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MBOT
LEMBAGA TEKNOLOGIS MALAYSIA
MALAYSIA BOARD OF TECHNOLOGISTS

TECHIES

Developing and Utilising Creative Digital Technology in Anthropological Studies

Creative Industry:

What has it to do with Creative Multimedia, and Art & Design?

Modern Batik

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President's Note

Tan Sri Dato' Academician (Dr)
Ts. Hj. Ahmad Zaidee bin Laidin FASc

The gazetting of the Act Technologists and Technicians 2015 or Act 768 led to the launch of Malaysia Board of Technologists or MBOT as a functional professional body to recognize technologists and technicians as an elevated and developed profession.

To date, MBOT has received more than 13,000 applications from related technology and technical professionals under MBOT's jurisdiction. From these figure, MBOT has recognized 3864 Professional Technologists (Ts.) and 282 Certified Technicians (Tc.) through fast-tracked program and series of online and on-site Professional Assessments since December 2018. With the support and cooperation of TEP members, MBOT managed to appoint more competent technologists and technicians who are able to contribute to the industry and educational institutions.

In September 2018, MBOT held MOU signing ceremony with 22 related Technical Expert Panels (TEP) witnessed by Deputy Minister of MESTECC YB Isnaraissah Munirah Majilis. This signifies symbiotic collaboration in developing the related technology and technical fields towards uplifting the status of technologists and technicians in Malaysia. One of the collaboration will be highlighted in this edition.

Art Design and Creative Multimedia Technology (AM) is one of the interesting technology that involves the process, technique and application of technology to produce creative content. The related key areas are animation, cgi, creativity, design, entertainment, content, interactive and games development which has been agreed defined with our TEP, Creative Content Industry Guild Malaysia (CCIG).

CCIG plays its vital roles as the reference and resource center for creative industry practitioners in various industry specializations. Other than CCIG, Multimedia University (MMU) is also MBOT's TEP in contributing professional graduates towards this field. MMU is known as one of the best universities that produced talented and well-rounded graduates as they were exposed by latest technology and various hands-on experiences in art creative field.

On top of that, MBOT has implemented various promotional programs to increase the number of registration and to raise awareness on the importance of recognizing and being recognized as technologists and technicians. Our promotional activities have been accelerated and expanded to both government and private sectors. On another note, MBOT is planning for more MoU signing with the industry players in order to enable future collaboration and also adopt more diverse and wide-ranging talent pool from the technology industry.

Lastly, I would like to express my deepest gratitude to everyone for the devotion to the growth and success of MBOT. We are committed to leave a big impact to the country's well-being. I am confident that we will be able to witness more escalating progress of MBOT and technology field.

About MBOT

LEMBAGA TEKNOLOGIS MALAYSIA
MALAYSIA BOARD OF TECHNOLOGISTS

- The Parliament of Malaysia has enacted the Technologists and Technicians Act 2015 (Act 768), an act to provide for the establishment of Malaysia Board Technologists (MBOT), in line with other professional bodies in Malaysia.
- MBOT is responsible for the registration of graduate technologists and qualified technicians as well as to recognise professional technologists and certified technicians.
- MBOT promotes education and professional training in related technology and technical fields.
- MBOT recognises technological careers and empowering technical and vocational education and training (TVET).
- MBOT will strive to be signatory to international accords in the field of technology and technical to ensure the technologists and technicians produced in the country meet international standards and ability to compete globally.

VISION

To be a world class professional body for technologists and technicians.

MISSION

To elevate the standing, visibility and recognition of technologists and technicians.

OBJECTIVE

To increase the pool of skilled workforce required to attain a high income economy, and to protect public safety and health.

WHO SHOULD REGISTER?

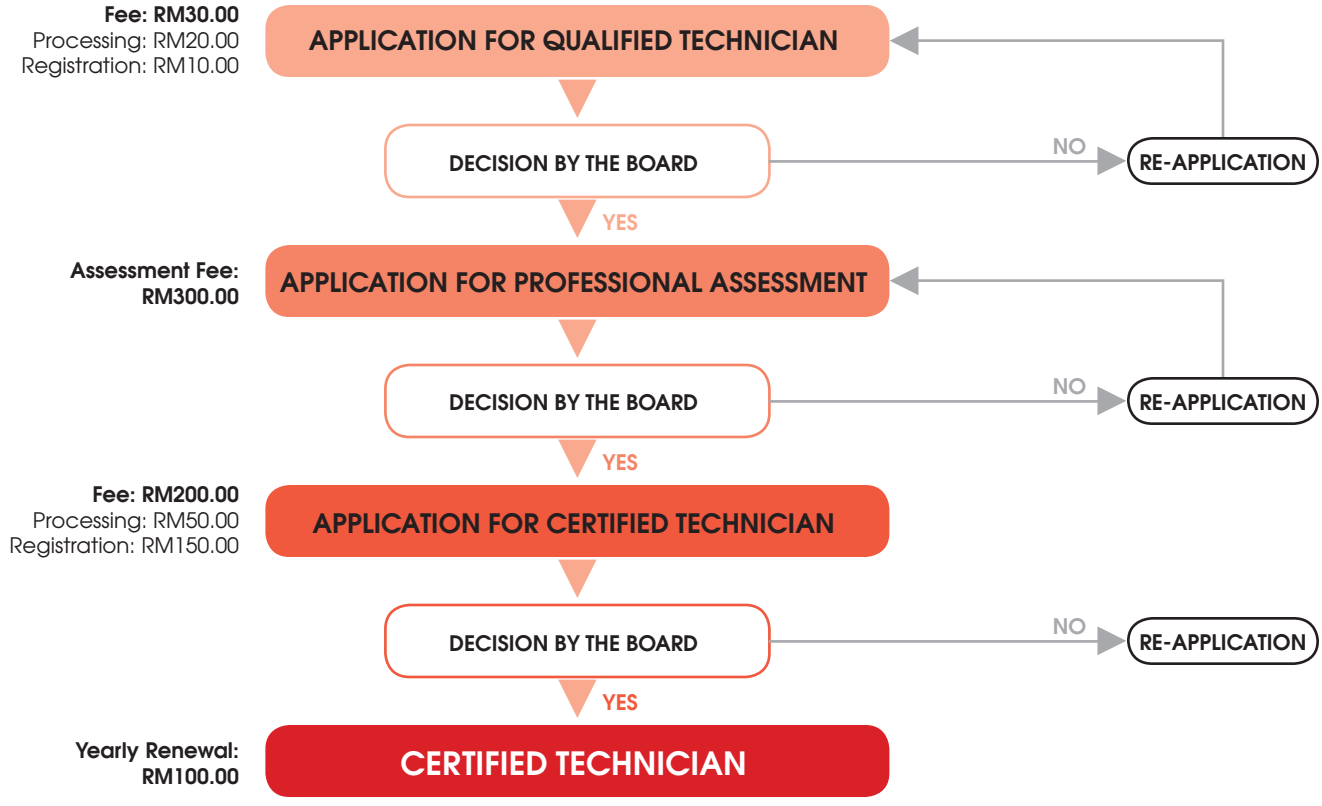
✓ **Professional Technologists**
Graduate Technologists with practical experience as stipulated by the Board

