

# RICE@UTeM

BULLETIN@

ISSUE 01 JAN-JUL 2015

Research, Innovation, Commercialisation and Entrepreneurship



UTeM

Learn,  
Relearn,  
Unlearn..

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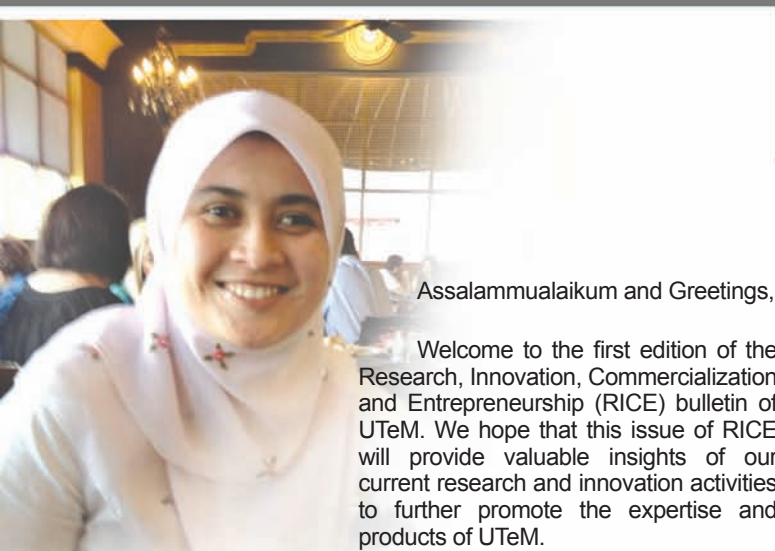
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RESEARCH  
**HIGHLIGHTS**

**INDUSTRIAL**  
ENGAGEMENTS

**SUCCESS**  
STORIES

# Editor's Note



Assalamualaikum and Greetings,

Welcome to the first edition of the Research, Innovation, Commercialization and Entrepreneurship (RICE) bulletin of UTeM. We hope that this issue of RICE will provide valuable insights of our current research and innovation activities to further promote the expertise and products of UTeM.

We intend to make this bulletin a bi annual publication to meet the demand of research activities of UTeM in general. This publication is intended to highlight our achievements in research, innovation and commercialization as well as industrial engagement. It is also a platform to disseminate the latest information on our research focus and expertise. The information in this bulletin allows us to reflect our successes and shortcomings that will chart our progress in pioneering the future technology and achieving a technology driven and industry relevant Hi-CoE, or more specifically Ti-CoE.

In 2014, we witnessed several achievements particularly in research and innovation activities. We have received 227 national and international grants worth of approximately RM15 million. This shows that our researchers from all faculties and CoEs have been actively working on a variety of interdisciplinary researches within the four research focus of the university: emerging technology, human interaction technology, system engineering and green technology. This has also contributed to the continuous increase

of our publications in both indexed and non-indexed publications. We have also won several awards in various competitions at the national and international levels, such as the ITEX, MTE, SIF and many others. From here, we have also managed to commercialize three products, namely My 2<sup>nd</sup> Eye, An Automatic Tyre Pressure Controller, Electro-Mechanical Locking System and Order Saya. Further, the great achievements of research have contributed to a significant increase in the development of human capital, particularly the postgraduate students. This is reflected through the consistent rise in the number of postgraduate intake from 2004 to 2014. The excellent performance of UTeM's research is also recognized based on its achievement to establish industrial relationship with IBM Malaysia Sdn. Bhd. under the roof of Centre of Excellence. Hopefully, all these distinctive achievements will motivate researchers to be more focus and take the challenge to perform better in the year 2015.

In this edition, we introduced the five centres of excellence (COEs), the key players targeted to achieve UTeM's research and innovation KPIs. These COEs, namely the C-ACT, AMC, CERIA, CARE and CETRI accommodate a total of 51 research groups with different research focus and expertise. UTeM's achievements in innovation and commercialisation of research products are also included in this edition. Further, several research discoveries and activities recently conducted by the research groups or the CoEs together with some insights on the upcoming research activities conducted in UTeM are included as well. This edition also promote our graduate studies and new doctorate courses such as the Engineering Doctorate (DEng) and Doctoral of IT (DIT).

In conclusion, we hope you will enjoy this first edition of RICE bulletin. Inshaallah, God willing, we will have a fruitful outcome and blessed year for 2015!

**Dr. Massila Kamalrudin**

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# Learn, relearn, unlearn...

By: PROFESOR IR. DR. MOHD JAILANI BIN MOHD NOR

Within the era of industrial knowledge economy, research and innovation activities have become essential. Accordingly, the current research scenario in Malaysia, including UTeM has changed. Previously, in 2012, when I first came to UTeM, the number of research grants was very low. Hence, most efforts and activities such as paper works writing and grants evaluation workshop were conducted to increase the number of grants received. Alhamdulillah, each year, it shows significant increase, till last year with nearly to RM15 million grants were received. However, a new challenge has occurred today! Most researchers fail to manage their research well as they under-utilise their grant's money and fail to present their report on their research findings on time. This is because of one reason: naivety (lack of) on the soft skills to react with certain condition.

Thus, I would like to suggest that all researchers need to "re-tool" themselves with the necessary soft skills. This is because excellent research alone is no longer enough. To establish a reputation in academia, researchers today must learn and equip themselves with soft skills that will allow them to be able to effectively manage their research and to clearly and persuasively communicate and present their knowledge. For this, researchers need to "Learn, re-learn and unlearn" certain soft skills if they want to survive and perform better in this challenging research world.

**Learn** means that researchers need to start acquiring new knowledge on how to manage their research, especially on their research funding. Most researchers are knowledgeable in their technical skills but not the soft skills to handle certain situation. They need to be a quick thinker, to react fast and to be creative on any state of situation. For example, they should learn to combine research grants to pay for research assistant if a single grant is not sufficient or make a virement if necessary to cover certain important cost. In addition to this, researchers should have a big heart to share their grants to ensure the success of the project.

Next, researchers should **re-learn** or revise their soft skills. Specific skills such as communication skills, lobbying skills and writing skills should be enhanced. In this era of inter-disciplinary research and commercialization, those skills are crucial to convince investors to collaborate and invest in our project. Further, those skills are also important for us to manage the team members from diversified disciplines.

Finally, researchers must also **unlearn** their bad attributes. They should be selfless and not selfish when managing research project



Researchers need to "Learn, re-learn and unlearn" certain soft skills if they want to survive and perform better in this challenging research world.

and team members. In addition, researchers should not be defensive on their research and must adapt to changes. George Bernard Shaw once mentioned "the reasonable man adapts himself to the world, the unreasonable man persists to adapt the world to himself. Therefore, all progress depends on the unreasonable".

In a nutshell, embracing life-long learning is a requirement to be a good researcher in this new demanding era of research where everything has changed including the way and the skills to manage the research grants. We must always be ready to learn new things and not to expect others to do for us. We are not supposed to keep waiting, but need to start moving to achieve victory. With this, it is believed that good research that is able to give positive impact to the country and society can be produced.



*Congratulation*

YB. Dato' Seri Idris Jusoh for being appointed as the Minister of Higher Education Malaysia.



*Congratulation*

YBhg. Prof. Dato' Dr. Ir. Zaini Ujang for being appointed as the Secretaries-General of Minister of Higher Education Malaysia.



*Congratulation*

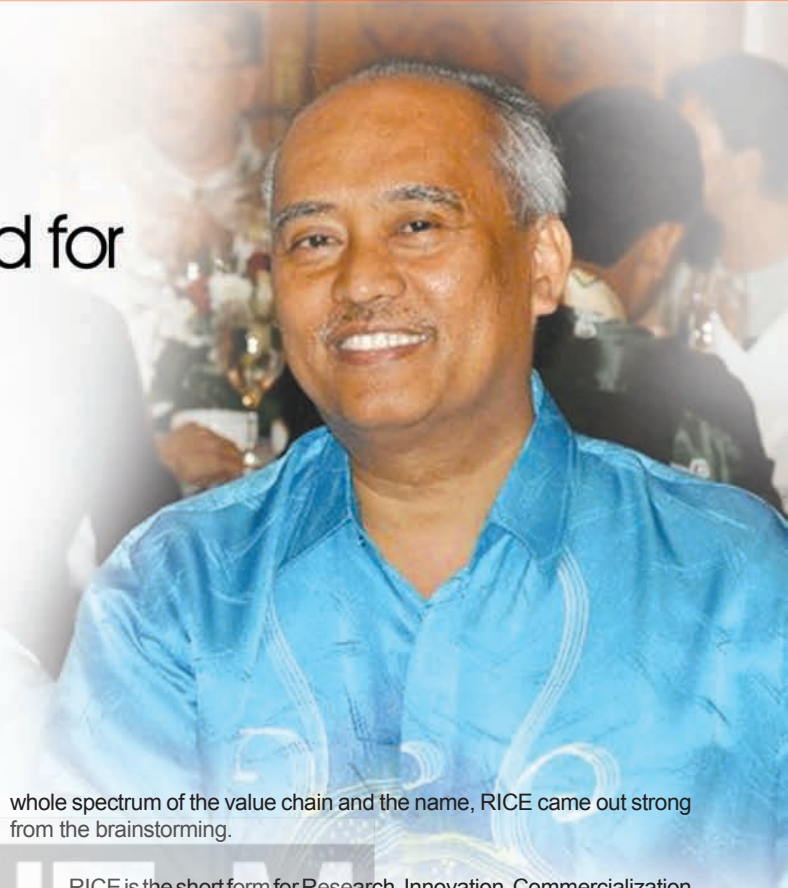
YBhg. Prof. Datuk Dr. Shahrin Sahib for your recent promotion as Professor Special Grade A (VK5).

# RICE as a staple food for Game Changers

By : PROFESOR DR. AHMAD ZAKI BIN A BAKAR

Naming a new magazine or bulletin for research and innovation can be a tricky affair. On one hand, one wishes to have a prominent name that signifies the importance of the bulletin in propagating the field and yet, on the other hand, a catchy name that is easy to say and remember but represents interesting content to entice readers to read it. After a round of brainstorming and no sure name, we decided to look at the value proposition for the bulletin instead. Who are the customers or readers for the bulletin? What do they need and want? What will they benefit from reading this bulletin?

