# CONVERGENCE Vol. 5 / No. 1 | JANUARY 2011

# WIDENING ACCESS TO KNOWLEDGE

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- MTSFB: THE TECHNICAL FORUM FOR THE COMMUNICATIONS & MULTIMEDIA INDUSTRY





Malaysia

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Suruhanjaya Komunikasi dan Multimedia Malaysia Malaysia Communications and Multimedia Commission

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Personality Dato' Seri Utama Dr. Rais Yatim





The Economic Transformation Programme (ETP) that our nation has embarked upon which will transform Malaysia from a middle-income to high-income economy is in full swing.

Communications, content and infrastructure is one of the 12 National Key Economic Areas (NKEAs) that are at the core of the ETP. The vision for this sector is continued high growth in communications and a paradigm shift from infrastructure to applications and content.

To fulfill these challenges, SKMM is actively pursuing various initiatives that will result in the achievement of the manifold targets that have been set for this sector. Many of the key initiatives are covered in this issue. Our cover story is about the ambitious project that is bringing the means to access broadband right down to the individual level. The Komputer 1Malaysia project is literally reaching millions of people who, likely, have never had access to the Internet that we have come to accept as an integral part of our lives. The article explains the rationale behind this initiative, shares details of the project and also examines the impact of these netbooks in a community in Negeri Sembilan.

The cover story is complemented by the Digital Districts article which provides a fascinating look at our initiative to transform districts into digital hubs of life. Yet another important line of action that SKMM is spearheading is that of growing the networked content industry. The article, Nurturing Young Creative Minds highlights one of the programmes that we are undertaking in this area.

Another major area that we are concerned with has to do with improving technological skills and abilities. We have articles on research to explore improvements in communications at high frequency bands as well as the inauguration of SKMM's TecnoLab, which will serve as a showcase of Malaysian communications technologies.

Let us work together on making Malaysia a communications and multimedia powerhouse.

Thank you. Tan Sri Khalid bin Ramli Chairman, SKMM

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## **People First, Performance Now**

This is about far more than the economic goals of our nation. This is about the life chances open to future generations. This is about raising the sights of low-income families to help them out of poverty. This is about the very fabric of our society where we each have opportunities and responsibilities. It's about placing Malaysia at the forefront of a high-income economy so that we can stand shoulder to shoulder with other fully developed nations. I am confident - with your support - we will choose the right path, move forward, not back, and build a fairer, stronger and dynamic Malaysia for many decades to come. I call upon you to join me in this momentous journey to build a truly prosperous and a new future for IMalaysia.

> YAB Dato' Sri Mohd Najib bin Tun Abdul Razak Prime Minister of Malaysia



YAB Dato' Sri Mohd Najib Tun Abdul Razak presenting a 1 Malaysia netbook to a student.

# WIDENING ACCESS TO KNOWLEDGE

After successfully carrying out infrastructural projects in underserved areas throughout the nation and then bringing ICT access to rural communities, the Government has now taken the programme that addresses the digital divide to the individual level. Md Rusli Hj Ahmad explains how this strategy is bringing digital access into rural homes. "High speed broadband is a key enabler to transform Malaysia as a middle-income nation to a high-income nation. It will make Malaysia a 21st century nation."

YAB Dato' Sri Mohd Najib bin Tun Abdul Razak, Prime Minister of Malaysia.

ince the 2000s, as new generations of wired and wireless communications services were introduced the into country, the Universal Service Programme (USP) has been instrumental in ensuring that the rollout and availability of communications and multimedia services did not leave out the less developed regions in the country. The USP fund, raised from the mandatory contributions of licensed telecommunications companies, has enabled the rollout of infrastructure and services to regions where it was commercially not viable for telecommunications' operators to expand their services and presence in those areas.

With basic infrastructure and community access largely addressed, the focus is now on bringing communications access to individuals. Under the latest steps taken in this initiative, SKMM is overseeing a programme consisting of placing netbooks coupled with broadband access package into the hands of the underprivileged populace in remote areas of the nation. This new line of action is in keeping with SKMM's role in promoting widespread availability and usage of network services and applications services throughout the country by encouraging the provision for network services (e.g. public cellular coverage) and applications services (e.g. broadband access service) in underserved areas and communities.

### The Universal Service Provision (USP) Programme

The USP programme aims to provide collective and individual access to basic telephony and Internet services throughout Malaysia. As telecommunications' operators tend to focus on commercially income-generating areas, a gap known as the 'Digital Divide' is created between the "haves" in urban areas, and the "have-nots" in underserved rural and remote areas.

