THE TRIPLE HELIX

TECHNOLOGY. APPLIED TO MARKET.

CATALYSING MALAYSIA'S TECHNOLOGY ECOSYSTEM THROUGH INDUSTRY-DRIVEN RESEARCH & INNOVATION

This year marks 8 years for the Collaborative Research in Engineering, Science & Technology Center (CREST) and it has been an enriching journey. CREST has proven that the collaborative model of bringing together the industry, academia and the government is one that works.

CREST has also assisted the industry to move-up the value chain and enabled academicians to see their basic discoveries applied in practice as well as developed a talent pool of scientists and engineers.

As a catalyst for the growth in the E&E industry, we remain committed in bringing together stakeholders for collaborative R&D, talent development and commercialization.

CREST COMMUNITY NEWSLETTER

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THE CREST JOURNEY

Due to common challenges faced in the ecosystem such as mismatched research areas at universities, lack of supply of industry-relevant talent and lack of shared facilities to serve immediate industry needs, CREST was established in 2011 after various dialogues with the Economic Planning Unit (EPU).

As the brainchild of the Captains of the Electronics Industry, the CREST platform aims to promote industry demand driven research, generate a pool of domain experts and optimise resource allocation in the ecosystem.
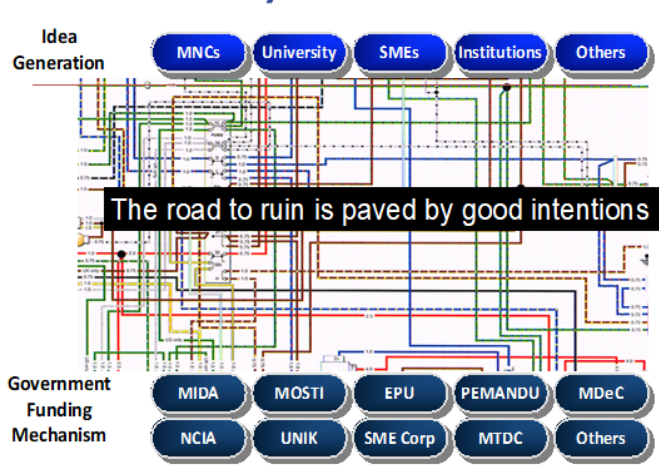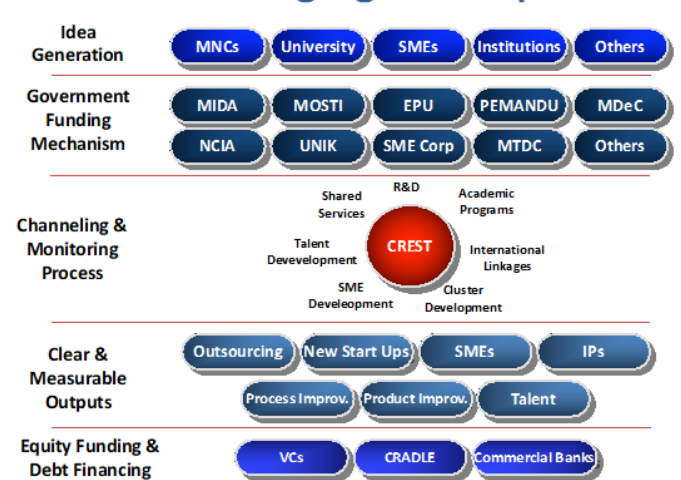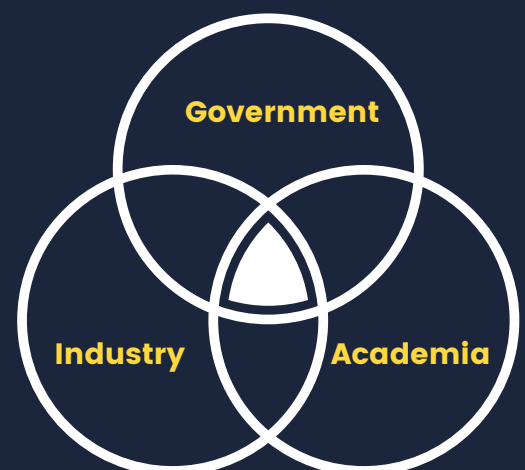

A NEUTRAL ENTITY TO BRIDGE THE GAP

CREST is a non-profit organisation and is an **Industry-led** collaborative platform for **market driven R&D.**

While CREST is industry-led, its member representation is the **triple helix** of government, industry & academia.