Top on the list of customers are parties outside the university, namely foreign visitors, local visitors, state and federal government agencies and ministries, industries, academics, post-graduate students, as well as anyone able to view the university's activities through various devices and platforms followed by internal staff and students. For physical and online visitors as well as those outside the university, they certainly want information about the university, its latest development, publication status, student enrolment, strategic linkages, facilities, facts and figures, as well as success stories. For academics, researchers, innovators, administrators and students, they want information on research grants, conference announcements, journal publication avenues, opportunities for commercialization and entrepreneurship, courses to improve their competencies, updates on foreign and local visitors, industry collaboration, stories on role models, news on their community, conference reports, tips and literally anything even wild ideas that is able to improve their current situation to become a top-notch academic or researcher as well as a game changer in their field. Looking at the long list of requirements, it covers the whole span of activities ranging from research & development, invention, innovation, commercialization, entrepreneurship and finally setting up an enterprise. Based on this scenario, in trying to name a bulletin for research and innovation, we needed a metaphor that symbolizes life and covers the



whole spectrum of the value chain and the name, RICE came out strong from the brainstorming.

RICE is the short form for Research, Innovation, Commercialization and Entrepreneurship. It is also a basic food element. Rice has always been a staple food for Malaysians as well as other Asians. A strong attraction for many tourists to Melaka is its diversity of food from the fusion of various cultural heritage and most of them have rice as an integral part of the main dish.

We certainly enjoy our food in Malaysia and many activities including socialization will have food included. Although many of us are privileged to have food in abundance, the unfortunate ones just eat plain rice to survive. RICE is envisioned to be like rice, the staple food not for the stomach but for the minds of the range of players in UTeM and its surroundings. RICE should be read regularly or consumed by those who want to be the best; the game changer that the university and nation is waiting for to revolutionize the landscape.

## Book Release



Visit Penerbit UTeM online bookstore at <http://utembooks.utem.edu.my/>

## Cultivating the next generation of innovators with **Samsung IoT Academy**

1<sup>st</sup> April 2015 marks the history of a partnership between Universiti Teknikal Malaysia Melaka (UTeM), and Samsung Malaysia Electronics (SME) Sdn Bhd. It was the date of the launching ceremony of Samsung Internet of Things (IoT) Academy at UTeM, which is the first-of-its-kind in Malaysia. This event was successfully officiated by YB Dato' Seri Idris Jusoh, Minister of Education II, who was accompanied by YBhg Prof. Datuk Dr Shahrin Sahib, Vice Chancellor of UTeM; and YBhg Dato' Roh Jae Yeol, Director of Corporate Affairs, Samsung Malaysia Electronics. YBhg Tan Sri Dato' Ir. Dr Ahmad Zaidee Laidin, Chairman, Board of Directors of UTeM and Mr Lee Sang Hoon, President of Samsung Malaysia Electronics were also present to witness the historical event.

The partnership between UTeM and Samsung Malaysia was highlighted as an excellent example of public-private partnership that leverages on the expertise of academia and industry to drive technological development and innovation. It was also in line with the Malaysia Education Blueprint 2013-2015 in which the

government aims to leverage on ICT to scale up the quality of learning for students. This partnership is expected to avail immense opportunities in the areas of academia, industry and community and provides significant benefits to the nation.

The Samsung IoT Academy is part of the Samsung Global Corporate Citizenship initiative in the core area of Education that employs Samsung technology and expertise for the betterment of local communities. Its establishment at UTeM is timely, given that the internet and ICT is fast transforming the world of digital, and the next generation of innovators will come from students who have been trained and equipped with the 21<sup>st</sup> century skills such as digital learning, effective communication, technology and problem solving.

The Academy is designed to optimise the transfer of knowledge where Samsung subject matter experts will train UTeM lecturers on the operating systems modules, the latter of whom will then undertake the delivery of these modules to students and participants. It is expected to deliver training modules, which include sessions on the latest operating and hardware systems such as Magic Info and Knox, that run on Smart Signage and mobile devices respectively. The latest Samsung devices will be available for use in teaching modules that are customised and co-developed by UTeM and Samsung Malaysia. In addition to digital training, there will also be workshops and seminars involving established entrepreneurs who will share their knowledge and experience to inspire the future generation of innovators. The establishment of the Academy at UTeM is considered as an important milestone and a way forward for a fruitful and smart partnership between the university and Samsung Malaysia Electronics.





**Research  
& Innovation  
Collaboration  
with IBM  
Malaysia**

UTeM and IBM Malaysia have recently signed a Memorandum of Understanding (MOU) on Research and Academic Initiative cooperation between UTeM, represented by IS3 research group, and IBM Malaysia at UTeM's, main campus, Melaka. Witnessed by representatives from both institutions, handshakes were exchanged between Mr Wong Chiun Chiek, the Chief Financial Officer, IBM Malaysia and YBhg. Datuk Prof Dr Shahrin Sahib, the Vice Chancellor of UTeM. This ceremony marks the collaborative partnership between UTeM and IBM in research and academy.

UTeM and IBM have enjoyed a long standing friendship with each other. Over the past few years, many programmes of cooperation have been established, particularly with one of UTeM's leading research groups, Innovative Software System and Services (IS3), led by Dr Massila Kamalrudin. The initiative for this collaboration started when the university organized a programme collaborated with the IBM Corporate Service Corporations (CSC) programme, Health Department, Melaka and World Youth Foundation. Held at the Faculty of Information and Communication Technology (FTMK) in 2013, IBM delegates from Austria, France and India came down to UTeM to share their knowledge and experience in the development of IT around the world. Other significant events were the SEPoW 2013 organised by FTMK and International Symposium on Research in Innovation and Sustainability (SORIS 14), co-organised by IS3 and two other research groups. During the conference, IBM representative, Mr Nazri was invited as one of the keynote speakers.

In research and innovation, IBM has worked closely with the IS3 research group in several research activities. At the moment, IBM is the industry partner for one of IS3's research project, granted by MOSTI. The Faculty of Information and Communication Technology (FTMK) and the IS3 research group are also working closely with IBM to set up a cloud-based testing laboratory which will be located at the faculty. With the establishment of this laboratory, it is anticipated that UTeM with the collaboration with IBM will become the hub of software engineering within the Southern Region of Malaysia. In the area of academic, IBM has shared their industry expertise particularly in validating students' research output, providing free software and courses under IBM Academic Initiative programme. With the signing of this MOU, students and lecturers of UTeM will have the privilege to further their skills and knowledge in the area of IT and technology.

The MOU ceremony marks an important milestone of strengthening the collaboration between UTeM and IBM. With a strong commitment from both parties, this partnership is expected to inspire more joint academic and research activities in future and drive the innovation and technology development of UTeM and IBM to even greater heights.

# SEDA Malaysia Appoints UTeM as Authorized Training Centre

Solar PV is one of the niche research areas for Energy and Power Systems (EPS) research group, under the Centre for Robotics and Industrial Automation (CeRIA). After the establishment of the Research Laboratory of Solar PV System and Smart Grid at the Faculty of Electrical Engineering (FKE) in 2013, the EPS solar team has set ambitious target to be one of the SEDA's authorized competency training centres. The team has then started to work closely with the solar industry and further equip the laboratory with the necessary training equipment and expertise. A number of meetings and visits have been arranged and finally on the 27 May 2015, Sustainable Energy Development Authority (SEDA) Malaysia has agreed to appoint Universiti Teknikal Malaysia Melaka (UTeM) as one of their authorized competency training centre for "Grid-Connected Photovoltaic Systems Course for Wireman and Chageman". This appointment is for the duration of two (2) years starting from 15 June 2015 until 14 June 2017.

The 5-day training course is structured and developed by SEDA to intensify human capital development in Malaysia renewable industry especially in solar PV. The main objective of the



*Ir. Dr. Nazri and Dr. Gan received the appointment document at SEDA*

course is to expose the wireman and chageman in Malaysia with regards to solar PV installation dealing with Direct Current (DC) side and components. The training will encompass both theoretical and practical sessions, ending with a competency examination [1]. SEDA will then appoint those who pass the competency examination as the Competent Person that is required by-law to handle the installation of the solar PV system in Malaysia.

Reference:

[1] Sustainable Energy Development Authority (SEDA) Malaysia, [www.seda.gov.my](http://www.seda.gov.my)

A product, known as the Road Attribute Data Logger and Inspection (RADIS) has been developed based on the research partnership between UTeM, the Malaysian Institutes of Road Safety Research (MIROS) and Rocogine Technology Sdn Bhd. A ceremony to flag off the RADIS installed survey vehicle was held on 28<sup>th</sup> August 2014. The ceremony was officiated by Sarawak's Minister of Infrastructure Development and Communication, YB. Dato Seri Michael Manyin, accompanied by the Director General MIROS, Prof Dr Wong IRAP's and UTeM's representatives.

The International Road Safety Assessment Programme (iRAP), a non-profit organization dedicated to save life, has developed the concept to give a star rating for roads to help reduce the number of risky road across the world. To give the road a star rating, several attributes of the road have to be collected and quantified by the road safety coder based on the method finalized by the iRAP. There are a few available systems in the market to collect the needed road attributes data. However, it is too costly and has limited portability (e.g. it is required to send the entire survey vehicle rather than just the equipment of the road survey). With the available expertise from the agency (Malaysia Institute of Road Safety Research, MIROS), public university (Universiti Teknikal Malaysia Melaka, UTeM) and technology firm (Recogine Technology Sdn Bhd) in Malaysia, a cost effective and highly portable Road Attribute Data logger and Inspection System (RADIS) has been designed and developed.

## A Product of Industry - University Partnership: Road Attribute Data Logger and Inspection (RADIS)



## Industrial Grant

PPRN is recognized as a mechanism to commercialize research solution by experts from the university to the industry.

For the first half year of 2015, UTeM has secured 11 Public – Private Research Network grant (PPRN). Each project is given RM30,000.00 to complete the research. The table shows the successful proposals.

