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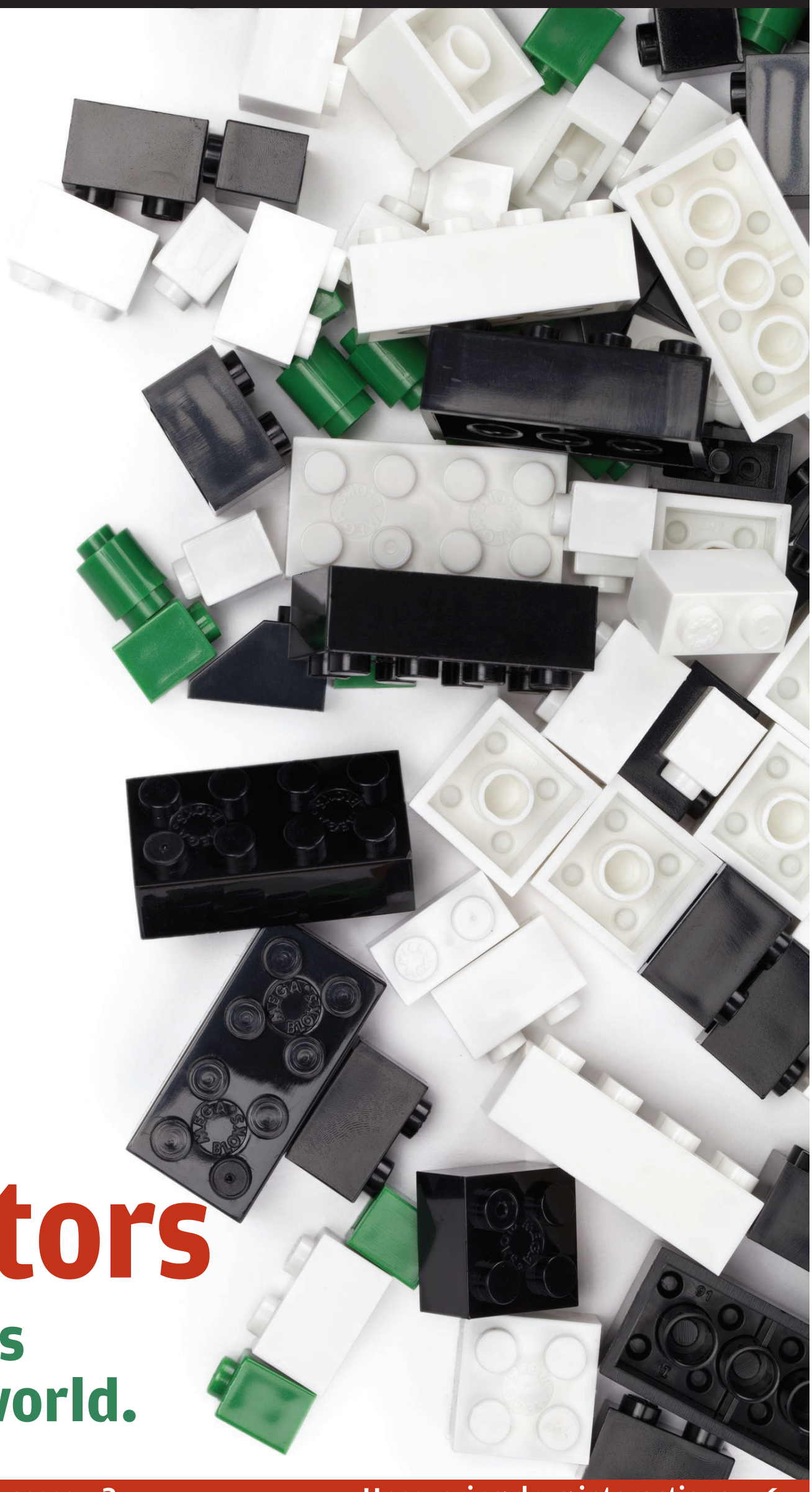

Connectors

From little ideas come a better world.

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It starts with an idea

By TINA CARMILLIA

IDEAS behave like human genes; ideas can develop, replicate, mutate and evolve. Now with the aid of information technology, ideas have the ability to spread and even influence people at a rate faster than ever.

Evolutionary biologist, Richard Dawkins, first coined the word "meme" to describe ideas that propagate from person to person within a culture.

A meme, or an imitable phenomenon, evolves by natural selection, much like biological evolution, through the process of variation, competition and inheritance, while ideas that are less prolific become extinct.

