unseen behind the scenes.

Bosch provides electrical, hydraulic and mechatronic components and systems that are deployed in large-scale industrial applications such as dams and oil rigs. The company also provides end-to-end solutions that ensure hygienic and efficient packaging for the food and pharmaceutical industries. Bosch's Thermotechnology business division provides large steam and water boilers, typically used in the factory, food and beverage, and hotel industries. In the area of security systems, Bosch's portfolio is not only limited to surveillance, fire detection and evacuation, and intrusion prevention, but also includes professional sound systems, intercoms, and public address systems. These solutions are installed in many Singaporean landmarks that often go unnoticed.

The Singapore government established the Smart Nation Programme Office in 2014 within the Prime Minister's Office that sets a strong impetus to capitalize on advances in cloud computing, ubiquitous communications, sensors and big data analytics to create an interconnected way of life in Singapore. Bosch Software Innovations provides the software layer that networks physical devices, collates data, and provides analysis to make technology smarter. The future development and growth for Bosch, particularly in Singapore, focuses on internet-enabled products and internet-based services.

Singapore is also the Asia-Pacific headquarters for Corporate Research and Advance Engineering Centre. Out of Singapore, Bosch continues to develop future-oriented technologies for the local and global market.

What are some achievements of Bosch since its inception in Singapore?

Mr. Hayes: Bosch's 'Invented for Life' imperative guides the actions of the company and shapes its strategic direction. Several notable developments in Singapore with a strong impact on the lives of its citizens demonstrate this.

The Marina Barrage, a dam across the Marina Channel, fulfils three objectives: the provision of a freshwater catchment reservoir, flood control, and a recreation activity area which are made possible by maintaining the constant water level in the Marina Basin. The Marina Barrage consists of a series of nine crest gates that are controlled by over 25 hydraulic cylinders from Bosch Drive and Control.

The combustion engine will continue to dominate the majority of vehicles on Singaporean road in years to come, but Bosch has taken pioneering steps into the electrification of the country's transportation infrastructure. Bosch was the appointed service provider of charging stations in the first phase of the electric vehicle testbed in 2010, where almost 110 charging stations have been installed across the island to-date. This infrastructure is enhanced with a comprehensive software solution that connects all

these charging stations to a central control system, and enables a host of useful applications.

Through the collaboration with experts from other domains within the industry, Bosch actively shapes the industry by jointly developing innovative, ground-breaking technologies. Several ongoing and successful collaborations illustrate this.

The Pre-Project Innovation Consortium, launched by the Singapore Economic Development Board, will enable Singapore to lead the adoption of cutting-edge technologies for green buildings that are customised for a tropical climate. Bosch is offering its Building Integrated Photovoltaic solutions to harness renewable solar energy from building facades, which is particularly suited for Singapore's urban, high-rise landscape with small roof surface areas.

Bosch participated in two research consortiums over the course of the past six years with A*STAR, the lead scientific research agency in Singapore – the MEMS Consortium set up to accelerate micro-electro mechanical sensor technologies as well as the A*CAR consortium to drive technological advancement and innovation in the automotive sector.

Bosch also committed to collaborate with information and communications technology service provider NCS's Solutions for Urbanised Future (SURF@NCS) initiative, as part of a larger ecosystem of global technology players, local start-ups, and research institutes to co-develop smart city solutions. The Smart Nation initiative in Singapore presents many opportunities for Bosch to benefit Singapore with its Internet of Things expertise.

With the changing economic landscape, what are some trends in Singapore and the Southeast Asia region that you believe will change the face of business in the next years?

Mr. Hayes: Rapid urbanization, industrialization, and a growing consumer market in Southeast Asia will present many opportunities for businesses in the coming years. These megatrends are especially relevant to Indonesia, Thailand, the Philippines and Malaysia, which are projected to account for about 70 percent of the regional GDP in 2025.