NO.	RESEARCHER	FACULTY	INDUSTRY PARTNER	PROJECT TITLE
1	Hidayat bin Zainuddin	FKE	Indkom Engineering Sdn Bhd	Investigation on Electrical Characteristics of Alternative Gas for SF6 and Without Solid Insulation
2	Muhammad Fahmi bin Miskon	FKE	SolarGE Sdn Bhd	Remote Input Feeding System for Solar Powered LED Advertising Display on Vehicle
3	Muhammad Fahmi bin Miskon	FKE	Global Factor Sdn Bhd	Design and Development of Marker Pen Manufacturing Automation System
4	Chong Shin Hong	FKE	Archtron Research & Development Sdn Bhd	Development of Home Energy Management System
5	Mariam binti Md Ghazaly	FKE	S.I.T Schiffs- & Industries Technik (M) Sdn Bhd	Homogenizer Rotor & Stator Re-Design for High Shear Force & Shorter Cycle Time
6	Hazriq Izzuan bin Jaafar	FKE	Ambang Dorongan Sdn Bhd	Development of High Production Machine for Murtabak Mini
7	Tan Chee Fai	FKM	Extro Code Sdn Bhd	Optimization of Smart Weapon Storage (SWS)
8	Tan Chee Fai	FKM	Ameba Products (M) Sdn Bhd	Improvement of Electric Toothbrush
9	Tan Chee Fai	FKM	CH Green Sdn Bhd	Design of Automated Monitoring and Warning System for COWTEC Composting & Biogas Production Machine
10	Zuraida binti Abal Abas	FTMK	Significant Technologies Sdn Bhd	CCTV Facial Recognition Using Computer Vision Techniques for Higher Occupational Safety and Health Administration
11	Mohd Sanusi bin Azmi	FTMK	Cook Clicks Sdn Bhd	Voice Navigation SDK for Android Based Application

# Product Commercialization

Order Saya: Application for Food Ordering - Copyright application number: LY2014002327

Order Saya, a mobile application designed for restaurant customers and owners has managed to attract a local software development company to buy the product. It was successfully commercialized in January 2015. Developed by researchers from IS3, Dr Massila Kamalrudin and Dr Safiah Sidek, Order Saya, allows restaurant customers to make their orders directly from their mobile, eliminating the role of a waiter to take orders from the customers. This apps is expected to overcome the problems of delays and errors while making orders. It also helps the restaurant's owner to automatically receive accurate orders from customers, hence reducing the time and cost due to errors from taking wrong orders. This product also allows restaurant owners to keep track the status of orders made by customers and view their daily or montly sales report. Finally, this application could contribute to green cafe as it minimises the use of paper and time when taking orders as well as ensures the correctness of orders made by customers. This application helps users to make order from their own mobile phone with the option of using the NFC technology. This application is divided into two parts: 1) web application for management of orders and 2) mobile Apps for making orders. The Main page and Order list page of the web application are shown in Figure 1 and 2 and the

main page and the order page of the mobile application are shown in Figure 3 and 4.

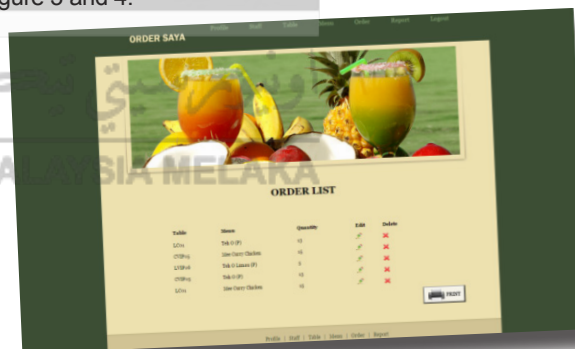


Figure 2 Order List page of Web Application

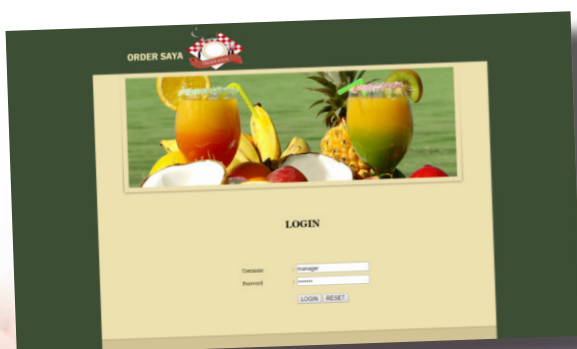


Figure 1 Main Page of of Web Application



Figure 3 Main Page of Mobile Application



Figure 4 Order Page of Mobile Application

This mobile application is expected to contribute to the development of Internet of Things, in which making order via mobile application will become an everyday practice in the food industry.



## Mechanical Engineering Research Day 2015 (MERD'15)



MERD'15 Poster Exhibition



Poster viewing session by Deputy Vice Chancellor (Research and Innovation)

The Mechanical Engineering Research Day 2015 (MERD'15) was jointly organized by the Faculty of Mechanical Engineering and the Centre for Advanced Research on Energy (CARE), Universiti Teknikal Malaysia Melaka. The event took place at Technology Campus, UTeM, Melaka on 31<sup>st</sup> March 2015. MERD'15 was officiated by UTeM Deputy Vice Chancellor (Research and Innovation), YBhg. Prof Ir Dr Mohd Jailani Mohd Nor as the representative of UTeM is Vice Chancellor.

The aim of MERD'15 is to foster a broad range of sustainable collaboration among researchers, expert, educators and participants, thus promoting new opportunities for the enhancement of research activities. This is in line with the increasing demand for innovative research ideas, design, optimizing, modeling, processing and solutions involving real engineering problems, which advocate the provision of rigorous study among distinct communities.

During MERD'15, 74 posters were presented, where short papers were published in the Open Access e-Proceeding (eISBN: 978-967-0257-51-8) via [www3.utem.edu.my/care/proceedings](http://www3.utem.edu.my/care/proceedings). The e-Proceeding has now been indexed in Google Scholar and it is still under evaluation of Thomson Reuters (formerly known as ISI) Conference Proceedings Citation Index™ for indexing consideration in Web of Science® coverage. Full-length selected papers of MERD'15 will be published in the Special Issue publication of *Jurnal Teknologi* (Sciences and Engineering).

## Research Workshops for Social Scientists

In an effort to increase participation among UTeM's social scientists in research activities, the Centre of Languages and Human Development (PBPI) have organised a series of research workshops recently. The workshops were co-organised with Institute of Technology Management and Entrepreneurship (IPTK), a social science and multidisciplinary Centre of Excellence (CoE) and two research groups, namely Research and Innovation Management Advancement (RIMA) and Sustainable Industrial Community (SI-COMM). The main objective of these workshops was to expose social scientists and researchers from PBPI and Faculty of Technology Management and Technopreneurship (FPTT) the types of external research grants and funding available for application. The first workshop on "Writing a Winning FRGS Research Proposal" was conducted by Prof. Dr. Samsuddin A. Rahim. The second workshop was on "Writing a Winning E-Science Research Proposal for Social Science" conducted by YBhg. Prof. Dr. Zainal Ariffin Ahmad. Finally, a luncheon talk entitled "Inter and Transdisciplinary Research: Issues, Challenges and Opportunities" was also conducted on the same day of the second workshop.





# Research Survival Workshop (RSW)

Research Survival Workshop was held on 18-19<sup>th</sup> December 2014 at UTeM Main Campus. It was the first consultation programme co-organised by Innovative Software System Services (IS3), one of the research groups under the Centre of Excellence C-ACT and UTeM Holdings. The two-day workshop was intended to give essential research skills in conducting research, managing research and writing research report. Delivered by a prolific researcher and writer namely YBhg. Profesor Dr. Mustafa Mat Deris, the workshop has attracted about 50 post graduates and new researchers interested to acquire the basic skills. The majority of the participants were very satisfied with the workshop and they suggested that it should be made an annual event.

# R2B - Research to Business Workshop



Recognising the need for researchers to commercialise their research product, a two-day workshop on Research to Business was carried out on the 5<sup>th</sup> and 6<sup>th</sup> May 2015 at Kings' Green Hotel Melaka. The workshop is a joint collaboration between IS3 research group and MTU showcase. It consists of five series mentoring programme emphasizing on developing the skills to build one's research niche, protecting one's research product, securing research funding, acquiring essential skills for business start-up and building sustainable growth for business start-up. Delivered by YBhg. Professor Ir. Dr Mohd Jailani Mohd Nor, the workshop received good response from researchers from UTM, USM, UUM as well as UTeM. There were also participants from Technology Transfer Officer. The highlight of the workshop was the session on the preparation of a business plan and pitching, which the participants appreciate the most.



# R&D CLINICS

UTeM through Centre for Research & Innovation Management (CRIM) is serious in promoting effective research culture at the University. CRIM has executed a series of seminars, workshops and talks to the researchers in the last six months of this year. Experts in the relevant field were invited to share their thought and experience. The table shows the programmes given by the respective invited speakers. We will continuously conduct these programmes to all researchers in future.

No	Activity	Date
1	Workshop for FRGS Grant's Evaluators	28 January 2015
2	Workshop for FRGS proposal	11 February 2015
3	GRA literacy clinic	11 March 2015
4	Research Budget Management Clinic	8 April 2015
5	Research Progress Report Writing	22 April 2015
6	Winning PRGS Clinic	29 April 2015
7	Workshop for Science Fund Grant's Evaluators	6 May 2015
8	Winning LRGS The One Baja Experience	7 May 2015
9	Writing A winning e-Science Fund Proposal For social Scientists	21 May 2015



# Research Highlights



## INTEGRATION BASED ON LEAN THINKING

Lean Integrated System and Standardization (LISS) Advanced Manufacturing Center (AMC)

Assoc. Prof. Ir. Dr. Puvanasvaran A/L.A.Perumal

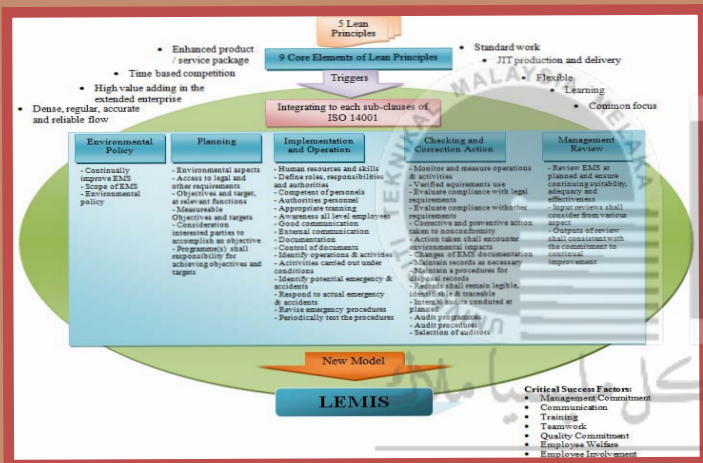


Figure 1 Lean and EMS integrative approach business model (LEMIS)

Kaizen or continuous improvement is a process of gradual change for the better. Typically this procedure is enforced once the system feels the satisfaction on the improvement made. Realizing on the situation, an integrated concept that emphasizes on lean concepts is introduced. Essentially, the primary idea of lean principles is to eliminate the waste and improve the operation. Here, it can be assumed that the idea of integration is basically to make the process more to customer-driven, while at the same time satisfies the company. Through the experiences either in the industries or as an academicians, the integration gives high impact on company's performance as well as increases the customer's satisfaction. There are A few concepts of integration being proposed based on the lean concept and the integration has been proven on the successfulness in a real world.