Today's greatest ideas have all evolved in a similar fashion. Facebook, for example, began with a different purpose but is now the leading social networking site.

Outside of the virtual space, ideas to improve the quality of life are also quickly changing the physical landscape.

In heavily populated urban areas, citizens are becoming more involved in the planning and development of the spaces they occupy.

The society, now more informed and better connected through technology, is actively participating in grassroots movements that challenge the traditional top-down approach towards urban planning.

Great things start small

Traditional apartments with large master bedrooms and two or three smaller rooms for the children no longer make much sense for young adults and smaller families that make up the current demographics of urban households.

In New York, for example, the city's Citizens Housing and Planning Council found that last year, 47% of New Yorkers over the age of 25 do not live with a spouse or partner.

Tiny houses and micro-apartments may be the future of urban living, especially with the rising population. The population density pushes the property prices up, making it more difficult for first-home buyers to afford their own place.

To counter this trend, property developers are developing more studio and SoHo units that are between 300 and 500sq ft to keep the prices affordable to the middle-income group.

In dense urban cities such as Hong Kong, living in crammed quarters is now the new norm.

The city's Society for Community Organisation (SOCO) hosted a photo exhibition this year called Trapped, which showcased photos of low-income families who live in subdividing apartments as small as 28sq ft.

Cities such as Hong Kong have to move beyond old-fashion approach to urban space living and rethink the architecture and design of the metropolitan.

With the influx of unemployed fresh graduates seeking job opportunities and newly arrived families looking for a better future, urban planners and property developers have to look into alternatives such as micro-units for single-person households and legal shared housing.

The problem with downsizing the living space is the issue of making these homes not just space-efficient but also comfortable.

Green architecture expects to make urban expansion sustainable by constructing buildings in such a way that they require no significant additional emissions for use or production.

The construction itself cuts down the usage of urban resources and the design would capitalise on natural light, adequate insulation and air flow, and reduce energy consumption to eliminate the need for air conditioning.

These buildings become "passive" structures that are self-sustaining and environmentally friendly.

Legos as idea bricks

The Living City by Better Cities is a recently concluded interactive exhibition that invites concerned Malaysians to participate in the process of city-making to create an ideal city. The concept generates the awareness that members of the community should be more inclusive in the process of planning, making and developing the cities in which they live.

The exclusion of most members of the society from such process can be reflected especially by under-utilised public spaces as well as the segmented communities within neighbouring vicinity.

The Living City transfers the power of planning to the people with a unique approach using Lego blocks as construction material (an innovative idea in itself).

Over the course of several days, an entire Lego city is formed as participants negotiate varying needs and ideas to arrive at what an ideal city would look like.

Better Cities extended the project through a collaboration with ThinkCity to present a Lego master class with two architects and founders of KRADS, an architectural studio based in Denmark and Iceland.

In the recent George Town Festival, KRADS brought with them a creative approach of fusing architecture and play.

"We asked for 1.3 million Lego bricks and Lego said yes. They were fascinated with the idea of using Lego to brainstorm for Better Cities," says Kristjan Kjartansson, one of KRADS' founders.

The master class probed participants to reimagine and repurpose car parks, which are expected to be obsolete – at least in some parts of Scandinavia.

Mentioning trends in urban mobility, Kristjan Eggertsson, also a KRADS founder, says that Helsinki intends to make car ownership pointless by 2025 as it gives way to new modes of transportation.

Eggertsson says: "We posed the question 'Can car parks be reimagined in such a way that when cars and parking spaces?' " become redundant, how can they be repurposed as greener and sustainable spaces?" Using lego blocks, participants remodelled car parks using single Lego brick units (2 x 4 pixel) to represent one parking space (2.5m x 5m).

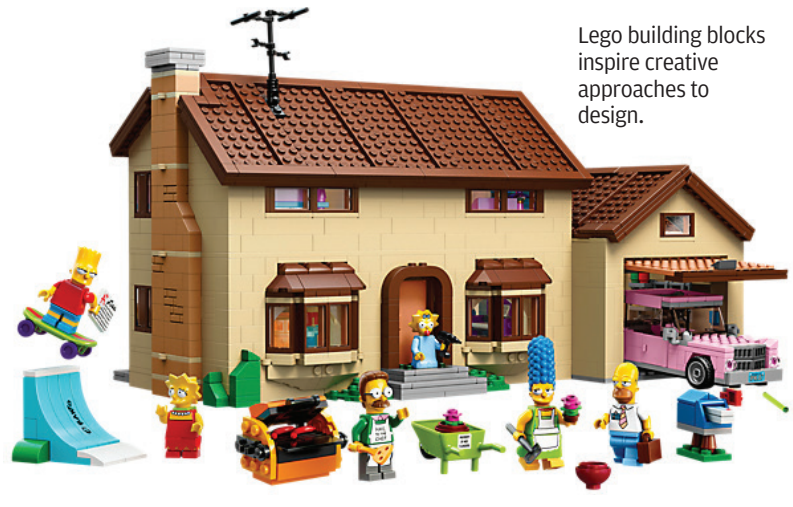
In the final leg of their visit to the country, Kjartansson and Eggertsson gave a talk in Kuala Lumpur to share the outcome of the master class and presented three different models of the repurposed parking space that are transformed into living quarters with only one model being selected for further development.