✓ **Graduate Technologists**
Holds a bachelor's degree recognised by the Board

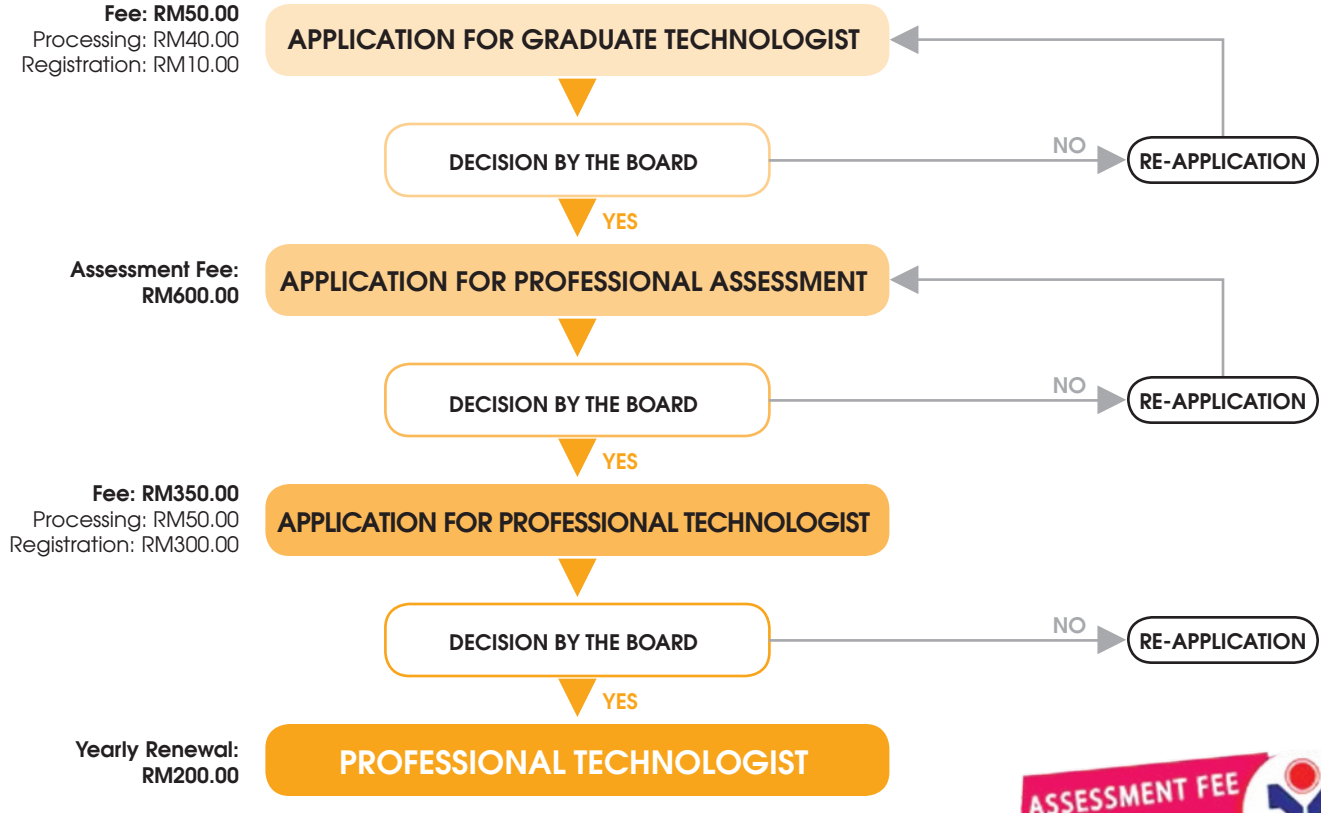
✓ **Certified Technician**
Qualified Technician with practical experience as stipulated by the Board

✓ **Qualified Technician**
Holds a certified qualification recognised by the Board

MBOT Flowchart: Application for Certified Technician



MBOT Flowchart: Application for Professional Technologist



Developing and Utilising Creative Digital Technology in Anthropological Studies

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[1]Institute of Borneo Studies, [2]Faculty of Applied and Creative Arts, [3]Faculty of Social Science, Universiti Malaysia Sarawak

e-DiVo (Ethnographic Digital Visual Organiser) is an artistic and a graphical approach in documenting visual information pertaining to Social Science research. It is a system developed using Adobe InDesign and published in a Flash format as an improvised and systematic way of digitally organising visuals relating to ethnographic and cultural objects. It is designed to systematically organise the collection of multi-assorted data (drawings, sketches, textual record and visual images) and respond to previous problems encountered by researchers in reconfiguring collected visual data on cultural objects associated to the "Ring Ladies" of the Bidayuh Embhan community.