By the next ten years, urbanization is set to go up 1.4 times, with more than half of the population of Southeast Asia living in urban areas by 2025. The increase in purchasing power stemming from the rising middle class across Southeast Asia is leading to an increase in demand for technology that improve quality. Due to the effects of these megatrends, Southeast Asia is one of the fastest growing region for Bosch.

As Singapore celebrates SG 50 this year, does Bosch have any plans to share in the nation's birthday?

Mr. Hayes: On October 11, 2015, Bosch will be presenting the Symphony Orchestra of the National University of Singapore at the Botanic Gardens. The concert's sound system will be by Electro-Voice, a pro-audio brand wholly-owned by Bosch.

Being a part of an international industry network here in Singapore, Bosch is committed to developing talent here. What vision do you have for the young talents that join Bosch?

Mr. Hayes: At Bosch, we believe that the apprenticeship model is a progressive step in the Singapore education system that enables young graduates to get a head start in their careers, and thus heighten the attractiveness of the country's workforce.

The company's founder established the first apprenticeship program over 100 years ago. Since then, more than 100,000 young people worldwide have completed apprenticeships at Bosch. In 2015, Bosch plans to make 1,000 new hires across Southeast Asia, particularly in the fields of mechanical and electrical engineering, and software design and development.

We also understand that our Transport and Logistics students have joined Bosch as interns before. What do you see in our students or how could they contribute to Bosch?

Mr. Hayes: I firmly believe in the value of internships that benefits both students and companies, and my experience of working with apprentices in Bosch dates back to 1993 when I first took on a management role in the U.K. Age diversity is a driver of Bosch's innovative strength, and young apprentices are a source of fresh ideas and perspectives. Their academic knowledge can also offer best practices to improve the company's processes and operations.

Students with a strong background in engineering and technology are always in high demand at Bosch. In Singapore, as Bosch's Southeast Asia headquarters, interns have the opportunity to get involved in a wide variety of functions, including working in the fields of research and advance engineering, as well as software development.

Being a leader in the industry, what advice would you give to students and fresh graduates?

Mr. Hayes: At Bosch, we believe that one of the most important contributing factors to a holistic education is having hands-on work experience. Prior to graduation, a good source for students to gain work exposure is through internships. Companies ensure that interns gain meaningful experiences, while keeping a lookout for those with high potential for future recruitment. Students and fresh graduates must retain their appetite for learning and gaining new knowledge. The desire to seek out new ideas, to challenge the status quo, and to innovate are qualities that are sought after by employers. The pursuit of education should never be a mere paper chase or gaining theoretical knowledge, but also an acquisition of valuable practical work skills.

Aside from developing technical skills, apprentices should also improve critical soft skills in problem solving and working in a team, as well as acting independently and taking responsibility for their actions. Furthermore, they should strengthen their interpersonal and intercultural communication skills when placed in a multicultural environment. As a multinational engineering company, we seek graduates with real-world practical experiences in various fields who are keen to embark on a career in a multicultural environment.

STUDENT INTERVIEW

Balancing School & Sports

How can a TUM Asia student balance between school work and extracurricular activities? In this issue, the DIGEST team speaks to a current student who has it all under control; managing a busy schedule while representing Singapore for Volleyball in the recent 2015 South East Asia Games.

Michelle Tan
Bachelor of Science in Chemical Engineering
Final Year Student
Singaporean, 24 Years Old

Photos: Michelle Tan

From left to right: Michelle (bottom left) with her closest friends in university, Michelle (bottom right) with her volleyball team

Hi Michelle, we hear that you represent Singapore for Volleyball and you are involved in the 2015 South East Asia (SEA) games. What was the experience like?

Yes, I am in the Volleyball squad representing Singapore in the 2015 SEA Games. I feel extremely fortunate to have the opportunity to don the Singapore Jersey. To be able to represent the nation with my passion is truly an honor. As such chances to compete are hard to come by, my team and I trained really hard and gave our all for the games.

As a sportsperson, how did you end up studying engineering with SIT/TUM?

