

CELEBRATING  
COMMERCIALISATION  
YEAR 2014

# iiindex 2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

invention  
innovation  
& design  
exposition 2014

INNOVATEUR  
wannabe!  
2014

27<sup>th</sup> - 30<sup>th</sup>  
APRIL 2014  
DEWAN AGUNG TUANKU CANSELOR (DATC)  
UNIVERSITI TEKNOLOGI MARA  
MALAYSIA

*Bridging  
the valley of death :  
advancing the  
commercialisation  
of research*

RESEARCH BOOK

# iiindex2014

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innovation  
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## FOREWORD

The Honourable Minister of Science, Technology and Innovation (MOSTI) has launched 2014 as Malaysia Commercialisation Year 2014 (MCY2014) with the theme Science Technology and Innovation (STI) for Wealth Creation. In line with this theme, Invention, Innovation, Design & Exposition 2014 (iidex2014) is an annual exposition organized by UiTM and is the ultimate platform to highlight and commercialise new inventions and innovations. Researchers and inventors will exhibit their products which cater to the needs and wants of the community and the country.

The iidex2014 creates a new dimension by fusing two competitive concepts, a competition among innovative products and a competition to invite Innovateur Wannabes to perform live pitching of their products to the audience. The iidex2014 focuses on comprehensive commercialization and creating opportunities for entrepreneurs to carry out R&D as well as to provide avenue to commercialise their products. Through expositions such as iidex2014, MOSTI hopes to inculcate the culture of commercialisation of new technology designed and created by Malaysians.

I wish to congratulate all the participants of the iidex2014 and this is the opportunity for all researchers to show their ideas and exhibits their products and creativity. Apart from showcasing their products, innovators will have the opportunity to provide a window to the industry for business matching during the exposition.

Tan Sri Dato' Sri Sallehuddin Mohamed  
Pro-Chancellor, Universiti Teknologi MARA

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## THE TRAVELLING PRAYER MAT

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This research is discussed on the multiple function of a travelling praying mat prototype used by Muslim travellers to pray. Nowadays many praying mats in the market are produced from unsuitable material for travelling. Thus, material, size and usability of praying mat is important for travelling purpose. The material used in the praying mat is waterproof material i.e. PVC and waterproof canvas with this material can help Muslim travellers easily maintain the mat from dirt and water if expose to rain. Every Muslim around the world performs prayers when they hear the adhan (called to prayer). This prayer mat contains a compass to enable the worshipper to find the direction of Makah. the benefit for muslim traveller is they can use the kiblah compass to find the direction of Makah. In addition, the mat is foldable type such as a sling bag, purse, hand bag and bag pack. This allows Muslim travellers to carry it easily anywhere. The mat can be used as a place to store item i.e. prayer cloth, Quran, counting beads and etc. The design on this mat is created using adobe illustration and adobe Photoshop. This prayer mat is printed using digital printing technique. The pattern suggests printing on the material such as fabric of PVC type, waterproof canvas, and any suitable waterproof material. The design of this mat was a combination of geometric arabesque design and Malay kerrawang. The combination of two designs on prayer mat represents the Malaysian identity. At the same time, it also can promote Malaysian products world-wide. Furthermore, this travelling mat comes in a variety of sizes for portability and also with a difference shape of arch. The significance of this product is the Muslim traveller can use this mat to perform the prayer anywhere and also as a sleeping mat and it also can be used as picnic mat. the combination of colour used on prayer mat is tones colour from light to dark colour i.e earth colour which are brown, royal blue and turquoise blue.

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## INDIGENOUS SOFTWARE FOR SIZING LARGE SCALE ROOFTOP GRID-CONNECTED PHOTOVOLTAIC SYSTEMS IN MALAYSIA

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This project presents an indigenous software for sizing large-scale rooftop-based grid-connected photovoltaic systems. The software which was developed in Visual Basic, enables the user to select a photovoltaic (PV) module and inverter so that the expected AC kWh energy output from the system could be maximized based on several site conditions such as solar irradiation profile, available roof space, inverter-to-PV array capacity ratio, tolerances, losses as well as efficiencies of components throughout the system. The site conditions are adjustable according to user's experience and knowledge. During the sizing process, the dimensioning of PV array is conducted to match the input voltage and current limits of the inverter. Besides that, several techno-economic parameters such as annual energy output, Specific Yield, Performance Ratio, Roof Utilization Factor, and estimated income from Feed-In-Tariff scheme are calculated to complete overall sizing process.