

CELEBRATING  
COMMERCIALISATION  
YEAR 2014

# iiindex 2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

invention  
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& design  
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INNOVATEUR  
wannabe!  
2014

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UNIVERSITI TEKNOLOGI MARA  
MALAYSIA

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

RESEARCH BOOK

# iiindex 2014

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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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## INTELLIGENT TREE INVENTORY DETECTOR

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In order to manage urban forest it is vital to know and understand the resource. It is the structure of the urban forest that provides the basis for its functions and subsequently its value as a resource. It has been stressed that inventories are an important components in the management of urban forest. As such urban tree inventory would be the first step in planning and managing the urban forest for priorities functions and values. The management of any resource needs to begin with an inventory of that resource. Planning and managing vegetation in urban area is complex, yet it can be seamlessly done using computerized tree inventory and Geographic Information System (GIS). GIS may enhance the tree inventory system with the application of mobile -based QR codes technology which could provide effective management of inventory elements, tree in particular, in urban areas to avoid project budget cutback, improve the efficiency of an existing program and educate and provide information to the public. GIS are able to store, manipulate, analyse and communicate between user and data, while mobile-based QR codes technology can be read by an imaging device (such as a camera) and processed using Reed-Solomon error correction until the image can be appropriately interpreted the tree; data is then extracted from tree patterns present in both horizontal and vertical component of the image. Urban park inventory and diversity assessments are essential to understand tree population structures and diversity status of park and provide information for biodiversity recovery planning. Unfortunately, the vast majority of park in developing countries are lack of inventory and detection data. Consequently the tree population structure and diversity status of these park are often insufficient for management (Appiah, 2013). The aim of the study is to design and develop a proposed system that can help the agency to managing the inventory of tree. The system could allow for the creation and maintenance of the inventories with attributes for each item. Botanical names and attributed is included and digital photo can be inculcated with each item. The objectives of this invention are to create a systematic Geodatabased of urban tree. It is also to develop and design 3D urban tree inventory systems for management. Lastly it is to create digital matrix bar codes for urban tree identification and classification. Using GIS as tools may help in managing system as well as increasing the ease of park management process. This system can replace the conventional method to smart management where computerized and systematic approach of database system will accelerate the tree assessment. The novelty of this invention is it can help improve the existing systems in conveying information globally. The animation can spread the uniqueness of the park and also the information about the park which indirectly help in planning. The QR code gives a better interpretation where it will enhance the visitor experience. This idea addresses the issue of the vast majority of forests or public park in a developing country which lacks data inventory. The invention benefits Park Manager, Local Authority and Landscape Architect.