I was always interested in chemical engineering. I researched on universities offering the major and stumbled upon TUM Asia. Joining TUM Asia was one of the best decisions of my life. With the flexible academic schedule, I was able to make time for school and travelling for team trainings. I made many new friends and embraced the complete experience of university life.

How has frequent travelling prepared you for your Overseas Immersion Programme in Munich? Are you excited for it?

Yes definitely! Having travelled abroad with my teammates was one of the most defining moments in my life. We trained really hard and spent a lot of time together and bonded through our experiences. I will never forget how amazing it feels to be able to travel. Thus, I can't wait to spend time with my friends overseas at TUM's campus, immersed in a bigger science and engineering atmosphere, and experience the life in the shoes of a westerner.

As Singapore celebrates SG50 this year, how do you feel that your participation in volleyball has allowed you to contribute to Singapore's success?

I believe that being able to represent Singapore is definitely a great accomplishment. As long as my team has done our best, we have already become a part of Singapore's history in representing Singapore in the 28th SEA games. I am sure Singapore will be proud of us!

Do you think sports and engineering can contribute to Singapore in the next 5 years?

Yes, of course. Both areas are gaining strength and recognition in Singapore. Sports is gaining more recognition thanks to the success from table tennis, netball, swimming, basketball, and sailing. In the recent years, Singapore has been pumping funds in support of establishing a better foundation for athletes in Singapore, such as constructing the OCBC Arena and the new Singapore stadium. As for engineering, I believe that the industry can perform better. Due to recession, companies have been downsizing to meet optimal performance. However, engineering is a constant and it is important to our society. I certainly hope that the demand for engineers will rise when it is time for me to graduate.

You are a girl studying Chemical Engineering and playing volleyball for the national team! How do you feel about girls being engineers?

We are living in the 21st century. I do not believe in stereotyping. I firmly believe in equal opportunities and a non-biased etiquette. Long gone are the days of stereotyping and men being the dominant gender. You could also say that men should not be in choir, meaning that good bands such as 'Pentatonix' would have never existed. If people were to ask for my opinion on why girls should be engineers, it is because given the job scope of an engineer, one needs to be meticulous and precise, which is a general trait of a female.

We know that the TUM curriculum can be rigorous. What advice would you give to others who are balancing their studies and extracurricular activities?

School can be tough at times with exams and assignments. But at the end of the day, I always believe it is 'how much do you want it' that counts. If you really want to score in life, you will get going no matter how tough it gets. My piece of advice for those trying to maintain a high commitment activity out of academics; you need to be sure of what you want. At the end of the day, you have to be able to look back, and tell yourself 'Yea I did that!' I'd do it over and over again if I ever get the chance to.

Functional Chemosensation Dinner Talk

TUM Asia has been successful in leveraging the high academic standards of TUM as the foundation for industry-focused education programmes that equip graduates with relevant industry skills and prepare them for leadership roles in the global economy. With that, in a collaborative partnership between the German Academic Exchange Service (DAAD) and TUM Asia, a scientific dinner talk titled "Functional Chemosensation: Implications for Nutrition, Health and Wellness" was held at the Shangri-la hotel in Singapore. The dinner talk served to foster greater interaction as well as the academic transfer and exchange of knowledge between Germany and Singapore.

"TUM Asia is one of our strongest partners in Asia, we hope that we can continue to bring our knowledge of higher education and science to the world through our collaborative efforts."
Claudia Finner
Director
DAAD Information Centre Singapore

The speaker was Professor Thomas Hofmann, Senior Vice President of Technische Universität München (TUM). Also serving as the Chair of Food Chemistry and Molecular Sensors, Professor Hofmann is an experienced researcher and lecturer in the areas of functional chemosensation and its implications for nutrition, health and wellness. With Singapore steadily becoming an emerging global hub in the Food and Nutrition industry, Prof. Hofmann's presentation addressed topics that were extremely relevant and of critical importance to the research and development aspect of the industry.