Front Cover

Interactive Infographic

Top view of Batuh Ritung, Pa' Lungan

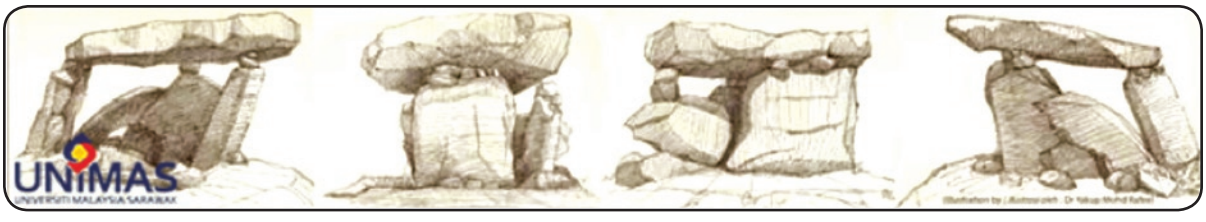
Batuh Ritung, Pa' Lungan

The creation of e-DIVO allows for more reliable and easy storage, accessible record, simple information retrieval, and painless updating. It is an interactive infographic system that enables users to share, collect, and compile information. Through this user-friendly and interactive system, the process of archiving and retrieving details on visual information is more organised and efficient. In addition, it is also relatively straight-forward to produce using other software such as Microsoft PowerPoint or any web-based designs. In this context, the system is devised to specify the precise parts of the body of the "Ring Lady". All images and sources gathered and utilised are the outcome of a field research on the "Ring Ladies" of the Embhan community at Kampung Semban, Padawan. The system is originally created by improvising the static nature of current infographic posters.

An exhibition entitled 'Megalith Cultures of the Kelabit Highlands through Space and Time' was curated by researchers from UNIMAS and the Rurum Kelabit Sarawak in conjunction with the 12th Pesta Nukenen (Food Festival) at the Teripun Museum, Bario. The main aim of the exhibition is to highlight the outstanding features of the Kelabit Highlands, which is a monumental landscape comprising stunning stone monuments and topography modifications. Apart from sharing research findings with the local community, the researchers sought to test some hypotheses by acquiring input from the local populace as well as visitors.

An important feature of the exhibition is the use of both Augmented Reality and Virtual Reality, whereby layers of multimedia content such as videos, animated graphics and sound are embedded to enhance users' experience. The use of Information and Communication Technology (ICT) is an alternative approach in anthropology and cultural studies to deliver accurate perception of the representation of cultural practices and well-documented heritage. Subsequently, the exhibition has successfully established a knowledge exchange platform between researchers and the public at large.

This research was supported by the Dayak Chair Grant, Institute of Borneo Studies, Universiti Malaysia Sarawak (F03/DRC/1457/2016) and the Ministry of Higher Education Malaysia, Fundamental Research Grant Scheme (F03/FRGS/1500/2016).



Artist sketches on site of four different site views

Does Sunway Offer Arts & Design Creative Multimedia Technology

Kenneth Feinstein
Programme Leader, MA Visual Communication & Media Studies
Centre for Research-Creation in Digital Media
Sunway University

Everyone is interested in our new developing media landscape. What will we being seeing and what will we be experiencing in the next few years? What we do know is that as technologies change we need to be at the forefront so that we can help guide where our future lies. So, how do we at Sunway University look at the future and how do we plan to help guide it?

In the School of Arts, we are involved in teaching the next generation of filmmakers, designers and media writers on how to be focused on new ways of storytelling in an ever-changing landscape. Our programmes give our students conceptual and storytelling skills to be Malaysia's next generation of storytellers. Media writing is a major part of the curriculum. Be it advertising or filmmaking, students learn to analyse and create stories. They are asked to conceive narratives in a variety of contexts. It does not matter if it is fiction, reportage or advertising, they are taught how different narrative and technical structures give meaning. This culminates in the creation of original music, sound recording, multimedia events and films. We are giving them the technical and conceptual skills to go out into the world of work and create a future that we still cannot conceive of yet.

As much as we look forward to the future, we are also interested in how new media and new technology can be used to preserve our cultural heritage. At the Centre for Research-Creation in Digital Media (CRCDM), we are finding ways to use Virtual Reality, Augmented Reality, 360º video, multiscreen video and exhibition design to document and preserve our rapidly disappearing history and legacy. The centre is an international leader in the field of digital heritage and hosted the 22nd Virtual Systems & Multi Media conference in 2016. Of late, we created projects to record the work of the Hainanese boat builders of Pulau Pangkor and the folk tales of the Mah Meri and Iban.

With the story of Mr Goh, the Hainanese master boatbuilder, we followed his team as they worked on a new boat from scratch. We placed 360º cameras in the middle of a boat as it was being worked on. The viewer is placed at the centre of the stage so that it can have a look- around view. We used a drone to get aerial views of the boatyard and the ocean. While in the AR for the publication we embedded interviews with Mr Goh. We also have a slideshow of the blessing ceremony for a new boat and a 3D model of the boat that you can interact with, hence giving Mr Goh and his team their own voice to tell their own story.