The Integration of Lean principles and ISO 14001 standards its involve by linking the nine core elements of lean with the implementation of the ISO 14001 standard and it is named as LEMIS model. For example, a clear definition of an organization's environmental policy will help to improve the firm's environmental performance. Fast-tracking by implementation of such a policy will make the organization is able to compete its competitors by winning customers who are more environmentally sensitive.



## A Notification System For Unattended Child In A Vehicle

Datin Nurazlina Md Sanusi, Nuridawati Mustafa, Dr Massila Kamalrudin, Prof. Dr Md Dan Md Palil

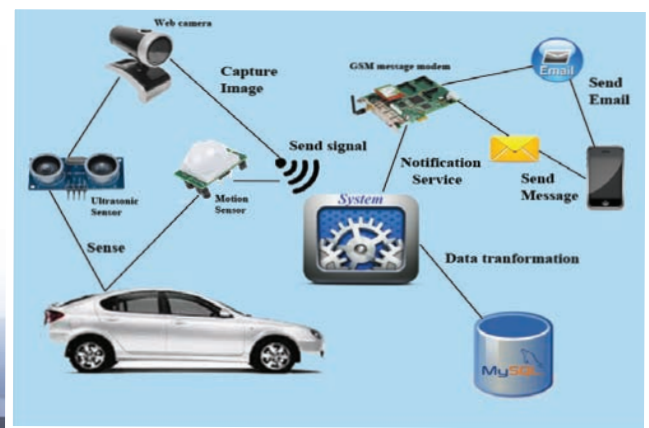
Unattended left behind children in parked cars is one of the major causes of serious injuries in non-traffic accidents. There were four cases (2011-2013) tragic incidences of busy parents or adults in a hurry getting out of their vehicle and forgetting that their child is left in the car. A recent case in July 2013, Malaysia was saddened by the news of three year old girl who died from heat stroke after being left in a car for five hours. In modern vehicles, there are many systems installed to alert the malfunction and dangers such as oil and engine temperature alerts that are displayed on dashboards, alert the passenger to fasten seat belts and alarms when the headlights are turned on.

However, to date, in Malaysia very little research has been carried out to investigate the alarm system to alert the driver that a child is left in the vehicle. Therefore, this research project aims at designing a notification system to remind a vehicle driver of the presence of the unattended child using a car camera, sensors and cellular mobile telephone. In particular, this research relates to a dual technology, detection system that could detect a presence of a child through body heat and motion. The solution of this research is to provide a notification system that has particular utility in connection with mobile telephone of the vehicle driver that there is an unattended child left in the vehicle. An even further of the solution is to provide an improved detection and notification system – a safety equipment that has a low cost manufacture with regards both materials and labor, and economically available to the public to buy.

We name our proposed system as "Detection System for Unattended Child in a Vehicle (DSUV)" to reduce the causes of child death in an unattended vehicle by parent carelessness. Our system will use two types of sensors. The sensors are motion sensor (PIR Sensor) and Ultrasonic sensor to detect the existing of children in the car with the engine switched off. The function of the motion sensor is to detect the motion. If the children struggle or move in the vehicle, the sensor will be triggered.

On the other hand, the Ultrasonic sensor is to track the existance of something in a certain distance. If the children do not move, the motion sensor cannot detect, but the ultrasonic sensor can detect the existance of a child. Our proposed system works when the car engine is switched off and the key is plugged off from the vehicle. Once the sensor senses something, the alarm will be triggered and immediately makes a sound. Then the camera in the vehicle will capture the image of the inside the vehicle and send via email to the vehicle's owner. Simultaneously, GSM modem will make a voice call to the car owner mobile phone to notify the incoming email. A text message will also be sent to the car owner mobile phone to notify that a child has been left unattended in the vehicle.

The proposed system aims to give an opportunity to the parents to save their child before it is too late. The proposed system can be controlled by the user. The user can turn off the system by pressing a button. When the system is set off, the sensors and the camera will be in the OFF state, even when the vehicle owner has plugged his car key and turned off the engine.





## OVERVIEW ON VEHICULAR AD-HOC NETWORK

**Information Security, Digital Forensic  
and Computer Networking (INSFORNET)  
Research Group**

Dr. Aslinda Hassan

Vehicular Ad hoc Network (VANET) is vehicle-to-vehicle (V2V) communications using wireless local area network technologies. The main idea of VANET is to provide continuous connectivity to mobile users on the road, and to provide efficient vehicle-to-vehicle communications. In recent years, the research and development in this area has intensified due to several factors. One of the contributing factors is the potential advantages of VANET applications. V2V communications have enabled the development and implementation of a variety of applications, as well as providing a broad range of information to drivers and travelers. By integrating vehicle's on-board devices with the network interface, various types of sensors and Global Positioning System (GPS) devices, the vehicle has the capability to aggregate, process and disseminates information about itself and its environment to other vehicles in the immediate vicinity that can be used for enhancing road safety and providing passenger's comfort.

The advancements in computing and wireless communication technologies have increased interest in "smart" vehicles, resulting in more vehicle manufacturers beginning to adopt the use of information and technology to tackle the issue of safety and the environment, as well as the comfort of their vehicles. For inter-vehicle communication, it is assumed that a vehicle should have a central processing unit (CPU) that implements applications and communication protocols; a wireless transceiver for transmitting and receiving data packets or wireless signals; a GPS receiver for location and time synchronization information, and a human interface between the driver and the system. This computing platform for vehicular communication (VC) is dedicated to VC functionality and independent from car processors and controllers. Car processors and controllers are normally used for tasks such as fuel injection, braking, transmission and car charging whereas VC computing platform is responsible for V2V communication protocols and applications. The VC computing platform usually uses information provided by the vehicle processors and controller and forwards them to safety and driving efficiency applications. Several automobile manufacturers in EU and USA, which include Audi, BMW, Mercedes DaimlerChrysler, Ford, General Motors and Volkswagen, have created a non-profit organization called Car2Car Communication Consortium (C2CCC). The main objective of this organization is to increase road traffic safety and efficiency using inter-vehicle communication.



## Green Innovative Glass Ceramic Tiles: Towards Resources Efficiency in Tile Industry

**Sustainable Material For Green Technology  
(SM4GT) Group**

**Advanced Manufacturing Center (AMC)  
Faculty of Manufacturing Engineering,  
Universiti Teknikal Malaysia Melaka**

Assoc. Prof. Dr Jariah Mohamad Juoi

Increasing waste amount is considered as a critical issue in waste management. Malaysian produces over 15,000 tons of rubbish every day and 4% of this represents the glass wastes. The amount of glass waste is increasing due to daily utilisation and demand. Glass is made out of silica sand, soda ash and limestone and has many diverse uses. In general, glass is recycled by melting it at high temperature (~1200°C) and then reformed into the desired shape such as bottles and food containers. This current practice has many disadvantages, such as high melting temperature, high energy consumption and processing route limitation. This practice leads to a high cost recycling process. In our work, Green and innovative glass ceramic (GIG) tile is produced from waste glass and industrial wastes. The waste materials involved are soda lime silicate glass (waste glass arising from domestic use such as bottles and container), spent bleach earth from oil palm refineries industries and incinerated ash of oil sludge from petrochemical industries. The production of this product would add value to the waste produced in our society. It saves natural raw materials and recycling waste into marketable product. Moreover, it reduces land requirement for waste disposal and innovates new practice of waste glass recycling. The product has an improved mechanical strength in comparison in the market place and it is produced in the market and produced at lower cost. This is due to the developed microstructure based on sinter crystallization mechanism during viscous flow sintering at lower temperature. Experimental results had shown that the tiles are compatible with antimicrobial coating leading to a self-cleaning property. The prototype of glass ceramic tile with sizes similar to the product available in current market had been developed and the performance of the glass ceramic tiles is evaluated for heavy duty domestic application. It is aimed to be a pioneer for green tag tiles product for application such as floor tiles, wall tiles and path way paving.



# Soft combustion technique – Properties of ferroelectric bismuth titanate ceramics

Green Materials Group (GMG)

Centre for Advanced Research on Energy (CARE)

Dr. Umar Al-Amani Azlan

Lead-free ceramics have been widely used as ferroelectric materials due to environmental friendly for their less toxicity. Many researchers have greatly focused on the lead-free ceramics to replace the lead-based ceramics such as lead titanate ( $\text{PbTiO}_3$  or PT) and lead zirconate titanate ( $\text{Pb}(\text{Zr,Ti})\text{O}_3$ ) or PZT). A group of lead-free ferroelectrics Layer-structured perovskite-like barium titanate ( $\text{BaTiO}_3$  or BT), strontium titanate ( $\text{SrTiO}_3$  or ST), barium strontium titanate ( $(\text{Ba,Sr})\text{TiO}_3$ ) or BST), strontium bismuth tantalate ( $\text{SrBi}_2\text{Ta}_2\text{O}_9$  or SBT) and bismuth titanate ( $\text{Bi}_4\text{Ti}_3\text{O}_{12}$  or BIT), are such as among these ceramics, BIT has received a special attention due to its potential for the development of memory technology such as dynamic random access memory (DRAM) and ferroelectric random access memories (FRAM). Moreover, the interesting electro-optic properties and the high Curie temperature ( $675^\circ\text{C}$ ) of this material allow its use in high temperature piezoelectric components and optical displays. Normally, the deposition of thin films is more complex to obtain a good layer on substrate. In order to tackle this problem, high precision deposition technique is essential in order to control the desired thickness and surface layer of ferroelectric compounds. To date, physical vapor deposition (PVD), chemical vapor deposition (CVD), metal-organic chemical vapor deposition (MOCVD) and RF sputtering have been frequently used to obtain a better ferroelectric thin films condition. However, a major concern on expensive equipment and experience user limit this technique in many studies. In order to develop the ferroelectric materials, the preparation of bulk ceramics has been studied. Improvement in processing route can also become another solution to improve the stability of BIT structure and subsequently, the ferroelectric properties. As stated earlier, the Bi ions are volatile at high

temperature. In a simple method, the BIT powders have been prepared using the conventional solid state reaction. Nevertheless, this conventional method produces non-stoichiometric composition due to the undesirable loss of Bi content through volatilization at elevated temperature thus, reducing the ferroelectric properties of BIT. In addition, this method also causes crystallites coarsening and particle aggregation due to calcination at high temperature. Hence, the volatility issue can probably be minimized by using wet chemical synthesis such as hydrothermal method, sol-gel method, precipitation method and mechanosynthesis. Self-sustaining combustion synthesis has emerged as an essential technique for the synthesis and processing of structural and functional ceramics, catalysts, composite, alloys, intermetallics and nanomaterials. According to Aruna & Mukasyan (2008), this method is convenient in process, simple in experimental device and saving in time and energy consumption in comparison to the conventional solid state reaction and several wet chemical routes. Moreover, it is a straightforward preparation process to produce homogeneous, very fine, crystalline and non-agglomerated multi-component oxide powders without intermediate decomposition steps. Patil et al. (2002) reported that the important key of combustion synthesis is highly dependent on the interaction of three important elements such as oxidizer, fuel agent and temperature. A good interaction between these three elements leads to the production of ceramic powders at lower temperature and shorter reaction time. On this basis, an attempt has been made to synthesis BIT powders via combustion technique. The properties of bismuth titanate ceramics prepared by soft combustion technique are summarized in Table 1.