A neutral trusted entity that **facilitate and catalyse** the needs of all stakeholders involved.

EFFECTIVELY CREATING IMPACT

Stethee
Uberisation of Healthcare
GaN on GaN
Wide Bandgap Semiconductor for LED, Power, Agriculture & Medical

RM5 Billion
FDI realised in high value-added activities
11x
Return for every RM1 of R&D spent
25%
Commercialisation rate from completed R&D projects

01 CLUSTER DEVELOPMENT
02
03
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RESEARCH & DEVELOPMENT
TALENT DEVELOPMENT
COMMERCIALISATION
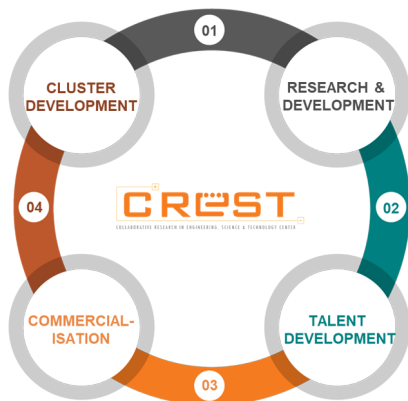
145
Collaborative R&D projects approved
87 Companies | **24** Universities
65% Industry Funding | **35%** CREST Grant

516
Industry Talent & Technopreneurs
250+
MScs & PhDs
6,000+
Graduates Trained
20
Technology Start-ups

2012 – Nov, 2019

TARGETED TECHNOLOGY CLUSTERS

LED / Optoelectronics | IoT & Embedded Systems | IC Design, Test & Validation | Advanced Material & Packaging | Industry 4.0 | Drones & Autonomous Vehicles

OUR INITIATIVES
non-exhaustive

OPEN & TARGETED R&D GRANT

THE GREATLAB (TGL) – INDUSTRY DESIGN CHALLENGE

TGL YOUTH INDUSTRY BOOTCAMP

GRADUATE INNOVATION PROGRAM

INDUSTRY LEADERSHIP PROGRAM

GALLIUM NITRIDE GAN) RESEARCH PROGRAM

DIGITAL HEALTHCARE CLUSTER

INTELLIGENT & INNOVATIVE CITY CLUSTER

SMART MANUFACTURING

PRECISION AGRICULTURE

NEW PRODUCT DEVELOPMENT & INNOVATION

Collaborate with Us Today!

THE CEO'S MESSAGE

Jaffri Ibrahim

Dear Members of CREST,

Welcome to the first issue of The Triple Helix for 2020 where we look at how far we have come in delivering value for our members and the community whilst simultaneously creating impact for the ecosystem.

In this issue, we take a look at two of our researchers from the CREST Research Community, whose collaborative projects with the industry have yielded much success. We also feature one of our talent development initiatives whereby the winning team for the TGL Design Challenge share their testimony on how participation at the competition has shaped them into industry-ready talent and has given them an upper hand in securing jobs, prior to graduation.

You can look forward to more news from the CREST community in upcoming issues as we highlight the initiatives we have in place for 2020. This is in addition to features on trends and strategies that both impact and create opportunities for the industry and ecosystem.

It is my sincere hope that this newsletter will be a channel of communication and sharing of the industry's best practices and knowledge with the CREST community. Therefore, I urge all of you to send in your contributions in any written form - let's learn from each other!

Finally, amidst the uncertainty that looms before us, I remain positive that we will weather the storm and continue our efforts to collaborate and create solutions for the ecosystem.

STAY SAFE!

COLLABORATIVE INNOVATIONS

2012 – Nov, 2019

CREST promotes and facilitates collaborative research between Industry and Academia through which universities can increase their ability to produce industry-ready researchers, and industry players can benefit from the research findings.