Our Malaysian folktale project is inspired by the carvers of the Mah Meri and the Iban weavers of Sarawak. We recorded interviews with the master craftspeople and took the tales relating to the origins of different crafts and then animated them into multiscreen videos. Along with this we made AR versions of the animation for our accompanying publications and they made versions of their work for us. All of this gives viewers a more personal experience than can be found in a book or looking at items behind a display case. The technology allows the viewer to become part of the world before him/her and becomes involved in it as well. All of this is done so that the traditional stories and ephemeral heritage do not disappear with industrial development.

As we continue on in the fields of digital heritage and new media narrative, part of our mission is found in our new Masters in Visual Communication & Media Studies. It specifically focuses on how we use technology to find creative new ways of telling informed and compelling stories. The Masters students work directly with the professors and researchers at the CRCDM and take advantage of the centre's commitment towards using new forms of technology. Here at Sunway we feel that using technology is the best way to help us understand each other and help make a better world.

Cultural Heritage Storytelling on Virtual Reality Framework

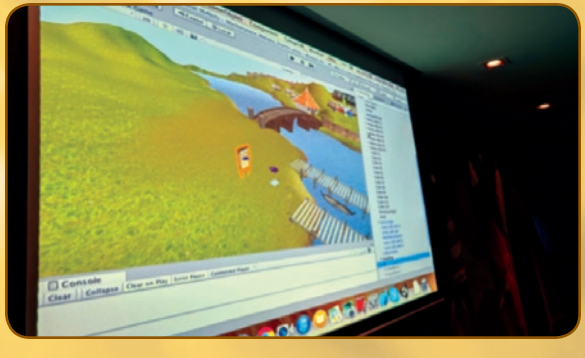
Jazmi Izwan Jamal & Siti Noraisyah Abd Rahman
Akademi Seni Budaya dan Warisan Kebangsaan (ASWARA)

Introduction

Wide availability of the Internet fits very well in cultural institutions like museums, universities, and libraries. Collecting, preserving and presenting exhibits from the real world to public or professional audiences can now be done through immersive digital storytelling, which is a way to convey virtual representation of almost any kind of exhibit or historical experience to any interested user.

To date, many have experimented empirical ways to compartmentalise and present multiple information in real time. Users' memory retention is greatly enhanced when a digital artifact with captions and connotations give instant feedback. Virtual reality offers interactive content organisation, where digital depiction replaces tangible reality.

The development of virtual reality has increased its range of practice while advancing the art of constructing immersive worlds. However, the development of interactivity, which is the process with which users act upon and even modify virtual worlds, is relatively unexplored. Still, as the plethora of interactive systems of all kinds indicates, our formerly immersive culture is now more concerned with interactivity. Indeed, in every new application directed to the public, from computer games to



educational software, interactivity is widely advertised for its recreational potential and its significance for learning and exploration. This is even more prominent in the case of virtual reality since interactivity is largely seen as one of the medium's essential properties.

Narrative in Virtual Reality

Narrative is understood as the way through which experiences are interpreted, shared, storied and re-storied. To put it simply, narrative sheds light on the process of making sense of experience by re-examining assumptions and coming to new realisation of meanings. This means virtual reality is a dynamic experience where sense-making is an ongoing process informed by narrative learning, whereby objects, artifacts and their relationships to places and people are interpreted.

When working with stories as a resource for experience interpretation, narrative theory helps to better understand learning. Narrative is a fundamental cognitive tool that enables the process of deriving meaning from experience, whereas storytelling is a way to explain cognitive processes. Cognitive processes comprise knowledge acquisition, reasoning, problem solving and new knowledge generation. These cognitive processes are found not only in the content of the stories but also in the way stories are told and organised. Stories can bring to the fore situated learning, and with multimedia devices, they can bring forth the appropriate and fitting context.

Immersive Experience in Storytelling

Immersion is influenced by many experiential and environmental factors. For instance, the size of the touch-screen, the player's expertise, and his/her perception of time affect the way the experience is comprehended. To add, there are a myriad of other aspects such as graphical fidelity, task fidelity, affective attention, ambient panorama, shared and collaborative environment, user interface, vibro-tactile feedback, and many more. One way to measure immersion is to ascertain if a user's psychological, physiological or neurological states are mapped onto the structure of the story.

Studies have been carried out to look into physiological arousal and emotional

links, the neural correlates of emotional processing, the psychological construction of emotion, cognition and behavior, and the neural correlates of arousal. These have successfully established a coherent eco-system of interrelated concepts and their measurements in physiology, emotion, cognition, neuropsychology and behavior. They provide hints on how measureable parameters such as physiological, neuropsychological and behavioral data can be leveraged to infer the emotional and cognitive states of an immersive experience. As such, a series of experiential qualities in storytelling have been developed, which could serve as metrics for measuring the quality of immersive experiences. One such measuring tool comprises a conceptual structure of experiential qualities in digital storytelling, where 13 aspects are involved – namely, usability of system, correspondence with system performance and own expectations, presence, character believability, effectance, autonomy, curiosity, suspense, flow, aesthetic pleasantness, enjoyment, emotional state and role of identification.

Figure 1 shows a framework that can be used to measure the quality of immersive experience in storytelling. Three types of data are fed into the system: human factor, system factor, and design factor. Human factor includes physiological, neuropsychological and behavioral measurements, which can then infer the cognitive and emotional processing of the participants. System factor suggests the user's optimal requirements of the system, which may include, but are not limited to, haptic feedback, graphical fidelity, screen size and most important of all, quality of service. These system configurations can lead to the degree of delight or annoyance of the end user. Design factors are storytelling tactics that include narrative, interactivity, spatiality, challenge, and many more. These data can be obtained through qualitative research methods such as ethnographic study, interviews, subjective reporting, questionnaires, etc. All three aspects constitute an operable framework for measuring the quality of immersive experience in storytelling.