Table 1: Properties of bismuth titanate ceramics prepared by soft combustion method

Parameters	Without fuel agent	With fuel agent
Single phase formation	Calcination at $750^\circ\text{C}$ for 3 hours	Combustion temperature at $290^\circ\text{C}$ for several minutes
Particle size by TEM	$\sim 120$ nm	$\sim 50$ nm
Optimized sintering temperature	$1100^\circ\text{C}$	$1000^\circ\text{C}$
Grain morphology	Rod-like grains	Plate-like grains
Dielectric constant, $\epsilon_r$ at 1 MHz	119	113
Dielectric loss, $\tan \delta$ at 1 MHz	0.008	0.007
Remanent polarization, $P_r$ ( $\mu\text{C}/\text{cm}^2$ )	6.3	6.8
Coercive field, $E_c$ (kV/cm)	20	26

# Business Continuity Management (BCM) vs Supply Chain Risk Management (SCRM)

## Growing and Contingency Management (GCoM)



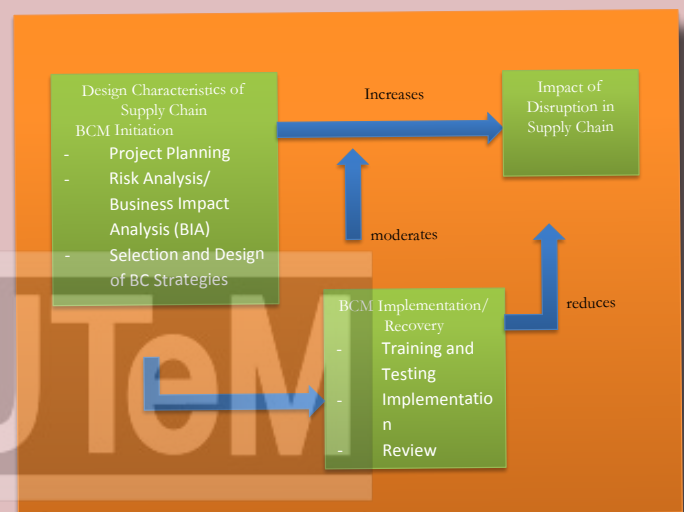
Dr. Haslinda Musa, Assoc. Prof. Dr. Ahmad Rozelan

BCM can be seen as specific processes in risk management, with a typical framework, of identifying risks, assessment of risks, strategy development to overcome risks, and applying possible resources in mitigating the risks. Both topics of BCM and SCRM seems to be discussed in service sectors such as financial (Ritchie & Brindley, 2007). While BCM tends to address both marketing and HR functions, SCRM is more geared towards addressing issues in transportation (Jyri Vilko et al., 2014) and healthcare services. Although service sectors such as finance are discussed in both studies, SCRM discussed the issues considering Supply Chain context with multiple organisations. BCM on the other hand only focused on individual business owners (Cooke & Rohleder, 2006), small business industry (Street & Meister, 2004), private enterprise (Sull & Houlder, 2006) and non-profit government/organisations (Dawes et al., 2004). SCRM in most studies, is focused on the manufacturing sector within their supply chain context comprising various functional areas (Jyri Vilko et al., 2014), such as operations, inventory management, distribution/ logistics and procurement. While BCM seem to focus on individual organisational decision-making, SCRM on the other hand focuses specifically on the manufacturing strategy in the broader area within the supply chain. The manufacturing strategy includes in-house productions, outsourcing, make-to order and lead-time. Studies on SCRM also seem to apply Inventory Systems (Rashid et al., 2014) such as Vendor Managed Inventory Systems (VMI) and installation base stock policy. Besides, quality management is also a concern to SCRM studies (Cui and Basnet, 2015). Whenever both BCM and SCRM topics were discussed, only Rashid et al. (2014) applied SCRM theory, while Zsidisin et al. (2005) applied institutional theory to understand their case studies. E. Cantor et al., (2015), although considering the condition of supply chain, only applied general principles of Small And Medium size industry (SMI) in managing risks considering the size of their business partner.

A framework for management of risks for business organisations varies between these two (2) topics (BCM and SCRM) although both discussed how risks are dealt within an organisation. Business Continuity Management (BCM) or some described it as "disaster recovery management" studies tend to focus on the recovery phase within risk management (Iacovou & Dexter, 2004). Further, BCM framework covers the unexpected disruptions that may occur in business organisation and deals with it in the recovery phase to ensure that the business will be restored to its normal level as quickly as possible (Bajgoric, N., 2014). While the SCRM literature brought in Partnership/relationships framework (Cui and Basnet, 2015) such as buyer-supplier relationships, dealerships and stockholding and Client Vendor-relationships, BCM on the other hand only brought in individual survival models (Sahebjamnia, N. et al., 2015) to

see barriers to business continuity.

In conclusion, a model is developed following conceptual approach discussed above, as shown below.



There are several of study in Supply Chain Risk Management (SCRM) ranging from identifying risk, analysing risks to how organization in supply network deal and response to the risk identified. However, there are also needs in considering plans to continuously operate the business and flow of materials in the supply whenever the risks occur, while the supply chain elements needed are not available. For this purpose, BCM could be applied to provide acknowledge planning to business in dealing with supply chain at risk. BCM came from many other topics with similar approach in dealing with emergencies such as emergency management, emergency planning, disaster recovery and crisis management. BC in supply chain is considering recovering from the disruption that occurs within supply and ensure that the business will be continuing its operation and that the flow of materials is undisturbed. In short, BC in SC could be seen as dealing with the effect of disruption to the supply (the impact of disruption to supply including the unexpected risks) rather than analyzing the specific identified risks as practiced in SCRM. It is obvious that BCM is managed in a similar way as traditional SCRM, hence similar steps could possibly be developed considering the six (6) steps that have been established in BS 25999 which begins with project planning (initiation), followed by risk analysis / business impact analysis (BIA), selection and design of BC strategies, training and testing, implementation, and finally review. As SC is far more complicated and complex operations with participation of other supply chain members, the perceptions of BCM and its competitive environments could differ.

## MeeInventor™: BRIDGING THE GAP BETWEEN IDEAS AND REALITY

Professor Dr. Goh Ong Sing

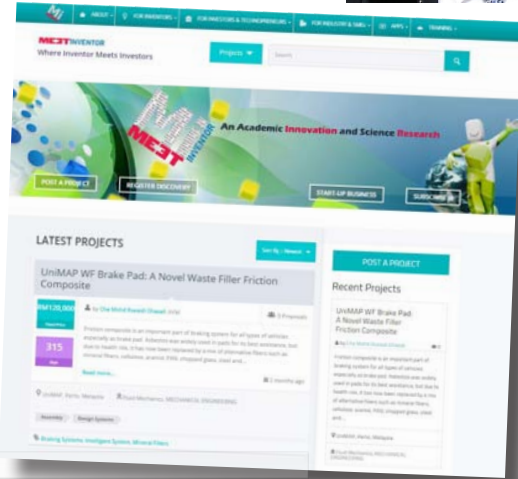


Academic research often provides the foundation for generating new ideas and innovations that can make positive impact on national economic prosperity. Research in science and technology allows the creation of new products to be brought to the marketplace. But how often do these academic innovations reach the marketplace? Although universities regularly produce new ideas and innovations, most academic research innovations are not well showcased and often fail to reach public awareness at large, including the potential investors. Many at times, such innovations end in the laboratory.

MeetInventor™ helps to bridge the gap between ideas and reality in academic research. The MeetInventor™ (via MeetInventor™ portal) uses Internet-based approaches to speed up the process of getting promising innovations into the market. Here, researchers are able to post information about their innovations to be exhibited on the portal. There are four main services that can be support by this portal i.e. repositing, educating, facilitating and marketing. The MeetInventor™ repositing system keep record of all products which are posted on the portal. This includes the inventor's product descriptions, intellectual property (IP) documents, inventor's profile, etc.

Besides that, MeetInventor™ provides a platform to supports online learning where virtual training will be given to researchers to develop their entrepreneurship knowledge and skill. One of the courses which will be offered is the Research to Business Massive Open Online Course (R2B-MOOC) course. Online training gives them maximum flexibility to learn at their own convenience.

MeetInventor™ also facilitates researchers by providing support for better access to funding. The portal can be directly linked with the university department responsible for research funding administration. Such research funding model will ensure huge fund amount can be obtained if the project



being

posted able to satisfy the funding institution's needs since the MeetInventor™ portal gives a clear insight into what the project has to offer upon completion.