RM168.9 m
Total Value of R&D Projects

87
Companies
(22 MNCs, 5 LLCs, 58 SMEs, 2 CLGs)
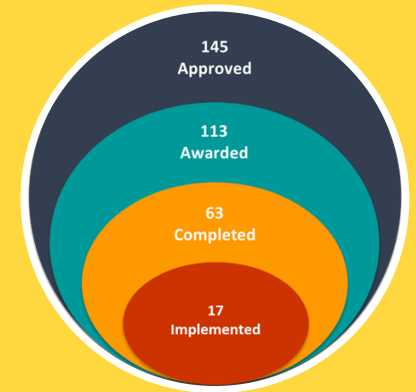
24
Universities

241
Academic Researchers

175
Industry Practitioners

212
Industry-skilled postgraduates

145 Approved

113 Awarded

63 Completed

17 Implemented

63 Completed projects, 17 implemented
21 IPs filed (7 granted)

106 Industry-ready Postgraduates
Completed (59 Graduated)

RM12.6m CREST R&D Grant disbursed
RM23.6m Industry & Uni. Contribution
RM114. Projected Business Value over 5 years

11.6x Return for every RM1 Grant
disbursed for R&D

FROM LAB TO REALITY

This section aims to showcase the CREST Research Community who have been active in various collaborative research projects with the industry which have successfully translated lab discoveries to market.

In this issue, we feature contributions from Dr. Yeong Che Fai, an Associate Professor at School of Electrical Engineering, Faculty of Engineering at Universiti Teknologi Malaysia and Professor Zaidi Mohd Ripin, Director, TheVibrationLab, Universiti Sains Malaysia.

ROBOTICS & AI

My journey with CREST began in 2014 when I embarked on a collaborative research project to work on 'Robotic Assessment of Motor Recovery after Stroke'. The research was a great success having carried out from fundamental research until it was translated into a commercial product namely CR2 (Compact Rehabilitation Robot). As a result, 1 PhD and 3 Master Students were produced as well as various publications.

More importantly, this project has led to the incorporation of Techcare Innovation Sdn Bhd to commercial and continue the journey of R&D of this product. CR2 has been exported to a few countries including China, Thailand and India. The team faced all sorts of challenges during this journey such as lack of ecosystem in Malaysia in developing healthcare technology. For example, it was very challenging and expensive to get proper certification for healthcare related products. Having said that, we were persistent and believed something needed to be done so Malaysia will have this ecosystem to support healthcare technology in the near future.

Recently, I secured another opportunity to collaborate on a new project entitled 'Design and Development of An Augmented Reality (AR) Enhanced Predictive Maintenance System with Artificial Intelligence (AI) for Industrial Mobile Robot. This project is in collaboration with UTM, SAS and DF Automation & Robotics Sdn Bhd. and I aim to drive the similar success rate as the previous project.

FROM LAB TO REALITY

I value CREST's support throughout my journey. Besides financial assistance, CREST has provided advise and consultation to my team in the area of R&D and commercialisation. Through its network, we have been able to get connected to customers, regulators, technology collaborators and the supply chain.

About Dr Yeong:
An Associate Professor at School of Electrical Engineering, Faculty of Engineering at Universiti Teknologi Malaysia (UTM). He has a Bachelors Degree and Masters in Mechatronic at UTM. He then graduated with a PhD in Bioengineering from the Imperial College of London. He has founded a startups such as www.techcareinnovation.com and www.dfautomation.com.

Dr Yeong's interest and research areas include industry robotics, healthcare technology, AI and Machine Learning. To date, he has won more than 100 awards such as British Invention Show, Frost & Sullivan Award, APICTA Award, SOBA Award, etc.

From left: Dr Yeong Che Fai, Dr Khor Kang Xiang and a team member from the CR2 project

THE VIBRATION LAB

In the School of Mechanical Engineering, Universiti Sains Malaysia there is a laboratory where two generations of researchers are carrying out research work to develop solutions for the problems faced by the industries in Malaysia.

TheVibrationLab was founded by Prof Zaidi Mohd Ripin which has been in operation for over 20 years. The lab's expertise include vibration, noise and machine design has attracted various industry partners to collaborate in R&D for product improvement as well as new product development. To date the lab has successfully produced 25 Masters and 15 PhD students, where the majority of them are hired by multinational companies and institutions of higher learning in the area of vibration and noise. Some stay back to continue research work, notably Dr Ooi Lu Ean, Dr Zhafran, Dr Abdullah and Dr Farhana and all of them are leaders in their own right.