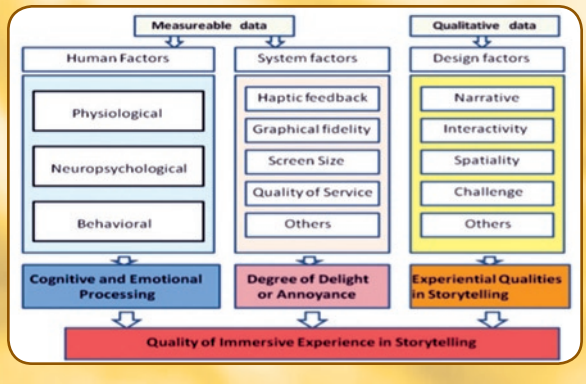


Figure 1: Quality of Immersive Experience in Storytelling

Conclusion

In an immersive virtual reality realm, the key factors of narrative learning ensure that content is constructed for knowledge transfer to be carried out accordingly. The constantly evolving learning behaviour of digital natives has pushed technologies to become beyond what they were before. Virtual reality has gradually broken the intangible barrier between the user and the screen - hence, the existence of mixed reality. Grey areas of experimentation that blur the line between virtual reality and mixed reality can be tested in the near future to enrich user experience that is often restricted by the barrier of a screen.

Creative Industry

What has it to do with Creative Multimedia, and Art & Design?

Ahmad Rafi Mohamed Eshaq
President, Multimedia University

The Malaysian government has recognised that the creative industry (CI) is an increasingly important sector, not just from a revenue standpoint, but also in contributing towards the building of the country's cultural identity, as well as in increasing its quality of life.

Due to this cognizance, the Malaysia Creative Industry Policy (i.e. Dasar Industry Kreatif Negara or DIKN) has outlined CI into three key domains – (1) Creative Multimedia (representing Advertising, Animation, Film and TV, Games and Virtual World, Music Recording, Publishing and Radio); (2) Arts and Culture (representing craft, fashion and textile, performing arts and visual arts); and (3) Heritage (representing cultural heritage). This policy clearly highlights that talent development, government policies, funding, marketing, technology, as well as research and commercialisation are major factors in a successful CI.

This delineation, along with the resulting streamlining of efforts, has enabled tremendous growth in content creation over the past few years. Good content creation demands a multi-disciplinary endeavour, requires the support of different platforms, strong Internet capabilities, and good content resolution. Fortunately, the convergence of multimedia and telecommunications in Malaysia has transformed the way content is created, consumed and distributed. There is an enormous growth in the range of media through which creative content is shared, such as video-on-demand, podcasting, live streaming, computer games and the provision of television services.

Malaysia is particularly blessed in our development of a CI, since our nation is deeply rooted in Arts and Culture, which dates back to the pre-7th century. In addition, our ethnic cultures have been enriched by our ancestral interactions with traders and travellers from afar, especially the Portuguese and Arabs. Some of the resulting heritage that came about due to these interactions include *gamelan*, *kuda kepang* and *dikir barat*.

The exchange is by no means limited to distant history. In the early 1900s, we gained a number of performing arts, such as the Chinese Opera and Indian folk dances. Journeying through the 20th century and 21st century, the creation of creative content drastically changed, as the population embraced technology and the attendant content. TV dramas, movies, games, interactive websites, and others are all consumed by the public, via avenues such as social media, streaming services, and digital content sharing services.

In todays' world, to create good content, a solid understanding of Creative Multimedia is needed. Creative Multimedia provides the foundation for content design. The word content is often referred to a substance that will provide a distinct product. Multimedia on the other hand, can be described as a medium that will enable diverse content of audio-visual images including graphics, animation, sound and text, created in the form of seamless digital media.

The combination of multimedia and content brings about the integration of arts and science. It allows for the resolution of problems that neither art nor science could resolve by itself. The scientist (or technologist) needs the insight of the artist; the artist needs the logic and technical skills of the scientist. This in fact has paved the way for a new breed of specialist, one we could perhaps call the multimedia artist, which brings together the relevant aspects of both science and art to create not just superb content, but also new works of art, or even entirely new genres of art.

From Design and Content to Art

There is a phrase coined as `good art is interpreted, good design is understood'. Art is a diverse range of human activities in creating