The most important feature of MeetInventor™ is the ability for researches to 'market' their ideas and innovations. Researchers can exhibit their products or projects through the portal. These products can be accessed by companies or industries around the globe, thus establishing strategic market linkages for business start-ups. To this end, we can say that the MeetInventor™ can function as a 'one-stop centre' for transferring academic innovations towards commercialization. The homepage of MeetInventor™ portal is shown below:

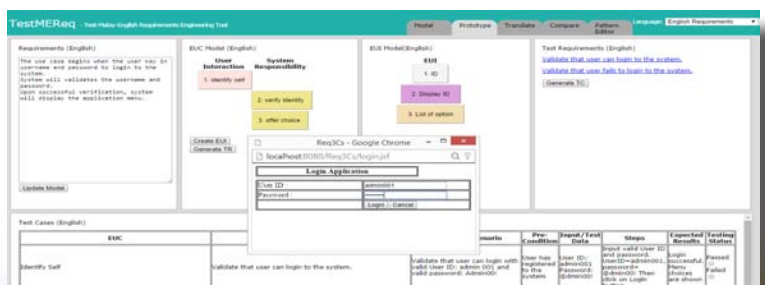


## TestMEREq "Test Early, Test Often..."

Dr Massila Kamalrudin, Dr Safiah Sidek, Nor Aiza Moketar

Requirements in nature are error-prone. This is due to unclear, ambiguous and incorrect description of requirements provided by the client-stakeholders. These problems always lead to failure and high cost for the software being developed. Therefore, we have produced an innovative and low cost solution called TestMEREq to validate requirements at the earliest stage of software development. With TestMEREq, anyone can perform an early testing of their requirements as often as they required. It offers many advantages compared to other available requirements engineering tools such as low cost and easy to use. It also allows for collaborative validation of requirements from different domain of applications. This is because TestMEREq is simple, lightweight and user-friendly as well as able to provide high-

performance capability to validate user's requirements written in an informal natural language. The tool can automatically generate test suite: test requirements, test cases and test script from semi-formalised Essential Use Cases (EUC) Essential User Interface (EUI) models which provides different states of behaviors to the requirements. In addition, TestMEREq provides an automated mock-up user interface to allow users to visualize and experiments with their requirements. Hence allow continuous validation to be done. This will help the user to be able to always validate their needs from the beginning. Test Driven Development (TDD) approach that have been employed to this tool, also helps to minimize the cost of correcting errors at the later stage of software development. The features of the tool are shown below:



*TestMEREq has won the silver medal award in this year's Malaysian Technology Exhibition (MTE) and gold medal award in Mini UTeMeX 2014*



## TYRE PRESSURE SUSTAINING SYSTEM (T-PreSS)



Assoc. Prof. Ir. Dr. Sivarao  
Subramonian

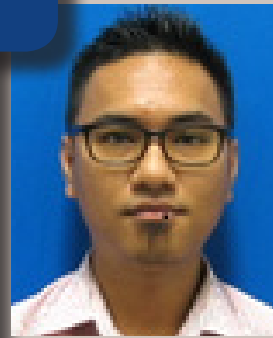
Automobile Tyres are silent killers! No matter how well they are taken care, how good and expensive they are, they still leak-out 10-15 kPa of pressure every month, and this is equivalent of adding an unnecessary load of 70kg into the car. Bridgestone and Dunlop had verified, properly inflated tyres can actually save 10% of fuel consumption, extend 9 months of tyre life, increase 20% of braking performance, lightens steering system, and reduces fuel burning and pollution at large. Many don't realise that, air from inside the automobile tyre is actually be leaked-out naturally to the atmospheric and eventually causes the tyre to drop its pressure from day to day. Scientific studies reveals, most major road accidents are mainly caused by catastrophic failure of tyres running with improper tyre pressure, where, many drivers do not even know their exact operating tyre pressure, ending-up to inflate by logic estimation or referred values which is too bad for safety. On the other hand, air pressure kiosks are often not maintained properly and stand high chance to fatigue, which may not provide the pressure we set on it into the tyre. On top of that, many don't even inflate their tyres because they are too busy until they forget /lazy to visit kiosks. Worst still, when the kiosk is out of order when it is approached. Thus, a system has been designed, developed and validated to sustain the safe tyre pressure without human intervention. This system was designed to automatically replenish the amount of leaked air to constantly maintain desired tyre pressure at all time, which eliminates the hustle of manual inflating. The technology named as Tyre Pressure Sustaining System (T-PreSS) is a unique and cost effective solution, suitable for moderate level ground automobiles and highly potential to be practiced worldwide.

## Smart Android Wheelchair Controller

KHAIRUL AZHA BIN AZIZ



Smart Android Wheelchair Controller is designed to control a wheelchair using android device wirelessly. The objective of this project is to facilitate the movement of people who are disabled or handicapped and elderly people who are not able to move well. Android technology is a key which may provide a new way of human interaction with machines or tools. The system can control wheelchair movement i.e. forward, backward, left, right and also facing qiblah. The system can also control electrical appliances.



## Smart Obrometer with Flood Alert Apps. System

Musa bin Yusup Lada

The Smart Obrometer with Flood Alert Apps System is developed to collect, record and monitor data regarding the amount of rainfall volume in specified areas, especially those areas that are susceptible and risky to have major flood or flash flood phenomenon. This system consists of rain sensor, tipping bucket, controller and flood notification apps via wireless technology. The tipping bucket is used to measure the amount of rainfall according to the tip drop frequency. If the number of tipping is more than the threshold setting, it shows that there is possibility of flood to occur. The controller will process the amount of rainfall, and then the data are sent to the meteorology base station. In addition, the data can be received by the risky flood residents via application software, ran on smartphones, tablet computers and other mobile devices. Furthermore, the system is also powered by solar power energy as one of the initiative towards energy saving and acculturate the green technology application. Hence, this system presents a practical solution to give a precaution reminder to residents of flood risky areas on the probability of the flood occurrence based on accurate measurements of the rainfall.

## TADA-chi

Mohamad Fani Bin  
Sulaima



Children with Autism spectrum disorder (ASD) have their own characteristic and behavior. They also have problem in communication skills, poor in imagination and difficult to learn as ordinary children. Furthermore, they are living in their own world. They cannot focus on activity in front of the others, except if they interact with the activity or module themselves. To overcome this problem, Therapeutic Aid Device for Autism Children is proposed. It is electronic module to interact ASD children. This product focuses on eye sense (train focus) and touch sense (muscle strength). Pertaining to train their focus, children with ASD evaluate on four based of colors. The four based colors are red, yellow, blue and green which are located at the flash card section. In regard to touch sense, children with ASD will be tested by touching the numbering buttons from zero to nine and the number will display as output as eye sense also. This research project is expected to make sure that this device can assist the children with ASD to sense and focus with the module. If the children with ASD children interested with this product, it will make the process of therapy becomes smoother. Meanwhile, the education process and sense level of the children will improve.

# Research Programmes Offered by the Centre for Graduate Studies

The Master of Science candidate is supervised by an academic staff (or a panel of supervisors) from the faculty. The directed research work will focus on a particular subject that introduces candidates to the processes by which new knowledge is developed or/and applied accordingly. The specific topic of investigation will be agreed upon by the supervisor (or panel of supervisors) and the candidate. The academic progress of a candidate is assessed through a research Progress Report submitted at the end of each semester. The degree is awarded based on an oral examination (viva-voce) of the thesis submitted by the candidate on completion of the study. Candidates intending to study by research may submit their application for admission throughout the year.

## Master of Science

The Doctoral candidate by research is supervised by an academic staff (or a panel of supervisors) from the faculty. The directed research work will focus on a particular subject that introduces candidate to the processes by which new knowledge is developed or/and applied accordingly. The specific topic of investigation will be agreed upon by the supervisor (or panel of supervisors) and the candidate. The academic progress of a candidate is assessed through a research Progress Report submitted at the end of each semester. The degree is awarded based on an oral examination (viva-voce) of the thesis submitted by the candidate on completion of the study. Candidates intending to study by research may submit their application for admission throughout the year.

## Doctor of Philosophy

The Engineering Doctorate (Eng) is a 4 year doctoral level programme combining academic research and scholarship with industrial problem-solving and project management. The programme incorporates the industrial relevant research, team leadership and unique university-industry partnership. The academic degree awarded on the basis of advanced study and research in engineering is equivalent to a PhD degree in engineering/ applied sciences. The innovative research output from the programme is expected to be immediately useful to the participating company. The Engineering Doctorate programme offers an opportunity for outstanding engineers to enhance their qualification through a mix of broadly based technical and professional training while completing an industry based research project. Successful researchers after completing the programme not only graduate with a title Doctor of Engineering, but also with the important mix of professional skills, technical knowledge and research experience that will enable them to progress to senior positions within industry at an acceleration rate.

## Engineering Doctorate (DEng)

Doctor of Information Technology offers a unique 3½ year program that consists of coursework (7 modules) and research studies to extend fundamental knowledge of information and communication technology in solving industrial relevant problems. During the research studies, candidate is supervised by an academic staff from the university and an industrial supervisor from the related research field. The directed research work will focus on an industrial problem that engages the candidate in industry-based problem solving by which new knowledge is developed or/and applied accordingly. The supervisor (or panel of supervisors), the industry supervisor and the candidate will select the topic of investigation. The academic progress of the candidate is assessed through assignments, written tests, and research progress report throughout the studies. The degree is awarded based on the completion of coursework, and an oral examination (viva-voce) of the thesis submitted by the candidate on completion of the study. Interested candidates may submit their application for admission throughout the year. Successful candidates should begin their studies in common semester according to the university academic calendar.

## Doctor of Information Technology

# Postgraduate Testimony



Hi, I am Zulkifli Tahir. I have completed my master of computer science at UTeM in 2010, almost 5 years ago. I am very glad that I have the opportunity to share my experiences while studying in UTeM.

I was a member of the Computer, Vision and Robotic Laboratory (CoVisBot) at UTeM, which was first chaired by Prof. Anton Satria Prabuwno who became one of my supervisors. In this laboratory, I carry out my master study and I had wonderful experiences not only as a student, but also as a Research Assistant and Teaching Assistant. As a master's student, I followed the structure of the study requirements of master by research in UTeM with most of the time was spent by research works and take 2 to 3 courses. I also feel very fortunate, because I was also recruited as a Research Assistant on the E-Science Fund grant awarded by The Ministry of Science, Technology and Innovation (MOSTI) with the research project entitled "Maintenance Decision Support System for Small and Medium Industries Using Decision Making Models" chaired by Assoc Prof. Burhanuddin Mohd Aboobaider, who also became my main supervisor. Afterwards, I was then appointed as a Research Assistant on another E-Science grant awarded by MOSTI chaired by Assoc Prof. Nur Azman Abu. Moreover, I was also given the opportunity to become a Teaching Assistant in several classes at Fakulti Teknologi Maklumat dan Telekomunikasi (FTMK). In carrying out all of my research work, I wish to express my sincere appreciation to my main supervisor, Assoc Prof. Burhanuddin Mohd Aboobaider for his patience, encouragement, guidance, motivation, advice and friendliness in explaining and coaching me. A special thanks to my co-supervisors Assoc Prof. Abdul Samad Hasan Basari, Prof. Anton Satria Prabuwno and Assoc Prof. Nur Azman Abu for their generosity in sharing their ideas and research work. I would like also to express my gratitude to The Dean of FTMK at that time, Prof. Datuk Dr. Shahrin Sahib and The Deputy Dean (Research and Post Graduate) Prof. Nanna Suryana Herman for their guidance, advice and motivation. With their participation and help, I managed to complete my master's program very well, by publishing my research in national and international publications, in several Journals and Proceedings, and also some of the achievements of research exhibition awards.

Shortly, around three months after graduating my Master Degree, with excellent experience gained at UTeM, I have been accepted as a lecturer at Hasanuddin University in Indonesia. During becomes a lecturer, I still maintain the study and research habits as I had done when studying at UTeM. And about three years after becoming a lecturer, which started in 2013, I got a scholarship from the government of Indonesia to further study at the Doctoral program of Ehime University in Japan, where I study and research today.