Could this be the solution to the future of urban living as public transportation improves and population density increases? The architects from KRADS continue to explore the possibilities of future urban architecture and expand on their method of bringing urban planning to the masses.

The idea of using Lego blocks began as a means to reimagine the future but it has grown laterally that Lego has newly launched Lego Architecture Studio Set aimed specifically at the architecture and design community.

Naturally, KRADS were involved in its development as the consulting concept editors.

It goes to show that ideas that catch on will evolve into something bigger than expected and perhaps even completely revamp the future of living.



Lego building blocks inspire creative approaches to design.

Dr Rohayu Che Omar (second from right) with Nor Hazwani Nor Khalid (centre) and Intan Nor Zuliana Baharuddin (left) with the awards won in PECIPTA 2014.

Paving the way for commercial success

AS a private university wholly owned by Tenaga Nasional Berhad (TNB), the country's leading utility company, Universiti Tenaga Nasional (UNITEN) is known for its engineering technology programmes and research.

Among some of the fields of research carried out in UNITEN are biomass studies, inspection robotics, slope management, solar car, energy power distribution planning and green technology.

Dr Rohayu Che Omar, head of the Centre for Forensic Engineering in UNITEN, leads a diverse team of researchers that studies and develops a slope monitoring system.

A slope management system monitors and maintains geotechnical designs of hill site development to mitigate risks of hazards.

TNB, which has chains of transmission lines across jungles and rural areas besides major cities in the country, is one of the stakeholders in the projects.

"Normally, transmission towers are located in high land and rural areas. Since the occurences of landslide, erosions and structural failure can lead to loss of money, time and manpower, we identified the need for an on-site data collection and monitoring system of the transmission lines," says Dr Rohayu.

Innovative management systems

The research started in 2002 with a grant from the Ministry of Science, Technology and Innovation to develop the Innovative Monitoring and Maintenance Rating System (IMRS) before it was expanded with additional grants from TNB and the Ministry of Education.

The team has since improved the system, which was then renamed the Innovative Slope and Structural Monitoring and Maintenances Support System (ISSMaS).

"IMRS allows people without civil engineering or geology background to understand the system. It is meant to make it user-friendly to the non-technical support personnel who rely on the system to carry out inspection or remedial work.

"On the other hand, ISSMaS is developed specifically for those with civil engineering or geology background to provide the technical specifications especially for monitoring and maintenance of the slopes and structures," explains Dr Rohayu.

The latest development to the system allows the team to not just monitor the slope movement, but also the building structural itself in real-time.

This system, called the Interactive Slope Movement Detector and Real-time Data Analyser (ISDA), is being developed by Dr Rohayu's team and under the supervision of Nor Hazwani Nor Khalid, a fellow research team member and lecturer at UNITEN's College of Engineering.

The team is also involved in a vegetable grout research project that aims to improve stability of slopes and base foundations. Besides that, it can also serve as a replacement for concrete base in building structures.

Dr Rohayu's team is also responsible for the development of the power energy distribution planning system, known as Selective and Decision Support for Site Selection and Impact Assessment (SEDASI).

"When we carry out research, receiving and responding to feedback from our partners in the industries help us identify new problems, conduct research and provide further improvements," says Dr Rohayu.

The case is true for TNB when the company needs to identify a location for a new transmission tower or substation. SEDASI acts as a planning system to provide feasible locations for new constructions.

"The important thing about the system is that it also integrates data analysis of the locals' input for any potential project. Social science, technical and cost analyses are the underlying criteria for site selection. That is why our engineers and geologists collaborate with economists and IT researchers in projects," says Intan Nor Zuliana Baharuddin, who is one of the researchers behind the research project.