Since the inception of CREST grant, the lab has carried out collaborative research with Motorola, National Instruments, Dyson, SAS and Freedom International to name a few with the total grant amounting to more the RM 10 million, including the industry contribution. The projects involved research relating to noise level of the products which were significantly reduced and the solutions developed have been adopted and released in the market.

More recently the lab ventured into biomedical engineering research led by Dr Ikhwan on the collaborative research with Freedom International to develop an intelligent patient transfer system. This system is meant to reduce the risk of back injury of nurses and care providers when transferring patients from bed to the wheel chair or commode. Research work like this is multidisciplinary in nature and requires teamwork effort from the School of Health Sciences, School of Medical Sciences and Advanced Medical and Dental Institute and Dr Ping Yi of Monash Universitiy, Malaysia.

Another important biomedical engineering area of research is the collaboration with SAS led by Dr Fauzi where big data is used to identify significant patterns in the development of a prognosis engine for stroke patients when undergoing rehabilitation at the acute stage. This is expected to ease the load on the physiotherapists and also provides measurable outcomes of the patient recovery when undergoing rehabilitation. This is most important as stroke is one of the leading cause of death and disability in Malaysia.

FROM LAB TO REALITY

At the time this article was written, the country is under restricted movement order due to Covid-19 and all over the world the engineering fraternity is rushing to develop respirators using additive manufacturing. More than ever the research work must now focus on the immediate problem that is a threat to humanity itself. What role can TheVibrationLab play post-Covid19 will be a challenge for the lab to address. Of course partnering with industry is crucial, the collaboration must be able to significantly improve the situation, academically sound and make business sense and CREST funding is critical in moulding these partnerships.

About Prof Zaidi:
Prof Zaidi holds a Bachelor of Engineering (B.Eng) degree in Mechanical-Marine Technology from the Universiti Teknologi Malaysia in 1989, a Master of Science (M.Sc) degree in Tribology in Machine Design and a Doctor of Philosophy (Ph.D) in Mechanical Engineering (Vibration analysis) in 1991 and 1996 from the University of Leeds, United Kingdom.

He is a registered Engineer with the Board of Engineers Malaysia (BEM) since 2010. He has an industrial experience as an Engineer at Malaysia Sheet Glass Sdn. Bhd. (1990 - 1991) and Proton Holdings Berhad (1995 - 1996). He is currently a Professor at the School of Mechanical Engineering and the Head of TheVibrationLab, Universiti Sains Malaysia.

His research interest covers a wide area of sound, vibration, control and tribology and has managed to secure various research grants from the government and industry totalling more than RM 2.08 million to date. The more notable grants are from Advance Micro Devices and Panasonic Manufacturing and also joint research work with Motorola and National Instruments under the CREST Research Collaboration grant. To date, he has graduated 11 PhDs and 23 Masters students.

Instrumentation training provided by TheVibrationLab for industry and academia.

Professor Dr. Zaidi Mohd Ripin

TOMORROW'S TALENT

TheGreatLab (TGL) Program aims to attract, seed and nurture industry relevant talent through industry-driven Collaborative Blended Learning platform producing industry-ready graduates, technopreneurs and future scientists.

2019's series of bootcamps, hackathon and programs under TGL banner attracted more than 500 students from both postgraduate and undergraduate levels from over 22 universities who participated in the Industry-Relevant Graduate program comprising of 4 main boot camps, namely, Johor Impact Challenge, The Great Lab Summer Workshop, Data Analytics Bootcamp, and Digital Healthcare Cluster Bootcamp.

Impact to date:

7000 +
Industry relevant graduates trained

250+
New industry relevant MScs & PhDs graduates trained

516
Industry talent and technopreneurs

TALES FROM THEGREATLAB

Nik Fikri and his team participated in the TGL Grand Design Challenge 2016. The team comprised of four members in the prototype stage, and five members in the implementation stage. The members were Anas Juwaidi, Amirul Syafi, Syed Ariff, and Muhammad Aiman. All five graduated from the Faculty of ICT, International Islamic University Malaysia (IIUM).

With early exposure to real project implementation, all five of them managed to secure a job shortly after graduating as the hands on experience gave them an edge over peers. Currently, one is working with Deloitte Consulting, two members are with Petronas ICT, one in Hitachi-Ebwork, and one is based with a start-up named Bateriku.com.