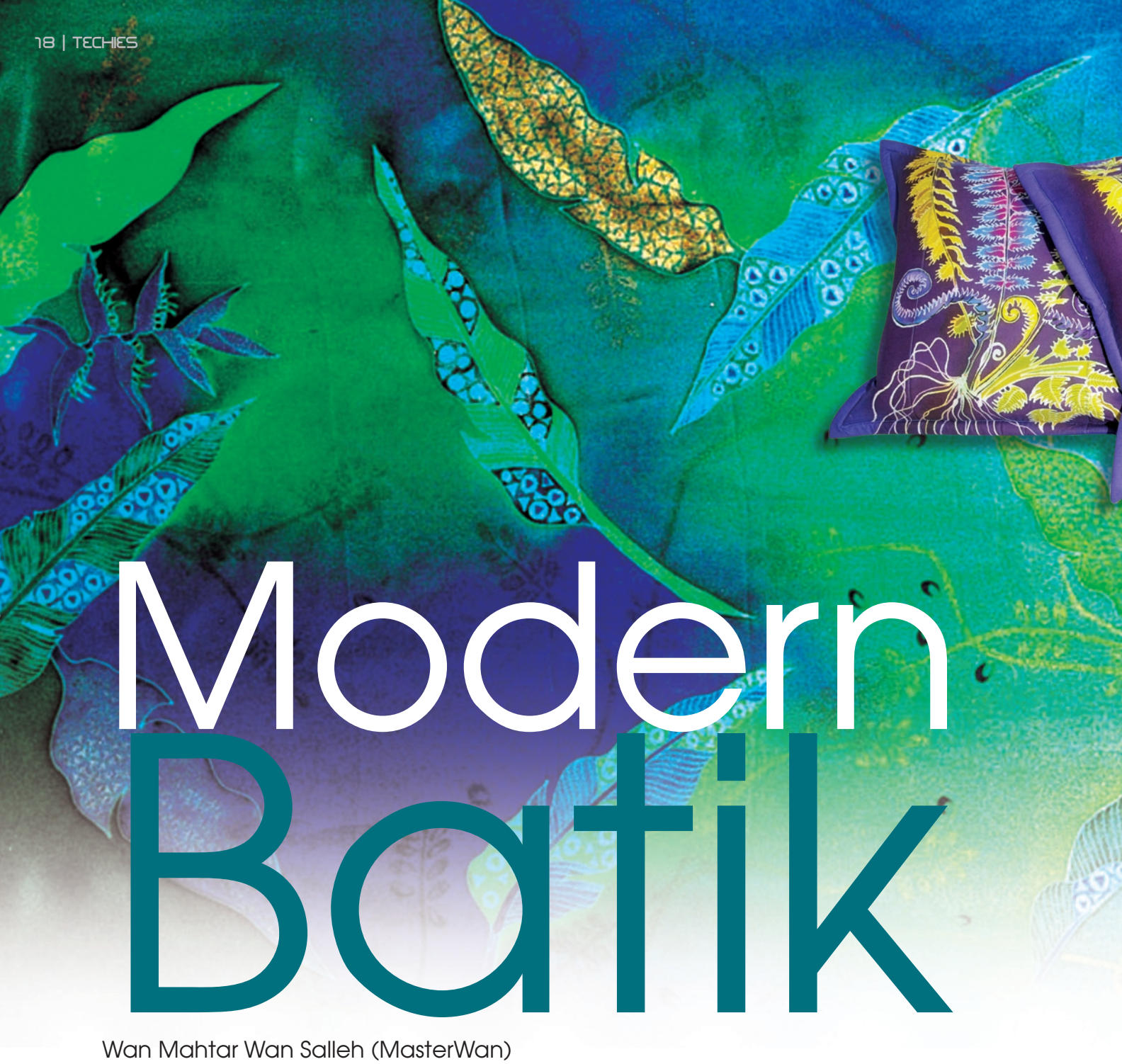
art works that are presented in the form of visual arts, performing arts, crafts, fashion and textile. Generally, these works include the production, the criticism, the study and the dissemination of art.

The process of creating the work of art typically starts with an empty space for the artist to express, explore and connect the work with their audience. Design in nature is an interdisciplinary activity that requires a collective input from different skill sets of professional, layman (clients) and specialist. In many ways, a good design is a matter of integration. It is a powerful tool and allows designers to shape their products and environments in a way that may affect the wellbeing of people in general, especially in the global networked economies.

The designer communicates their message and motivates the consumer to understand the creation. Some of the most powerful design regularly interpreted in the form of minimalist styles in which the attention is put through the size, positioning and space with minimal use of colours.

This overview gives an insight of CI in the context of Malaysia to lay down the proper foundation of Creative Multimedia, as well as Art and Design, in order for the country to remain competitive and dynamic. It is believed to be one of the most demanding skills set needed in the 21st Century due to the ability and power to change the way we think, work, produce, act on, innovate and do business.

"Malaysia is particularly blessed in our development of a CI, since our nation is deeply rooted in Arts and Culture, which dates back to the pre-7th century"



Modern Batik

Wan Mahtar Wan Salleh (MasterWan)

Many people know what batik is. The question is, do they wear it? The difference between batik and textile is not very obvious. One of the ways to know is by examining the design on the fabric. If it is visible on both sides of the fabric surface, the fabric is indeed batik. On the other hand, if the pattern is visible only on the printing side of the surface, it is categorised as textile, not batik.

Batik is a traditional Malay cultural handicraft that goes back in time. It has been passed down from one generation to another and it continues to this very day.

The batik industry in Malaysia has gone through its own evolution process, which sees the development and change in printing and techniques. Starting from the wooden block to metal, copper, stencil, hand-drawn, and digital-based, the latest in line is the candle screen technique. This evolution is a process of batik modernisation, in line with the latest advances in technology.

The modern batik progresses not only with time, techniques and approaches, it also progresses with motifs, designs and colours. Motifs and designs are created and

developed to bring out the uniqueness of the theme. They are crafted with cost- and time-saving preferences in mind so as to facilitate the production process.

In spite of the use of modern production approaches, batik motifs are predominantly of the flora and fauna variety – just like the motifs found traditionally. However, one can see the fusion of graphics, semi-graphics and geometrical patterns with limited or unlimited use of colours to produce a serene and peaceful visual effect on the fabric. One can find countless choices in the market with these patterns and motifs.

The globalisation era and vast progress in technology, coupled with the advent of new media, have great impact on the modern batik. Institutions of higher learning and skills institutions now offer numerous batik-related courses, accelerating its growth. This positive development ensures the continuity of the country's heritage. It also spurs the industry with young and dynamic talents having new ideas, hence giving birth to more new enterprises run by enthusiastic and energetic individuals who will eventually bring the trade to the next level.