# IPTK

INSTITUTE of Technology Management and Entrepreneurship (IPTK) was established on January 1, 2004 through the approval of the Higher Education Department letter dated January 21, 2004. The academic session started on June 2004/2005 with programmes being offered at post-graduate which levels are Master of Science (MSc by research) and Doctor of Philosophy (Ph.D by research).

The programmes that being offered are MSc in Technology Management, Entrepreneurship, Human Resource Development, Counseling Industry, and Technical Communication. Whereas under Ph.D levels, programs offered are Management of Technology & Entrepreneurship, R & D Management, Quality Management, Technical Communication, and Education Technology and Training.

For entry enquirement at PhD and MSc level, candidate needs to have a good degree (Master or bachelor) from UTeM; or from any institution of higher learning which are recognised by the Senate UTeM related to the field of study applied for. Other qualifications equivalent to a bachelor's degree and relevant experience recognised by the Senate UTeM will also be considered.

# Centre of Excellences (CoEs)

## CENTRE FOR ADVANCED COMPUTING TECHNOLOGY (C-ACT)

<http://ftmk.utem.edu.my/c-act/>

The Centre for Advanced Computing Technology, is also known as C-ACT, was established in 2011 and located at Faculty of Information and Communication Technology (FTMK), UTeM. C-ACT comprises of eight research groups with different focus and expertise but mainly aims at providing sustainable computing and software solution for any application of domains and promoting the pursuit of excellence from research idea to practice, based on a foundation of innovative, ethical and collaborative work.

The vision, objective and research group are shown below

### Vision

To establish a cohesive and expanding base of multidisciplinary research in computing and software technology in producing sustained growth in research funding, excellence in integrated research and education, and proliferations in national and international stature and collaboration.

### Objectives

1. to expand the demonstrated capability of UTeM in the area of computing and software Technology
2. to engage in activities that are directly or indirectly support the economic development initiatives that benefit university, country and society, in particular activities that create collateral opportunities for new computing and software technology research.
3. to cultivate partnerships with industry and academia, and by providing the solution regards to computing and software technology.

List of Research Group	Group Leader
Innovative Software System and Service (IS3)	Dr Massila Kamalrudin
Optimisation, Modelling, Simulation, Analysis and Scheduling Group (OptiMASS)	Assoc.Dr. Abdul Samad Sighatullah
Creative Media Lab (CML)	Mrs Shahrul Badariah Mat Sah
Information Security, Digital Forensic and Computer Networking (Insfornet)	Dr Aslinda Hassan
Biomedical computing and Engineering Technologies (Biocore)	Assoc.Dr Abdul Samad Hassan Ahmad Basari
Computational intelligence and Technologies (CIT)	Dr Nurul Akmar
Communication, Multimedia, Network and System (Comnetsys)	Mr Mohd Fairuz Iskandar Othman
Innovative and Sustainable Technical Education Research Group (ISTE)	Assoc. Dr Faaizah Shahbodin

## CENTRE FOR ADVANCED RESEARCH ON ENERGY (CARE)

[www.utem.edu.my/care](http://www.utem.edu.my/care)

The Centre for Advanced Research on Energy, which is also known as CARE, was established in 2011 and located at the Faculty of Mechanical Engineering (FKM), UTeM. CARE is mainly supported by the staffs from the Faculty of Mechanical Engineering and Faculty of Engineering Technology; and responsible to Centre for Research and Innovation Management (CRIM). Currently, CARE comprises of twelve research groups with multidisciplinary fields. The vision, mission and motto of CARE are:

### Objectives

To be the world leader for research development and innovation in the field of sustainable energy and automotive.

### Motto

Towards Greener Future

### Mission

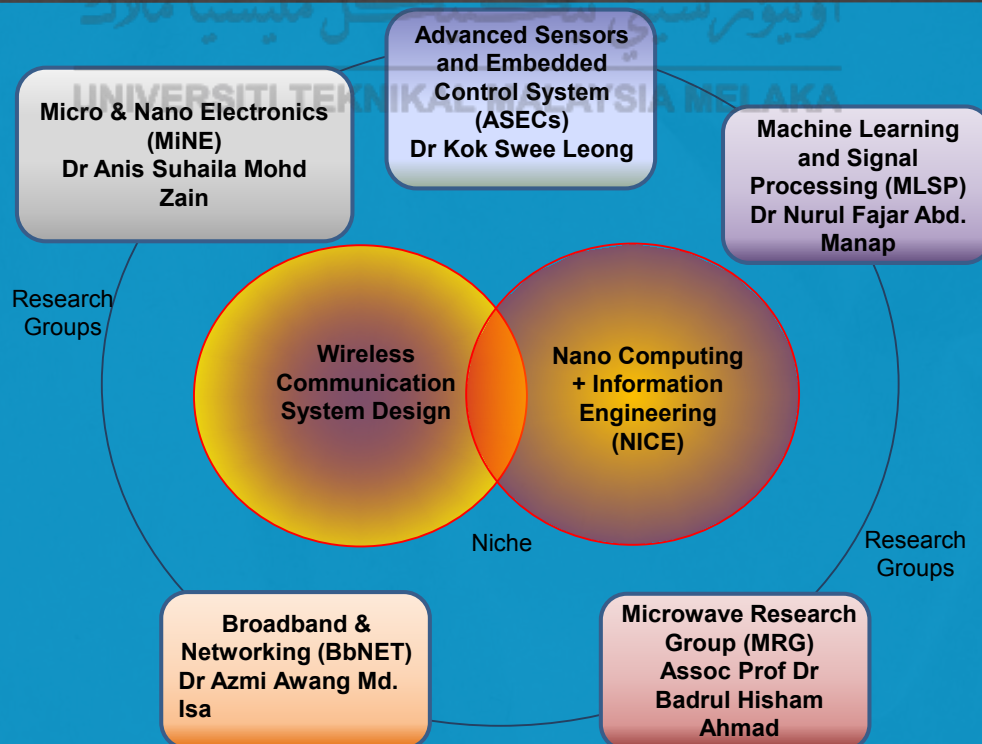
1. Conduct high-impact research in energy, automotive, and policy within the context of economic and environmental sustainability.
2. Securing significant research funding from national and international level.
3. Establishing state-of-the-art research facilities that promote technology transfer through innovation and commercialization.
4. Undertake collaborative projects with industries and societies.

Research Group	Group Leader
HiPS : High Performance Structure	Prof. Dr. Md. Radzai Bin Said
POCSEET : Pollution Control and Environmental Engineering Technology	Assoc. Prof. Dr. Ir. Abdul Talib Bin Din
Vibro-Acoustics	Assoc. Prof. Dr. Azma Putra
AcTiVe : Advanced Vehicle Technology	Dr. Mohd Azman Bin Abdullah
GTeV : Green Technology Vehicle	Dr. Musthafah Bin Mohd Tahir
A-MAT : Advanced Materials	Dr. Mohd Zulkefli Bin Selamat
SusME : Sustainable Maintenance Engineering	Dr. Reduan Bin Mat Dan
EFFECTS : Efficient Energy and Thermal Management System	Dr. Tee Boon Tuan
INNOMA : Innovative Machine and Mechanism	Dr. Faiz Redza Bin Ramli
IDEA : Integrated Design	Dr. Siti Nurhaida Binti Khalil
G-TriboE : Green Tribology and Engine Performance	Dr. Mohd Fadzli Bin Abdollah
GMG : Green Materials Group	Dr. Umar Al-Amani Bin Haji Azlan

## CENTRE FOR TELECOMMUNICATION RESEARCH AND INNOVATION (CeTRI)

<http://www3.utem.edu.my/cetri/>

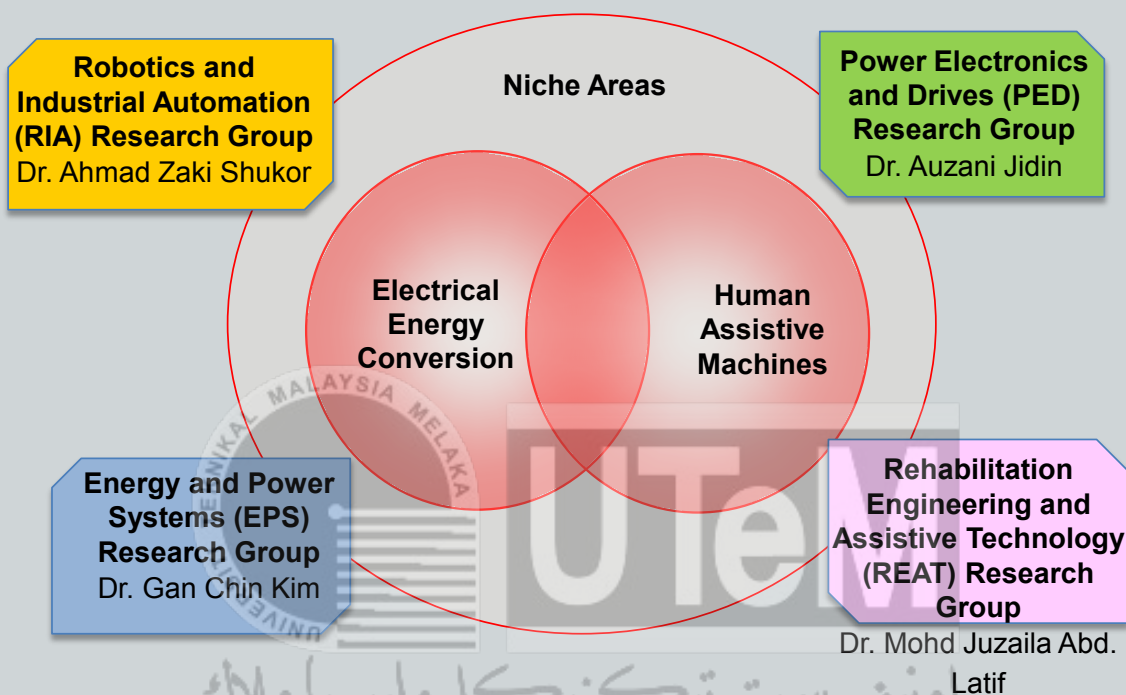
Center for Telecommunication Research and Innovation (CeTRI) is located at Faculty of Electronics and Computer Engineering. Since its establishment in 2011, CeTRI has committed itself to the research, development and commercialization activities in the field of wireless communication system design and nano computing & information engineering in both national and international levels. Our mission is to lead in the research and innovation by actively incorporating experts in the fields of computer, electronics and telecommunications with smart university-industry partnership in line with national aspirations. With the full support from Universiti Teknikal Malaysia Melaka (UTeM), government agencies, research collaborators and industrial partners, CeTRI is growing steadily throughout these years and surely will strike higher goals in the near future.