It all began with the TGL Summer Bootcamp in 2016, when they were shortlisted as a finalist for TGL Grand Desing Challenge 2016 where they received a RM1,500 seed fund from CREST to build a working prototype. The problem statement for the team was to build a Barcode and QR code platform meant for public facilities in collaboration with the local authorities. However, considering the feasibility, the team scaled down the project to only university's facilities in collaboration with a department in IIUM.
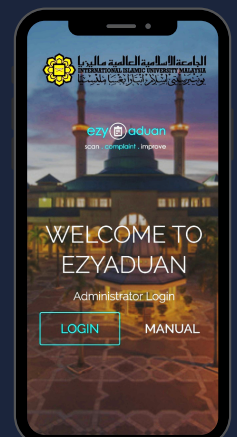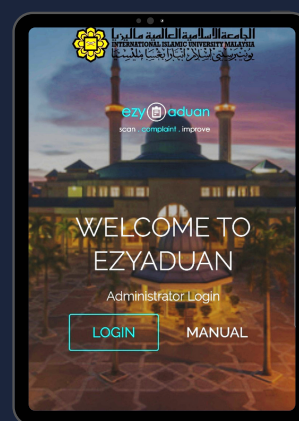
As a result, they built a prototype called EzyComplain which enabled students to lodge complaints effectively. Being a student in IIUM, all Nik and his team were very passionate to execute this project considering they were also part of IIUM community. Fast forward to TGL Grand Design Challenge Grand Finale, they won the 1st prize for the university track as the system was client-ready and had been tested by real users. After winning the competition, the department agreed to fund Nik and his team to implement the project considering the benefits that both IIUM community and the project owner will get. The project has been fully handed over to IIUM and the university is still actively using the system which now called EzyAduan.

Nik Fikri, a TGL Alumni

Through its Talent Development initiatives, CREST has definitely helped in building industry-ready talents especially in this Industry Revolution 4.0 (IR4.0) era. My team and I have benefited from CREST's TGL programs making us one par above the other fresh graduates. To pay it forward, I return to CREST every year to participate in TGL programs either as mentor, facilitator, or judge. Until today, it is still a learning process for me and I continue building my capacity through these events and learn from juniors who come with fresh ideas and perspectives.

CREST IN THE NEWS

CREST - Leading the Digital Healthcare Revolution in Malaysia, Ocotber 2018

Electronic Medical Record System in 145 hospitals in 3 years, March 2019

CREST - Seven Years of Leading the Wave, July 2019

US-CHINA Trade War: A Wafer Thin Opportunity For Malaysian E&E Players, July 2019

CREST Digital Healthcare Cluster Kicks Off with 3 Initiatives, October 2019
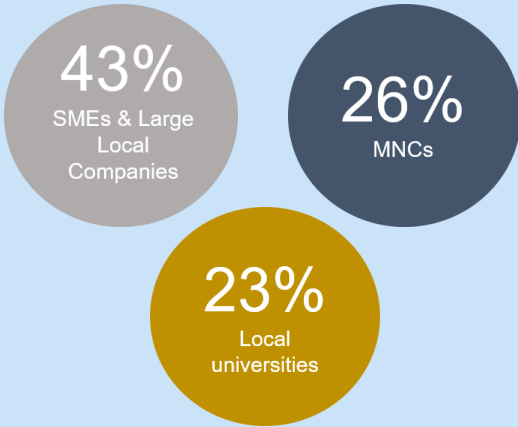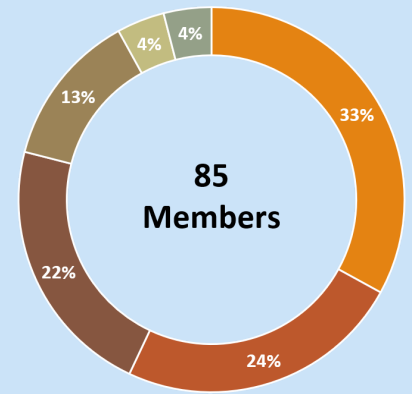
READ ALL ABOUT IT @ WWW.CREST.MY

CREST MEMBERSHIP

As a member-based platform, CREST members are the backbone of the collaborative platform. Member representation is the triple helix of government, industry and academia.