Regional success in the horizon

Dr Rohayu's team has received numerous awards, including the Innovator Cup for the IMRS in the Invention New Product Exposition (INPEX) 2010 in Pittsburgh, USA; Gold Medal & TIPPA Award in MTE 2010; Gold Medal and Henry Goh Award for SEDASI in ITEX 2010 and INPEX 2013; gold medal for bio-vege-grout in ITEX 2012 and INPEX 2013; IFIA Gold Medal at the Korea International Women's Invention Exposition (KIWIE 2012) and the most recent gold medals from ISDA in INPEX USA 2014, as well as PECIPTA 2013 and ITEX 2014 in Kuala Lumpur.

The exposure received by the team at exhibitions and award shows is important for the commercialisation of their research products.

"We have been invited by companies and government agencies in and outside of Malaysia to present and commercialise our research projects," says Dr Rohayu.

Being a believer of the importance of research and product innovation, Dr Rohayu calls for a more vibrant research culture.

She says, "I hope to see more interdisciplinary research and the output of these research studies becoming commercialised worldwide."

The Minister of Agriculture and Agro-based Industry, the chairman of Mardi and the director general of Mardi during the harvesting of the aerobic rice. Aerobic rice production technology that requires half the amount of water is an option for areas with low water availability or during times of drought brought about by the climate change.

Genebank essential in nation's rice heritage

THE major rice granaries cover approximately 1.8 million ha of land and cultivate modern rice varieties, producing 2.63 million tonnes in 2013, which amount to about 70% of the national requirement.

But just how do these modern rice varieties exist? The answer is through rice-breeding programmes.

Breeding is continuous work and involves undergoing many rounds of hybridisation followed by screening for the best breed or genotype.

For the purpose of breeding, accessions carrying the genes of interest must be made available.

Genes of interest are those that confer characteristics such as pest and disease resistance, tolerance of drought, salinity and flood conditions, aromatic and high anthocyanin and vitamin content.

These are usually kept in the form of dried seeds, under secure, storage conditions in the genebank.

Mardi Rice Genebank was established in 1989 and to date, 43 modern rice varieties with superior traits have been released by Mardi.

It has involved the hybridisation of more than 10 local rice landraces, including Pandan Gelap, Engkatek, Secupak and Radin Goi.

The first modern rice variety, Malinja, was released in 1964 as a result of the hybridisation of a local rice landrace (Padi Siam) with a Japonica rice variety (Pebifun).

To date, the Genebank located in Bertam, Seberang Perai, has conserved a total of 12,770 accessions of which 8,500 or 75% from the cultivated rice accessions are of local origin collected from diverse rice ecosystems in Peninsular Malaysia, Sabah and Sarawak during the last 42 years.

The remainder of the accessions were accessed from other rice-growing countries such as Bangladesh, China, India, Indonesia, Japan, Myanmar, Thailand, the United States, Vietnam, Pakistan and the Philippines.

Currently, the genebank facilities provide ideal conditions for three types of seed storage: long-term seed storage equipped with five scientific refrigerators with temperatures of -10°C to -20°C, and expected seed longevity is 30 years; medium term seed storage, equipped with two walk-in cold rooms with temperatures of 3°C to 5°C, and relative humidity of 35% to 40%, expected seed longevity is 15 years; and short term seed storage, equipped with one walk-in cold rooms with temperatures of 12°C to 15°C, relative humidity of 40% to 45%, and with expected seed longevity of five years.

Since the searching of the new genes is a continuous process, it is necessary to enrich the germplasm collection and broaden the gene pool.

Continuous and concerted effort in characterisation and evaluation of the conserved germplasm is also important to identify accessions with desirable and potentials characteristics which may be used in future breeding programme.

Mardi rice genebank in Seberang Perai can only store up to 20,000 accessions of seeds. As such, a new Seed Genebank has been established in Serdang, Selangor, that can store up to 200,000 accessions. It is called the MyGeneBank.

The bigger role and functions of MyGeneBank is a subject of deliberation at the Agrobiodiversity and Agroenvironment Symposium 2014 to be held at the Pullman Hotel, Kuching, Sarawak, from Sept 15 to 18.

The symposium is organised by Mardi, Bioversity International, Department of Fisheries and the Department of Veterinary Services.

Vertical farming of lettuce in Cameron Highlands - a way to grow crops at high density in an eco-friendly manner.

Successful young agroprenenurs with their melon plants grown using the fertigation technology.