The production of the modern batik through methods such as canting, rejisan lilin, sapuan lilin and candle stencil are much simpler compared to traditional batik -making because the process is organised according to the finished product - be it a caftan, shirt, blouse, robe, palazzo, cardigan, kimono or other types of clothing. However, the need for the use of machineries is inevitable in order to meet the high and fast market demand.

Apart from clothing, batik designs are also used as wall decorations in hotels, offices, and residences. They can similarly be found in souvenir items and various household products. The designs are not limited to the conventional pucuk rebung and sulur only, rather, it is entirely up to the designers to express their creative visions on the items and fabrics.

The modern batik is now transforming again in terms of motifs, patterns/designs, and colours, according to ethnic tastes and suitability. Indians, Chinese and members of international communities have shown high interest in batik due to its distinctive and trendy patterns and designs. Indeed, the modern batik is now highly accepted worldwide.

Modern batik designs have a huge potential in the fashion world due to their unsurpassed creative content and high adaptability with time and form. At the same time, batik maintains its heritage value, which ensures its preservation in the future.

The vast and dynamic qualities that the batik has, alongside affordable prices, guarantee that its market will soar both locally and internationally. This will in turn help elevate further the country's economy. As such, batik entrepreneurs must constantly pave new horizons in finding more creative strategies and approaches as this industry promises a huge potential in the global market.

Creative Multimedia and Technology

Burhanuddin Md Radzi
Managing Director
Les' Copaque Production Sdn. Bhd.

When Toy Story was released in 1995 by Pixar for Walt Disney Pictures, it marked the first feature-length computer-animated film. The film had a large impact on the film industry globally with its innovative computer animation. Various industries were interested in the technology used for the film. Personal computer makers, game developers, robotic researchers and software developers were interested to develop the technology further following the euphoria of the film's success.

With the evolution of internet and videos on the internet, the 3d animation software and posting of animation works is no longer the privy of established animation studios. More and more young people are attracted to learn 3d animation and showcasing their works on internet platforms such as YouTube, Facebook, Daily motion and others. Apart from animation technology, computer generated image (CGI) technology also flourished with the release of the film "Lord of The Rings" in 2001. Since then, more and more films are being produced with CGI and the technology keeps on improving. Today, with the advancement of technology, almost all films are being produced with CGI and it has opened up new opportunities for those computer savvy millennials to be involved in creative multimedia productions.

In Malaysia, Tun Mahathir Muhammad, the then Prime Minister, saw the potential of Malaysia becoming the power house for all these technologies as early as year 2000. The Multimedia Development Corporation (MDEC) under the Ministry of Science Technology and Innovation (MOSTI) at the time, was tasked to spearhead the animation industry in Malaysia and significant budget was allocated to assist the local players to jump start by giving them grants for their projects. Local universities started offering animation and visual effects courses and their graduates were able to find jobs in the local market. Unfortunately, most of the local products produced at that time were not able to make an impact due to poor animation quality and storytelling. This resulted in a number of studios not able to sustain their business.

However, in 2007, when Les Copaque Production Sdn Bhd (LCP) released their famous series "Upin and Ipin" and followed by their successful film in 2009, "Geng: Pengembaraan Bermula", it managed to excite the local industries. LCP has led the way in maximizing the values of their Intellectual Properties (IP) in generating multiple streams of income to propagate their business. The key to their success are creating the right content for the target market, proper management of their IP and keeping abreast with technologies in creating their product.

Technologies in multimedia are changing at a very fast pace; from software, camera and even platforms to exhibit their creativity. The business model for creative industries are also changing. Gone are the days when television stations were the only platform to sell their product. Social media are now being used extensively to generate income. The onus is on the creators to use the technologies to their advantage in creating their products.

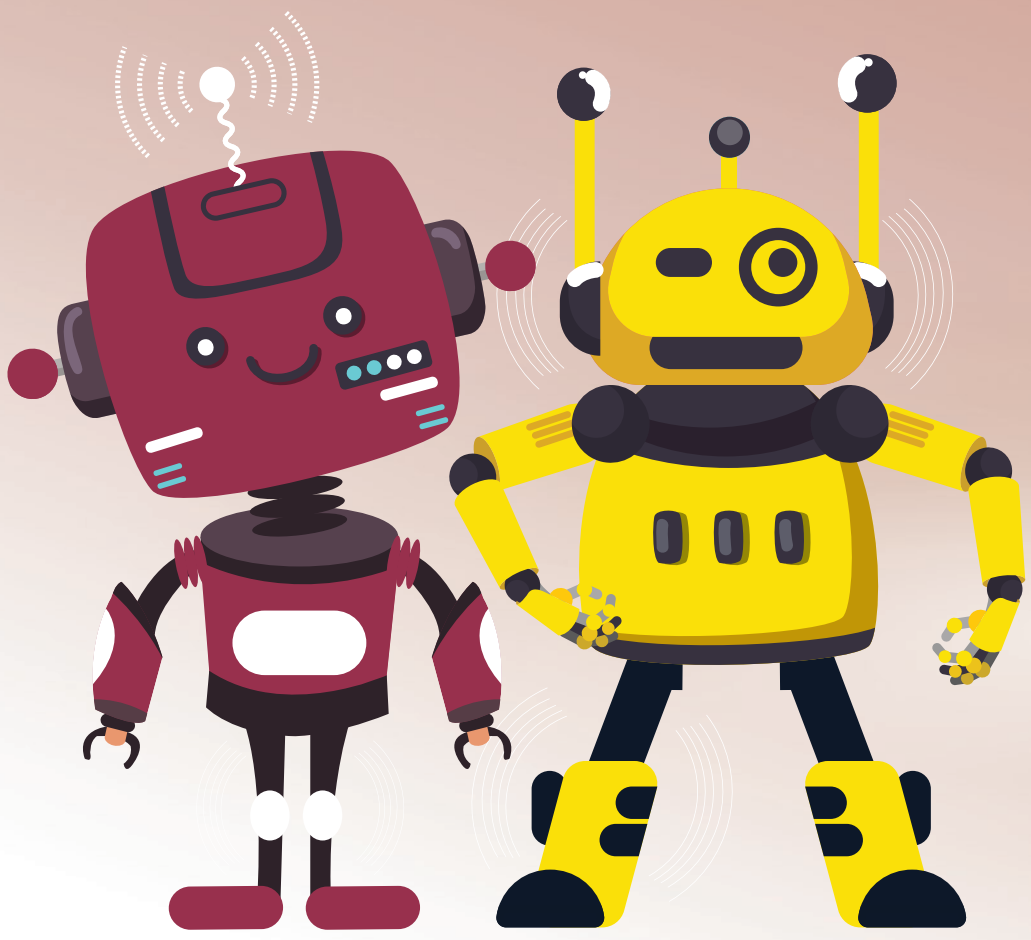
Technologies alone do not guarantee that we can produce a marketable product. The younger generations put more emphasis on technologies rather than contents. Time and time again, it has been proven that content is the king to any multimedia product. Good content with good technologies will compliments each other. Therefore, a lot of R & D needs to be done first before embarking in any commercial product.