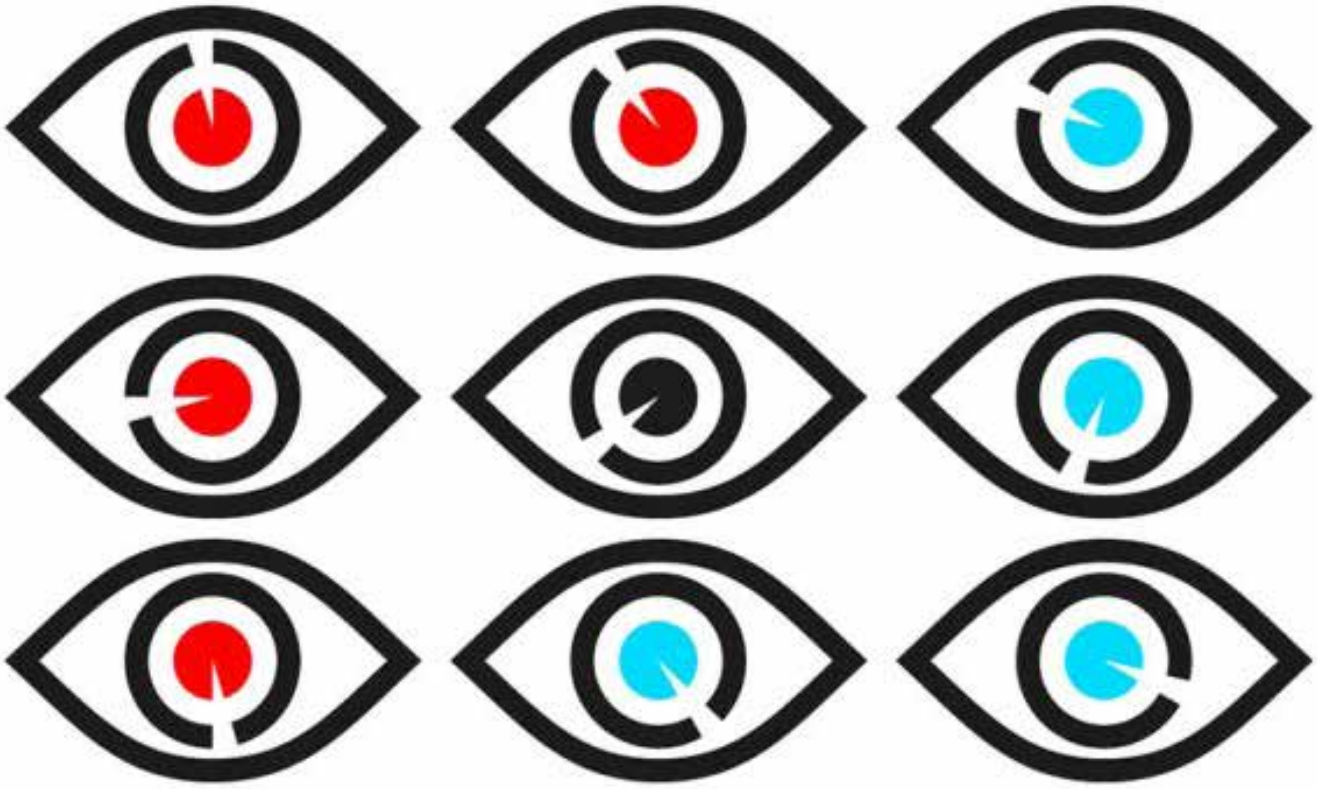
"Since TUM Asia's establishment in 2002, TUM Asia is honoured to be able to work actively with the DAAD and other prominent organizations and institutions in organizing and hosting events."
Dr. Markus Wächter
Managing Director
TUM Asia

For the betterment of science and technology, frequent interaction and exchange of ideas are very important. A technical university, such as TUM, should be continuously providing students with the relevant skills and what the industry requires. "There needs to be more convergence of local competences to allow for greater integrated research and development. Moreover, it is not enough to just improve in technology, but also in sciences. It is necessary to inject more natural sciences into engineering; the effect of this is a better society", affirmed Professor Thomas Hofmann.