Advancement in agriculture

THE Malaysian Agricultural Research and Development Institute (Mardi) plays an important role in ensuring food security and the sustainability of agriculture in the country. It strives to develop appropriate technologies that fuel the food, agriculture and related industries in view of current and future challenges, including those of the inevitable climate change.

For more than four decades, the institute has successfully provided the nation with numerous crop varieties, clones and animal breeds through well-planned research and development, skills, technology and the know-how of production systems that are made available to farmers and those involved in the industry.

Being one of the agencies and departments under the Ministry of Agriculture and Agro-based Industry, Mardi's activities are guided by the National Agri-Food Policy. The policy's main objective is to ensure food security, availability and affordability.

The focus on food security is understandable, considering the effects of the 2007-2008 world food crisis that pushed food prices up.

To ensure success and speed up technology development, Mardi has established strategic networking with numerous research and development agencies at both local and international levels.

Organisations such as the International Rice Research Institute (IRRI), Asian Vegetable Research and Development Centre (AVRDC), Rhino Research and private companies, including chemicals and fertiliser specialists BASF, Chemical Companies of Malaysia (CCM) and Nestlé have been instrumental in the development of new food and agricultural-related products.

Mardi is currently working on a collaborative research programme with Shandong Academy of Sciences, China, on microbial fertiliser and mushroom production.

Mardi has more than 3,000 staff of whom 650 are scientists and is also equipped with state-of-the-art research facilities.

It also works with centres such as the Centre for Molecular Development and Validation (CMDV) and MyGenebank (the crop genebank) to speed up its research on plants and the National Animal Embryo Centre on livestock. These centres carry out research activities and provide services to the research community.

The institute has been involved in consultancy services for developing nations through its subsidiary Marditech Sdn Bhd in places such as Cambodia, Brunei, Afghanistan, Syria and Nigeria, especially in programmes that aim to improve plant and animal production systems in these countries.

Mardi carries the mandate from the Ministry of Agriculture and Agro-based Industry and is also currently involved in programmes to help those living in poverty, in line with aims of the National Key Results Area (NKRA).

For example, the Azam Tani programme has been successful in helping many families get out of poverty. Out of 1,760 participants, 54% have managed to obtain incomes 40% more than before.

The key to success is providing appropriate technologies and constant monitoring by experts in the various entreprises.

Another focus area of Mardi is the development of young entrepreneurs, a programme conceived by the Minister of Agriculture and Agro-based Industry, Datuk Ismail Sabri Yaakob.

This programme is aimed to develop a large number of young entrepreneurs to replace the existing ageing farmers. Currently, young entrepreneurs only make up 14% of the total number agricultural entrepreneurs.

The strategy adopted is to promote clean and sophisticated technologies that will appeal to young entrepreneurs and those capable of getting a monthly income of RM5,000.

More popular among business ventures is the fertigation technology used for melon and vegetable production and the rearing of stingless bees for honey production.

Many have already registered for the programme while participants who joined the programme earlier this year have started to show success.

There are various approaches and methods used to support the programmes that promote and commercialise Mardi's technologies. These include training sessions, test-beds, incubator facilities and lands for cultivation and laboratory analyses such as chemical and seed testing.

The food and agriculture industries will remain important to the nation as they now represent 7% of GDP and 14.8% of export earning.

Mardi will continue to support the food industry, not just to ensure food security but also to make the industry an important contributor to the economy.

A state-of-the-art facility at the Centre for marker discovery and validation (CMDV); one of its popular uses is molecular (DNA) fingerprinting.

Curtin Sarawak offers Higher Degrees by Research (HDR) at both master's and doctoral levels.

Innovative solutions

THE research activities at Curtin Sarawak are an essential component of its academic excellence, contributing to advancing knowledge and providing innovative solutions to solving industrial and community challenges.

Students are also roped in to participate in a learning culture that promotes and develops professionalism among graduates.

Strategic research foci at Curtin Sarawak are structured around its School of Engineering and Science, School of Business and the Curtin Sarawak Research Institute.

Various research projects and supervision expertise are available under the following teaching departments of the School – applied geology, chemical engineering, civil and construction engineering, electrical and computer engineering, mechanical engineering and petroleum engineering.

The School of Business' courses and research programmes also offer a global perspective through industry partnerships, both local and international as well as numerous international professional accredited bodies.

The School's research activities are focused on globalisation, theories of management, marketing, finance, economics, banking, entrepreneurship and education research.

The Curtin Sarawak Research Institute (CSRI) is Curtin Sarawak's multidisciplinary research institute that was formed in 2011 and initially funded by Curtin University and the Malaysian government.