Since its inception back in 2002, there has been careful planning and development of new USP projects in view of ensuring optimum appropriation of the USP resources to the intended beneficiaries in the rural underserved areas; taking into account the market demand and industry supply, technological progress and national aspirations. The USP programme is considered as one of the tools for bridging the Digital Divide by acting as a mechanism for channeling private sector investment into unprofitable rural areas. The key tenet here is one of "no gain, no loss." That is, a designated service provider incurs no loss, nor makes any profit, when implementing this programme as the service provider only claims for expenses incurred at cost and SKMM reimburses them.

To ensure smooth delivery of the USP project, the USP Fund serves as the sole purpose of implementing the principal project components (i.e. network facilities, network services and applications services) in the underserved areas and communities.

Moving forward, SKMM has taken an audacious move to explore new approaches by means of assessing actual community needs prior to implementing new USP programmes. Such consumer driven (based on demand) approach augurs well with the community development model envisioned by SKMM which would integrate elements of human capacity development as part of the key characteristics of new USP programmes. In the meantime enabling parameters (e.g. target community demography analysis;



📕 YB Dato' Seri Utama Dr. Rais Yatim showing a 1 Malaysia netbook to YAB Dato' Sri Mohd Najib Tun Abdul Razak



level of ICT education and exposure; relationship with State Government, Local Authorities and local communities; promotional and awareness activities; and suitable technology deployment that could boost take up; sustainability of e-Community initiatives, etc.) were also taken into consideration to ensure integrated appropriation of USP resources.

The new USP model which is community friendly takes the form of Community Broadband Centres (CBC), Community Broadband Libraries (CBL), and Public Cellular coverage projects which were aimed at providing communications access services to the underserved populace nationwide.

The primary strategy for expanding broadband coverage and usage in the rural areas consists of the setting up of the CBCs and CBLs. These centres enable underserved communities to access broadband services and ICT facilities. The CBCs provide valuable IT training for citizens in view of equipping them with the necessary skills to use computers and access online services. The CBCs also serve as community Internet access centres where members can access the Internet at affordable rates.

### The Broader Approach to Outreach the Nation: The National Broadband Initiative (NBI)

The USP projects are all part of larger government efforts to move the nation into the digital age. To consolidate all these lines of actions into one national plan, the Government launched the National Broadband Initiative (NBI) which aimed to bring broadband to the entire nation. The NBI envisions to transform Malaysia

		ZONE 1		zo	NE 2		ZONE 3	
		Urban	Suburban				Rural	
Initiatives	HS	BB (end-to-end)				U P •	niversal Service rovidion (USP) Basic Broadband Infrastructure Community Broadbar Centre (CBC) Community Broadbar Library (CBL)	nd nd
	BE	3GP (lastmile)	HS - C - Di - M - U	PA/3G elcom igi axis -Mobile	WiMax - P1 - Redtone - Asiaspace - YTL	9	Broadband as Basic Utility (same as water and electricity)	

Coverage of national broadband implementation

into a knowledge society and to leapfrog the nation towards becoming a high value, high-income economy by 2020. The two-pronged strategy adopted under the NBI focuses both on demand and supply aspects of broadband.

On the supply side, broadband infrastructure and services would be rolled out throughout the country. Efforts were also put into creating demand for broadband. Here, emphasis was given to three aspects of demand which are awareness, attractiveness and affordability.

The approach for creating awareness was through continuous government and private sector involvement in the awareness programme and capacity building initiatives. On the area of content, efforts were made to improve the attractiveness of the online content, and especially local content. There was also focus on enhancing and promoting e-Government, e-Education and e-Commerce content. Programmes are also being implemented to digitise traditional information resources such as libraries, archives, etc. to be available online and access to become ubiquitous. The affordability factor and Digital Divide is being addressed by developing various incentives to reduce broadband access costs and widening community access.

The official announcement of the NBI was made on the evening of 24 March 2010 where the Y.A.B. Prime Minister of Malaysia had announced six (6) initiatives to encourage broadband usage among Malaysians namely:

**Initiative 1:** Setting up of CBC-to-Home ('Broadband for All') to serve rural households across 246 CBC locations nationwide at the cost of RM60 million;



Achievements for 2009

Initiative 2: Establishment of Pusat Internet Rakyat (PIR) also known as Mini CBC at 138 Information Offices to provide broadband access at the cost of RM10 million;

**Initiative 3:** Setting up of e-Kiosks at community centres and sub-districts across all 1,105 *mukims* (sub-districts) nationwide at the cost of RM40 million;

**Initiative 4:** Expansion of cellular coverage by setting up 873 new telecommunications towers;

Initiative 5: An allocation of RM1 billion from the USP fund to be used with the consensus of service providers to distribute notebook computers to needy students and low-income families under the Komputer 1Malaysia project; and

**Initiative 6:** Telekom Malaysia (TM) to make available broadband packages together with netbooks, with rates reduced

from RM50 to RM38 a month, and in USP areas a further reduction of RM20 a month.