CURRENT MEMBERS

FOUNDER & EX-OFFICIO — 19

AMD · BROADCOM · clarion · flex · intel · KEYSIGHT TECHNOLOGIES · NCER MALAYSIA · MIDA · KEMENTERIAN TENAGA, SAINS, TEKNOLOGI, ALAM SEKITAR DAN PERUBAHAN IKLIM · MOTOROLA SOLUTIONS · OSRAM Opto Semiconductors · SILTERRA · UNIVERSITY OF MALAYA · NATIONAL INSTRUMENTS · KHAZANAH NASIONAL · Universiti Kebangsaan Malaysia The National University of Malaysia · UPM · USM APEX · UTM

CORE — 4

hp · IDT Integrated Device Technology · The University of Nottingham · UTP

FULL — 14

UniMAP · UTHM Universiti Tun Hussein Onn Malaysia · DRB-HICOM UNIVERSITY OF AUTOMOTIVE MALAYSIA · INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA · Universiti Malaysia PAHANG · UNIVERSITI TEKNOLOGI MARA · DELLOYD · kontron · TNB ENGINEERING CORPORATION · SAS THE POWER TO KNOW · dyson · Alcon · RENEXUS CLEANTECH · kiwitech

ORDINARY — 48

UST Global · muRata · Continental · JABIL · BOSCH · NIHON SUPERIOR SN100C · ViTrox · NXP · ANALOG DEVICES · FSR TECHNOLOGY · MLt · DETRAC · CNN SDN. BHD. · QDOS · RECOGINE TECHNOLOGY · araken · RENEON TECHNOLOGIES · Inari Amertron Berhad · Chulia Facilities Management Sdn Bhd · flexTTech · NANORIAN TECHNOLOGIES · GO AUTO · PENCHEM · ITRAMAS · P-PLUS Your Manufacturing Partner · INSTITUT JANTUNG NEGARA National Heart Institute · ophl · MULTIMEDIA UNIVERSITY · Techcare · E-PROLINK · IFCON technology · UTeM · UTAR · SynVue · AIMST UNIVERSITY · MONASH University · wawasan open UNIVERSITY · UniKL · SyMMiD · UMCH · eclimo · qrf · inLAZER Dynamics · FMI · CL SOLUTION SDN BHD · df AUTOMATION & ROBOTICS · Curtin University · NatMeiTech

FOR MORE DETAILS VISIT
WWW.CREST.MY/MEMBERSHIP-OUTLINE

MEMBER PROFILE

85 Members

- 33% SME
- 24% MNC
- 22% Local Uni
- 13% Large Local
- 4% Govt
- 4% Foreign Uni

43% SMEs & Large Local Companies

26% MNCs

23% Local universities

VALUE PROPOSITION OF BEING A CREST MEMBER

✓ Collaborate with a network of like-minded organisations to advance innovation and achieve common outcomes

✓ Access to a network of industry-ready talent

✓ Access to R&D insights and to a research expert alliance

✓ Access to real market needs / challenges faced by multiple verticals

✓ Collaborate and jointly create solutions for the ecosystem.

COLLABORATE WITH US TODAY

For more details on our programs and initiatives, feel free to contact our team below:

INITIATIVES	EMAIL
OPEN & TARGETED R&D GRANT	**Lim Poi Hong** **phlim@crest.my**
THE GREATLAB (TGL) PROGRAM – TGL YOUTH INDUSTRY BOOTCAMP – GRADUATE INNOVATION PROGRAM – INDUSTRY LEADERSHIP PROGRAM	**Haziati Abdul Hamid** **haziati@crest.my**
GALLIUM NITRIDE GAN) RESEARCH PROGRAM	**Lim Hoo Kooi** **hklim@crest.my**
DIGITAL HEALTHCARE CLUSTER	**Aida Basri** **aida@crest.my**
INTELLIGENT & INNOVATIVE CITY CLUSTER	**Michelle Woo** **khwoo@crest.my**
SMART MANUFACTURING PRECISION AGRICULTURE NEW PRODUCT DEVELOPMENT & INNOVATION	**Fouzun Nasser** **fouzun@crest.my**
CREST PLACE JOHOR & INCUBATION PROGRAM	**Azreena Azizan** **azreena@crest.my**
MEMBERSHIP & CREST PLACE PENANG	**Naja Mohammad** **naja@crest.my**

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