CSRI aims to form a competitive research organisation that discovers and applies knowledge and expertise to increase business competitiveness and enhance the well-being of communities in Sarawak and the broader region.

CSRI also emphasises on encouraging multidisciplinary and collaborative research to develop holistic solutions that encompass scientific, technological, social and economic aspects.

CSRI's multiple roles include driving high-quality multidisciplinary research, creating new opportunities related to the rich resources of the region, promoting partnership between campuses of Curtin University and its external partners in academics and the industry, and increasing the research capacity in Miri and Sarawak by nurturing and supporting established and budding researchers.

Pro vice-chancellor Prof Jim Mienczakowski: 'Curtin University in Malaysia is rapidly ramping up its research capacities.'

The research interests of its current team of in-house researchers and research fellows include bioinformatics, optimisation and optimal control applications, ecotourism, ethnobotany, sediment geochemistry, signal processing, green technologies, business strategy and technology management, climate change, renewable energy and materials, renewable energy and chemistry.

Current CSRI-funded projects include studies into the traditional ethnobotanical knowledge of the Kelabit community of the Bario Highlands of Sarawak; ontology-based query language for biological data; developing a unified ethnobotanical index to assess language and traditional knowledge vitality; optimisation of biofertilisers; texture/rheological modifiers from pomelo peel and its application in low-fat foods; the Niah Caves National Park Tourism Enhancement Project; and moving single mothers into the workforce.

Other notable research and development achievements by Curtin Sarawak include the partnership with Celtex Resources in 2011 to undertake research aimed at improving management of palm wastes produced by palm oil mills and developing more efficient and sustainable technology for the treatment of palm-based wastes.

In 2013, joint research with Universiti Malaysia Sarawak (UNIMAS) resulted in the world's first index to assess traditional knowledge and language vitality simultaneously.

Recently, two projects proposed by the campus' office of R&D arising from the research plans of Dr Dominique Dodge-Wan and Dr Ramasamy Nagarajan, both from Curtin Sarawak's Department of Applied Geology, were approved for funding by Sarawak Energy Berhad.

They include the mapping of soil erosion risk in the catchment area of the Baram Hydro Project using Landsat and GIS, and uncovering the geochemistry and distribution of trace metals in sediments in rivers proposed for dam sites in Baram, Baleh and Pelagus.

By providing an environment that encourages investigation, Curtin Sarawak has been successfully attracting world-class researchers and teaching staff of which more than 70% are PhD holders.

The academic staff have access to financial support for conference attendance and seed funding for new research projects.

For junior staff, the opportunities to acquire the skills necessary for conducting R&D are presented in the form of generous staff study support and continuous staff development activities such as seminars and workshops.

To further enhance its research reputation and excellence, Curtin Sarawak offers a Higher Degrees by Research (HDR) at both the master's and doctoral levels for a variety of business and engineering disciplines.

■ For more information, visit *www.curtin.edu.my/R&D/*

Uncovering drug interactions

THE occurrence of negative side effects due to the interaction of prescribed drugs with certain foods, herbs and other drugs is a serious and increasingly common problem in the medical world.

Recent studies in the United States have shown that up to 50% of cases of adverse drug effect have been due to drug-drug, drug-herb or drug-food interactions.

"It is a common problem in Malaysian hospitals for patients to develop side effects from consuming prescribed drugs that interact with other consumed foods or herbs.

"However, patients are sometimes not aware of this and hence don't report it," says Associate Prof Dr Ong Chin Eng from the School of Pharmacy, Monash University Malaysia.

Dr Ong, who has been involved in pharmacology research since 1998, started research on enzyme cytochrome P450, which is responsible for metabolising up to 80% of commonly prescribed drugs in the human body.

He set out to determine if the enzyme's activity was affected when mixed with local herbs, specifically *tongkat ali, kacip fatima, misai kucing, hempedu bumi* and *pegaga*.

"I decided to study the interaction between these herbs and certain drugs as these herbs are readily available here and widely consumed among the ethnic Malay community," he said, adding that much research had already been done on western herbs.

Associate Prof Dr Ong Chin Eng (right) believes that his research can serve as a guide for doctors and alert them to possible drug interactions.

Dr Ong's research concluded that *kacip fatima* showed good potential for interaction with a cytochrome P450 iso form that mainly metabolises painkillers, anti-convulsants and anti-epileptic drugs.

The herb also interacts with the action of warfarin, which is a commonly prescribed blood-thinning agent.