Prof. Hoffman giving his presentation

Photos: TUM Asia

The Seven Sins Of Peer Review



More than one million scientific articles are published every year. The process that was established to control their quality is increasingly being called into question.

Jan Hendrik Schön, Yoshitaka Fujii, Woo Suk Hwang, Diederik Stapel: these scientists are famous not for their discoveries, but for having cheated the system. They manipulated – and in some cases even invented – experimental results to get their work published in such prestigious scientific journals as Science and Nature.

These fraudulent cases suggest problems with both the integrity of researchers and the quality control of journals. One of the system's foundations is the process under which two or three scientific peers examine articles before publication. These are experts in the field, who then recommend whether a paper should be published.

Often criticised as slow and cumbersome, peer review seems archaic in the era of Web 2.0. Technologist presents both the problems and some possible solutions.

Problems

1. INEFFICIENCY Peer review does not always fulfil its primary purpose, which is to prevent the publication of erroneous results. This problem was brilliantly exposed in two studies, one in Science in 2013 and the other in the British Medical Journal in 2008, in which articles with intentionally erroneous results were sent to hundreds of journals, the majority of which accepted them for publication. The experts who were consulted either failed to detect or just overlooked the errors.

An efficient system should also select the most pertinent articles and promote high-quality research. Yet the system tends to stifle original thought; in fact, some research that ultimately proved Nobel-worthy was originally rejected. It is often difficult for reviewers to identify truly groundbreaking research because it contradicts established theories.

2. BIAS Consciously or not, experts tend to favour articles from renowned institutions. A 1982 study by Behavioural and Brain Sciences demonstrated that a previously accepted article originating from a prestigious university was often rejected when subsequently submitted under the authorship of scientists at second-tier institutions.

The experts themselves, who usually remain anonymous, also tend to be favourable to articles from colleagues with whom they have worked on a regular basis – even to the point of fraud. A 2014 survey by Nature revealed that some authors went so far as to create false identities to review their own articles or those of their friends.

3. SPEED The rhythm of scientific progress and the advancement of careers are accelerating, but publishing an article still takes as long as ever – from several months to more than a year if authors are asked to make corrections or challenge a rejection.

4. CULTURE The famous "publish-or-perish" culture encourages scientists to work on projects whose results are likely to be published quickly by reputable journals. These are often trendy subjects with practical applications and, above all, only positive results.

But science does not always work that way: progress often comes in small increments. As such, it is critical to share negative and positive results alike to ensure that scientists do not waste time on hypotheses that have already been dismissed. Reproducing existing results is an essential step in the scientific method, even if it does not lead to publication.

5. COST Peer review is founded on the unpaid work of thousands of university experts, as well as the paid work of journal staffs. Subscriptions are expensive; even open-access journals just transfer their costs to researchers, who have to pay to publish their articles. This is ultimately profitable for the publishers: Reed Elsevier, for example, has an operating margin of more than 30 per cent.

6. OBSOLESCENCE Publishing in a scientific journal is not the only way to disseminate research results. In the era of Web 2.0 and social networking, there are plenty of platforms on which scientists can write their articles, publish them online and respond to comments from not one or two peers but the entire scientific community. The current system is archaic in comparison because results cannot be updated or corrected quickly, nor can post-publication comments be taken into account.

7. A NECESSARY EVIL Despite the system's drawbacks, many scientists still consider peer review a necessary evil. A 2011 report from the British Parliament described it as inefficient but irreplaceable. This is because the articles a scientist publishes in prestigious journals are critical to career advancement and peer review plays a critical role in their evaluation.