National Combat Robot Competition 2018

Elena Mazlan

Kuala Lumpur, 1– 4 October 2018 – Using Robot Wars as a concept has driven a number of forward-looking communities to participate in the National Robot Combat Competition 2018. The competition was organised by the National Science Centre and My Robotsz Enterprise, with the theme, "Resist or Surrender".

The winners of Robot Combat 2018



During the event, the arena was flooded with supporters and 32 teams comprising 250 members from different educational backgrounds, including public and private universities, Institutes of Industrial Training (ILP), MARA training institutions (GIAT MARA), polytechnics, small medium companies (SMEs) and individuals.

The National Combat Robot Competition aimed to test the practical knowledge and skills of our youngsters in basic mechatronic and mechanical engineering. Participants were given the task to build robots using their own creativity and know-how.

After rounds of explosions, thuds and clashes, the team from ILP Mersing, Johor, was crowned as champion. The 1st runner up went to the National Youth Skill Training Institute Bukit Mertajam, and the 2nd runner up was Universiti Putra Malaysia.

The competition recognised both the aesthetic value of the design as well as the functional aspects of the robotic technology by way of awarding "Best Design Award" and "Best Engineering Award". The Batu Pahat Community College and the National Youth Skill Training Institute, Bukit Mertajam won the prizes, respectively.

The closing ceremony was attended by Assoc. Prof. Dr. Ramzah Dambul, Deputy Secretary General, Science, Technology and Innovation of the Energy, Science, Technology, Environment and Climate Change (MESTECC).

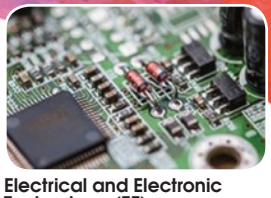
"The competition is a platform to develop students' skills in developing robots with guidance from their instructors. Each team comprises four teachers and five students. The robot 'Todak' symbolises Johor," said Mohd Fahmin Mohamad, lead instructor of the team that won the championship. "The most challenging is time investment and efforts that we pour into the project despite our busy schedule as instructors".

The competition promotes robotics as one of the important technological convergences in the new industrial revolution.

23 Fields of Technology

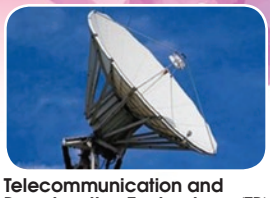
What is MBOT's Recognized Technology Fields? To-date, MBOT has recognized 23 Technology and Technical Fields. These technology fields are not permanent and will dynamically change based on the rapid growth of technology. Each Technology Fields has gone through rigorous verification and requirements study before it was being approved by the Board and recognised as MBOT Technology and Technical Fields.

Each Technology and Technical fields was defined by MBOT's Technology Expert Panel which consists of representative for the industry, relevant government agency and academia. The Key Area for each Technology and Technical Fields was also defined properly to cover the wide angle of Technology Fields and its implementation in the industry.


Electrical and Electronic Technology (EE)


Information and Computing Technology (IT)


Chemical Technology (CM)


Telecommunication and Broadcasting Technology (TB)


Biotechnology (BT)


Building and Construction Technology (BC)

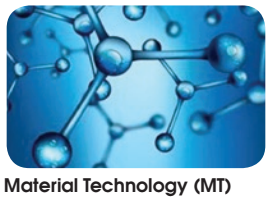

Resource Based, Survey and Geomatics Technology (RB)

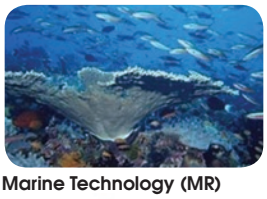

Manufacturing and Industrial Technology (ME)


Agro-based Technology (AF)


Cyber Security Technology (CS)


Transportation and Logistic Technology (TL)


Material Technology (MT)


Marine Technology (MR)


Maritime Technology (MI)


Atmospheric Science and Environment Technology (AC)

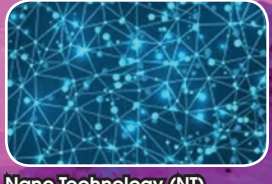

Green Technology (GT)


Oil and Gas Technology (OG)


Automotive Technology (AT)


Aviation and Aerospace Technology (AV)


Food Technology (FT)


Nano Technology (NT)


Nuclear and Radiological Technology (NR)


Art Design and Creative Multimedia (AM)