His findings also showed that *misai kucing* has good potential to interact with anti-psychotic and anti-depressant drugs.

"The other herbs didn't show much potential for interaction and hence have a lower chance of causing adverse responses in patients who consume these herbs in addition to their prescribed drugs," he says.

His findings are the first to link the action of common local herbs with commonly prescribed drugs, alerting medical practitioners of reactions that they have been unaware of.

Dr Ong believes that his research can serve as a guide for doctors to alert them to possible drug interactions.

Medical practitioners should also observe the warning signs of interaction and advise patients accordingly during the course of treatment.

Dr Ong's research has been documented in international papers that are published in well-established journals that are focused on herbs and drug interaction.

He currently collaborates with local and international universities and the Institute of Medical Research, which is one of the country's premier institutions of research.

"I believe that the findings of my research can be a guide for further research that will help decrease incidences of drug-interaction problems in drug treatment. Ultimately, our goal is to improve the quality of health care in this country," he said.

At Monash University Malaysia, Dr Ong teaches pharmacology and pharmacy practices, lecturing on clinical-related topics such as drug-drug interactions.

Dr Ong is actively involved in pharmacology research with particular interest in drug metabolism and pharmacogenetics of drug-metabolising enzymes.

"I often apply my research and work into the lessons and share them with my students. It benefits them as they are then kept up-to-date on the latest research findings," he says.

■ For more information, visit *www.pharm.monash.edu.my*

Impactful research projects

THE Centre for Islamic Business and Finance Research (CIBFR) is based in the Nottingham University Business School of The University of Nottingham Malaysia Campus (UNMC) and brings together experts from a range of disciplines to provide research and consultancy services to organisations worldwide.

"Islamic finance is one of the high profile research areas in the social sciences and we are well-placed to have the expertise here in Malaysia and London," says Prof Graham Kendall, vice-provost of Research and Knowledge Transfer at UNMC.

The university is in the process of setting up an Asean Research Centre that will collaborate with other Asean countries to cooperate on issues relevant to the region.

There are also major science research projects being conducted at UNMC:

• Management and Ecology of Malaysian Elephants (MEME)

The Management and Ecology of Malaysian Elephants (MEME) project studies the behaviour and ecology of Asian elephants to mitigate human-elephant conflicts.

The Asian elephant population is dwindling in Peninsular Malaysia.

A population that used to be counted in thousands now come up to about 1,500.

"The MEME project addresses the locals' concerns for their residences and crops while ensuring the conservation of elephants. The research team has collared about 20 elephants roaming in the Malaysian tropical rainforest.

"The aim is to fit 50 elephants with satellite tracking devices to monitor how they respond to the changes in their habitat, their reaction towards translocation and the effect of current conservation measures such as highway viaducts and wildlife corridors," explains Prof Kendall.

The project, led by Dr Ahimsa Campos-Arceiz and financially supported by several organisations including Yayasan Sime Darby Foundation, will uncover the immediate and mid-term behavioural response of elephants to translocation as they move away from conflict areas.

• Crops for the Future Research Centre (CFFRC)

Another research project is addressing global food security. The Crops for the Future Research Centre (CFFRC) studies neglected and underutilised crops that can be used as alternatives for food and non-food uses.

"There are six main food crops, including rice, wheat and maize that contribute to the bulk of our food source.

"However, with Malaysia's unique biodiversity, we can identify and commercially produce new crops that can feed the whole country without being so dependent on the conventional food crops," says Prof Kendall.

By shifting the trend towards a more diversified and locally-produced crops, the country can build value chains and create new sources of income to the agricultural players, minimise the risk of a food crisis and provide a sustainable source of nutrition for users.

Prof Graham Kendall, vice-provost of Research and Knowledge Transfer at UNMC.

• Post-harvest processing

Another project is studying ways to reduce food waste through food-covering technology and other preservation methods.

"The bulk of the fruits we consume have wax that consumers have to wash off before consumption.

"Prof Asgar Ali has developed edible coverings that are non-toxic and Dr Chung Lim Law is looking into ways to improve dry fruits to ensure that the fruit's quality and nutrition are retained," explains Prof Kendall.

Developing partnerships

Prof Kendall explains that UNMC adds value to its operations by building business opportunities and securing sustainable partnerships and networks that can deliver mutual opportunities.

"We carry out research and expect to see the benefits of that research. It's really about making an impact in wealth and job creation locally and globally, so it's also important to engage with business," he says.

UNMC does this through Nottingham MyResearch Sdn Bhd, which is a company fully owned by UNMC.