Solutions

UNIVERSAL JUDGEMENT In the peer review process, two or three experts are consulted. But tens, hundreds or potentially thousands of experts who may want to chime in on its strengths and weaknesses read a published scientific article. Participative evaluation in the form of online comments and feedback would make it possible to assemble and consider all these.

PUBLISH, THEN REVIEW An article could be published before it is reviewed, enabling the entire community to quickly read and assess its quality. In less than two months in 2011, for example, the scientific community published 60 articles on Arxiv.org (see below), affirming that neutrinos produced at CERN travelled faster than light – a much more rapid and complete response than traditional peer review.

LIFE AFTER PUBLICATION On some platforms, every online article can be commented, evaluated and even graded by experts. Authors then have the opportunity to respond to criticism, explain obscure points, and even modify their articles. In this context, the results remain up-to-date even after publication.

THE END OF ANONYMITY Revealing reviewers' identities would instil a sort of social control, curbing the tendency towards cronyism. Such openness could even encourage peers to participate through comments, such as on specialised forums where experts who answer questions earn points – developing the "gamification" of peer review and the recognition for constructive criticism.

Sites like F1000.com already encourage a thousand recognised experts in a scientific field to publicly recommend articles they have read by explaining why they found the research interesting.

THE EXAMPLE OF ARXIV.ORG Physicists, mathematicians and computer scientists use the Arxiv.org platform to distribute an open-access copy of a manuscript they are submitting to a journal. Founded in 1991 and funded by Cornell University, Arxiv.org now includes nearly one million articles.

The site allows quick sharing of results; each year about 100,000 new articles are published. Instead of waiting months for articles to appear in journals, the community stays up to date on research results in real time. Despite the absence of peer review before online publication, the site has published only a small number of articles with questionable content.

A POSSIBLE TRANSITION The system should not be changed abruptly. A process of online review could be developed in parallel to the current journal review, replacing it gradually. Collective review could begin with open-access articles that have already been published. This, among other things, would avoid copyright issues.

This article was written by Daniel Saraga. All photos and information are courtesy of LargeNetwork for Technologist.
To view online, visit http://www.technologist.eu/the-seven-sins-of-peer-review/

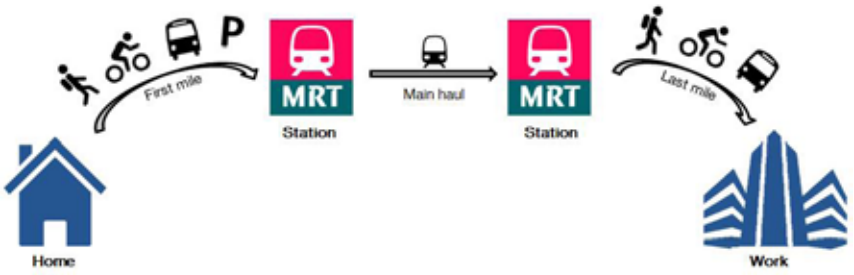


Photo: TUM CREATE

Multimodal Traffic Planning towards a Seamless Public Transport System

Multimodal travel meets today's mobility challenges and ameliorates transport issues such as traffic congestion and air pollution. With the development of mass rapid transit (MRT), MRT - oriented public trip has become the main travel mode in Singapore. Travellers dependent on the public transport system often use a variety of modes, such as walking, cycling, car-sharing, bus, MRT/LRT, to complete their journey. Hence, public transport systems need to cooperate well with each other to provide travellers a more efficient experience, which consequently helps to promote public transport usage. A seamless public transport system will ensure a high degree of synchronisation of the schedules of the various public transport systems, facilitate accessibility and easy transfers, and provide adequate information to travellers.

To achieve the goal of efficient multimodal transport, the Department of Transportation and Traffic Engineering (RP10) in TUM CREATE, focuses on three research strategies in Singapore.