# CENTRE FOR ROBOTICS AND INDUSTRIAL AUTOMATION (CeRIA)

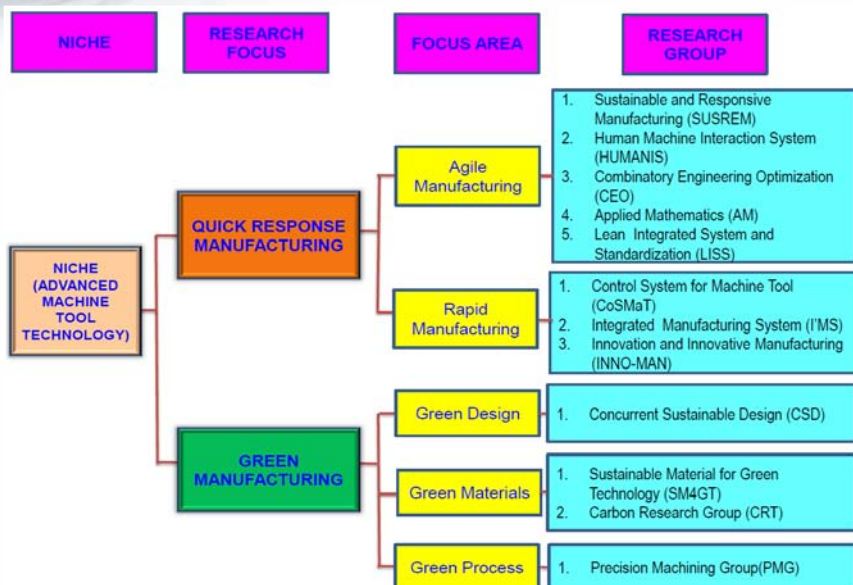
<http://www3.utem.edu.my/ceria/>

Centre for Robotics and Industrial Automation (CeRIA) was established in 2011 and is located at Faculty of Electrical Engineering (FKE), UTeM. CeRIA conducts research associated with new technologies and new product developments as well as providing consultancy services and commercial testing to the industry. CeRIA has identified two niche areas which are Electrical Energy Conversion (EEC) and Human Assitive Machine (HAM). In championing both areas through strategic sharing, CeRIA has established four research groups that are inter-faculty base with most of the members are the academic staff of FKE. Moreover, in order to create an inspiring research environment, eleven research laboratories have been established and each laboratory is under the responsibility of particular research group.



# ADVANCED MANUFACTURING CENTRE (AMC)

Advanced Manufacturing Centre (AMC) was established in 2003 and located at Faculty of Manufacturing Engineering (FKP) with the aim to cultivate research in the area of manufacturing whether it is processes, material, automatic and robotic, design and management. It provides impressive in-house facilities for teaching and learning as well as consultancy and testing services to the industry. The niche area of AMC is Advanced Machine Tool Technology in which two main research focus have been identified; Quick Response Manufacturing and Green Manufacturing. In consistant to this, further five research disciplines have been identified and with this 12 research groups that inter-faculty base are established in order to support the development of the CoE. At the same time, in an effort to inspire and carrying research engagements, six research laboratories dedicated to the CoE have been established.





The members of the RICE bulletin extend their congratulation to YBhg. Datuk Professor Dr. Mohd Ruddin Ab Ghani on the appointment as a new Fellow of Academy of Sciences Malaysia at the 20<sup>th</sup> ASM General Meeting held on 25<sup>th</sup> April 2015. We are very glad to have you as the first academic staff of UTeM as well as our first father of UTeM to receive this appointment.

YBhg Datuk has produced thousands of students majoring in Bachelor of Electrical engineering and he has also supervised an approximately not less than 25 postgraduate students, while he was the Dean and Rector of the university. He has been awarded more than 5 research awards internationally and is the first recipient from Malaysia that won the most prestigious award namely the "Awarded Invention Academics Order of Merit" at the 2014 World Inventor Award Festival, Korea Invention News on 13<sup>th</sup> September 2014. Further, he is also an inventor and a patent holder of a product called iREMOTE TERMINAL UNIT (iRTU). In addition to this, he is also a prolific writer where he has wrote almost more than 150 research articles that comprise both journals and proceedings at the national and international level. His research articles are proven to be referred and contributed to the body of knowledge with 680 citations and 11 H-index till today. All these achievements and experiences have proven that YBhg Datuk is an active researcher although he is busy with the management task and responsibilities as a Dean, Rector and Parliament Secretary. Thus, we are confident that YBhg Datuk will perform very well in this prestigious and challenging responsibility at the Academy of Science Malaysia.



UPCOMING EVENTS

## International Design And Concurrent Engineering Conference 2015

September 6 – 7, 2015,  
Awa Kanko Hotel, Tokushima, Japan

**IDECON2015**

AWA KANKO HOTEL, Tokushima, JAPAN



### ORGANIZED BY

Japan Society of Mechanical Engineers, Design & Systems Division  
Japan Society of Mechanical Engineers, Manufacturing Systems Division

### CO-ORGANIZED BY

Universiti Teknikal Malaysia Melaka

### TOPICS OF INTERESTS (BUT NOT LIMITED TO)

Whole themes of design and concurrent engineering, which include CAD/CAM, CAE, Reliability in Design, Ergonomics in Design, Virtual Engineering, Concurrent Engineering, Rapid Prototyping, Reverse Engineering, Design for Automation and Intelligent Systems, Design for Mechatronics Systems, Design for Manufacturing Systems, Features Based Technology, Green Design, Sustainable design, Sustainable Materials in Design, Composite Product Design, Operation Management, Lean manufacturing, Supply Chain Management, Logistics, Material Handling, Warehousing, Global Manufacturing Management, etc.

Language: English

### OBJECTIVE

Bilateral collaboration between Malaysia and Japan has become increasingly important in academia as well as in industry. Originated in Malaysia, iDECON2015 will be held first time in Japan to provide an international forum for researchers, engineers, industrial practitioners of these two countries. A wide variety of topics related to design, concurrent engineering and manufacturing is accepted in iDECON2015 to facilitate sharing recent research results/trend among the participants and to explore the future directions.

### IMPORTANT DATES

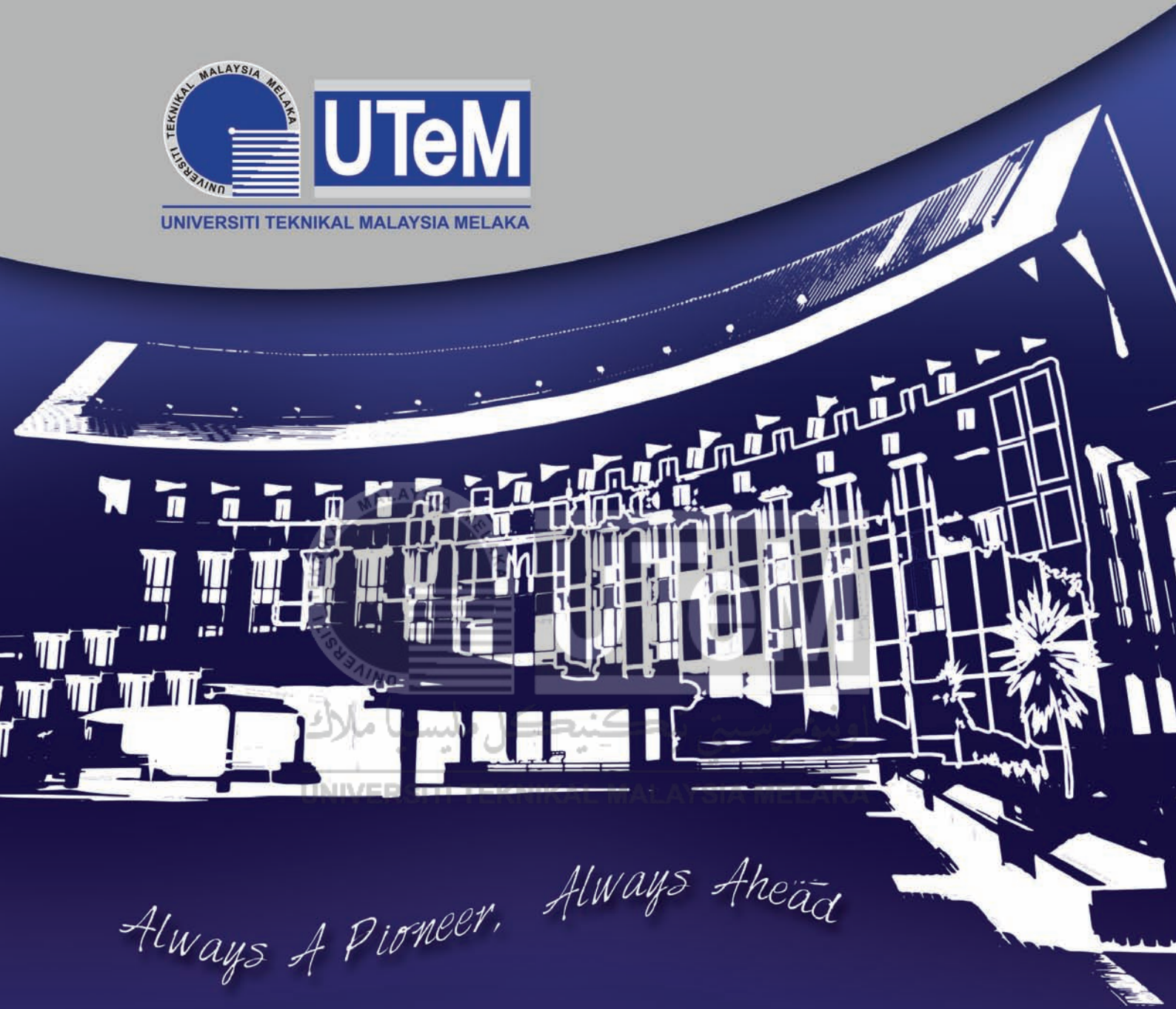
May 10, 2015	Abstract Submission Deadline
May 20, 2015	Full Paper Submission Deadline
Jun. 15, 2015	Notification of Paper Acceptance
July 17, 2015	Final Paper Submission Deadline
Sep. 6-7, 2015	Conference

<http://www.eng.osakafu-u.ac.jp/idecon2015/>



**UTeM**

UNIVERSITI TEKNIKAL MALAYSIA MELAKA



*Always A Pioneer, Always Ahead*

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Melaka, Malaysia.

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