The company has recently been awarded MIDA R&D status – the first company owned by a private university to be granted this status by MIDA.

"This research target cannot be achieved by the university itself and MyResearch was launched as a company that would solely focus on research," says Prof Kendall, who is also the chief executive officer of MyResearch.

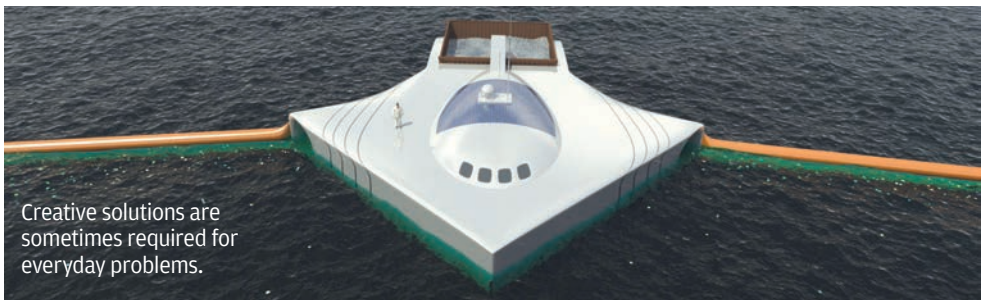
MyResearch is a tax-efficient way for businesses to invest in research and development.

Industry partners are able to access expertise from any of the three campuses that the university operates, enabling staff of MyResearch to not only contact the academic staff in Malaysia but also those in the UK and China.

Partners have the opportunity to receive a double taxation benefit when they invest in research and development through MyResearch.

The company also provides technical expertise and support services, including project management, proposal development and tax advice to help its partners' business development and growth.

■ For more information, visit *www.nottingham.edu.my*



Creative solutions are sometimes required for everyday problems.

Addressing issues innovatively

FOR centuries great innovators have provided solutions to the most pressing problems of the time.

Today, climate change, the food crises, access to education and energy conservation continue to be issues that require innovative solutions. Here's a look at innovators who are making a stand for a better tomorrow.

Boyan Slat

At the age of 17, Dutch aerospace engineering student proposed an ingenious way to eliminate plastic pollution in the ocean. The concept, dubbed the Ocean Cleanup Array, was first introduced by Slat at the 2012 TEDxDelft talk.

The Ocean Cleanup Array is now becoming a reality. It works by directing and concentrating the plastic particles to an area using 24 floating barriers and platforms that are anchored to the sea bed.

Slat aims to place the manta ray-shaped arrays in the five gyres where plastic debris in the ocean have accumulated.

Slat estimates that it will only take five to 10 years to completely clean up a single gyre with this concept as compared to other ocean clean-up methods that would take approximately 79,000 years to completely clear the ocean of plastic disposals.

In addition, the Ocean Cleanup Array network is powered by the sun and ocean currents, producing minimal emissions.

Sugata Mitra

Dr Sugata Mitra is an educational researcher who has challenged traditional forms of formal education by introducing the School in the Cloud concept.

The School in the Cloud is a learning laboratory where children receive education using the Self-Organised Learning Environment (SOLE) method created by Dr Mitra.

SOLE was first implemented in Mitra's Hole in the Wall experiment, where children living in the slums of India independently learned how to use a computer that he placed in their community.

The result of the research showed that children learned better when given the chance to explore independently and as a team.

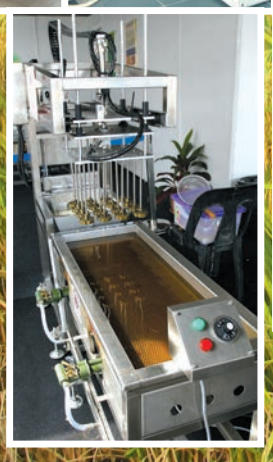
The School in the Cloud's online platform aims to collect data sent in from people around the world who have used SOLE to educate children.

It also allows retired teachers to volunteer to teach students of the School in the Cloud.

These volunteers communicate through Skype chat and encourage children to find solutions independently and explore their options.

MARDI transforms Malaysian food and agriculture industries

- MARDI, the leading agriculture research institution in Malaysia is spearheading cutting edge research and new technology to transform the Malaysian food, agriculture and bio-based industries.
- MARDI strives to produce products, technologies and expertise that are competitive, innovative and sustainable to be a world leader in agro-technology and partner in global commercialization.
- MARDI is a service provider to solve real agriculture problems through contract R&D, training packages, technical analysis and molecular marker discovery and validation.



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