Firstly, there is research into the behaviour of travellers, specifically focussing on the first and last mile trips, as well as the influence of transfers. The ongoing investigations use a set of field surveys to understand the current multimodal travel characteristics, travel preferences and development trends. Based on this, RP10 aims to model the travel behaviour of public transport trips linking with the first and last mile trips.

The second research strategy aims to discuss the influence of infrastructure attributes on the travel decision on the individual trip level. An integrated evaluation method for public transport systems will be developed to find potential for improvement in terms of infrastructural and operational aspects. For example, to improve the accessibility of MRT stations the study will identify the need for adequate parking facilities for bicycles or covered footpaths to residential areas.

Finally, the full understanding of Singapore's multimodal travel behavior would contribute to the design of a suitable traffic policy for the first and last mile, as well as transfer link. This could then be integrated into the existing Intelligent Transportation System (ITS), such as non-motorised signal control and advanced traveller information systems.

In future, TUM CREATE plans to research electromobility in multimodal transportation networks tailored specifically for the diversified trip purposes in Singapore.

Info: TUM CREATE Ltd.
www.tum-create.edu.sg

Photo: TUM Asia SMC

TUMowling

Due to busy schedules, TUM Asia's students rarely get the opportunity to meet one another on a regular basis. However, on 11th June 2015, TUM Asia's Student Management Committee organised a student gathering, allowing students from different classes and cohorts to come out and have fun over bowling. The event, also known as TUMowling, was a memorable time and everyone had a blast!

Photo: TUM Asia

Master Thesis Workshop

The Master Thesis/Dissertation is an important and mandatory portion of the TUM Asia Master degree programme curriculum. The duration of the Master Thesis/Dissertation is approximately 6 months, including practical work and report writing. On the 18th and 22nd of May, two Master Thesis sessions were held by Prof. Dr. Christian Kille, a guest lecturer of the Transport and Logistics Master Programme at TUM Asia.

The aim of the lecture was to help students to gain a better understanding of the Master Thesis as a whole and how to ideally manage and develop a successful thesis. This lecture, which was open to all TUM Asia Master students, gave students the chance to bounce their Master Thesis back and forth with Prof. Kille in order to seek his feedback for improvements. It was an insightful time and everyone benefitted greatly from the exchange of ideas.


Photo: DR

The Young Man And The Sea

Activism in action: a 20-year old takes on the mass of floating plastic garbage.

Boyan Slat has not only the face but also the benevolence of an angel. In three months the 20-year-old Dutchman raised $2 million through a highly effective Internet crowdfunding campaign on behalf of The Ocean Cleanup, which aims to rid the seas of floating plastic garbage.

It all began in the summer of his 16th birthday, when Slat took a diving holiday in Greece. He was shocked by the amount of garbage he encountered. “I started to work on this with a friend,” he recalls. “We were total novices, and everyone thought it was an impossible goal.”

Using Facebook and Skype to involve the world’s leading experts, Slat dropped his studies in aeronautical engineering at the University of Delft to devote himself to the project fulltime. “I’m not an engineer or an expert in the marine food chain. I defined the project based on the information I gathered. My current role is to organize the overall strategy.”

Plastic garbage accumulates in gyres, enormous vortices that exist in all of the world’s five oceans, formed by global currents. Slat’s idea is to install surface dams along the paths of these currents, trapping any plastic garbage larger than 2 millimetres, which is 90-95 per cent of the total. In March 2014, a field test conducted off the Azores confirmed the project’s feasibility.

François Galgani, an expert in ocean garbage at the French Institute of Ocean Research, believes the problem lies closer to home. “Is it justifiable to collect garbage more than 5,000 km offshore when it already saturates our coastlines and has a visible economic impact?” he asks.

With the money Slat has raised, he can launch the second phase of his project: the construction of a prototype. This should take a year, after which Slat hopes to build four to five more within four years at a total cost of $300 million.

This article was written by Judith Bregman. All information are courtesy of LargeNetwork for Technologist.
To view online, visit: http://www.technologist.eu/the-young-man-and-the-sea/

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