Apart from Initiative 6, all other initiatives were to be funded from the USP Fund.

### Widening Access

One of the milestones set for the nation in its journey towards becoming a knowledge society was to achieve household broadband penetration of 50%. It was projected that 50% penetration of broadband among households can potentially result in a 1% rise in GDP and the creation of 135,000 new jobs. However the achievement of this goal could only take place if efforts were made all across the nation and not just in urban areas. A survey in the year 2000 carried out by SKMM showed 85% of the country's broadband usage came from major cities but that alone will not be able to help achieve the 50% household penetration target. In short, even if every household in

the major cities were to have broadband, it would only make up 35% of total broadband penetration in the country.

Efforts were then required to proliferate broadband access services into the more rural households of the country. Under the context of the USP this would also meant re-orientation towards individual broadband service ownership to complement the previous community-based approach. This was further evidenced by the overwhelming response to the CBC facilities which demonstrated that if something could be done to bring broadband into homes in underserved areas; it could make a significant contribution to the national broadband goal.

Bearing these goals in mind, the Komputer 1Malaysia project was conceptualized to increase the proliferation of broadband-enabled netbooks.

### Komputer 1Malaysia (1Malaysia Netbook)

Under the USP programme, SKMM had allocated for one million netbooks to be distributed amongst eligible recipients such as poor students at secondary schools and universities as well as low-income groups to ensure that they are not being marginalized and deprived from the digital opportunity offered via the Internet. This initiative will further ameliorate broadband usage throughout the country and contribute towards the nation's household broadband penetration rate.

The distribution of the broadbandenabled Netbooks was targeted to reach the eligible beneficiaries in the following ratio:

Low income students with priority given to high school students yet to have broadband subscription through



Youths using the IT facilities at a Community Broadband Centre

joint cooperation with Ministry of Education (MoE). This will comprise of 65% from the total allocation; and

• Low income group within coverage areas across traditional villages, new villages and *penempatan masyarakat setempat.* This will comprise of the remaining 35% of the total allocation.

The ensuing works commenced and the initial listing of low income students has been obtained with the cooperation of Ministry of Education (MoE). In operationalising this, the listing is shared with SKMM's Regional Offices (ROs) who then perform verification with the District Education Office (*Pejabat Pendidikan Daerah* (PPD)).

As for the listing of eligible low income group, SKMM is in the process of identifying the recipients with the various agencies. The identification of students from low-income families is made with the assistance of the relevant Ministries and Government agencies. A household income of RM3,000 and below is used as an indicator of potential recipients within the low-income groups category.

With the assistance of the relevant parties, a confirmation of eligibility for each shortlisted student recipient is made on the basis of the family's financial standing along with ascertaining that there is no computer and broadband subscription at home. Each of the targeted households is limited to only 1 unit of netbook. Nationwide distribution of the 1Malaysia netbooks began throughout the country in June 2010. The distribution will be made directly to the identified target group based on the criteria mentioned earlier.

Between the months of July – October 2010, a total of 123,000 units of netbooks have been delivered under Phase 1 of the programme which operated in tandem with the CBC. These CBCs currently have desktop personal computers (PC) set up with broadband connections and hired supervisors to facilitate Internet usage. The CBCs also offer WiFi facilities hence the recipients of the netbooks could then access broadband services at these centres.

The 1Malaysia Netbook project went into Phase 2 rollout in August 2010 where an open tender commenced for eligible and interested licensees to take part in distributing around 350,000 odd units of additional netbooks to new USP underserved areas nationwide. This exercise has drawn overwhelming response from licensees who had submitted their bids for SKMM's further evaluation. In January 2011, the successful bidders were awarded with their respective parcels for delivery under the Phase 2 rollout nationwide. The design of the 1Malaysia Netbook project also allows for participation of small and medium enterprises (SMEs) who were engaged to distribute the netbooks in their appointed geographical locations.

These SMEs, who are holders of the relevant licenses from SKMM also provide operations and maintenance services for the netbooks.

### **On the Ground**

The most important gauge of the success of a programme is always the impact it has on the targeted population or segment. On that score, the 1Malaysia Netbook programme has been a success, as manifested by a recent visit to Sekolah Menengah Teriang Hilir.

Under the Phase 1 rollout, almost 250 netbooks were distributed to students of this school which is located at Simpang Durian in the Jelebu District of the State of Negeri Sembilan. The list of students was vetted through the proces just described.

The distribution of the netbooks was coordinated by the CBC of Paloh Satu. The CBC manager there is Siti Nasarah Bt Md Sahib and she is assisted by Noor Shazelin Bt Harun. Siti and Shazelin distributed the netbooks to the students in the school in August 2010 with representatives from SKMM at hand to oversee the distribution.

To gauge the impact of the project, we visited the school in early 2011 where we met with five recipients of the netbooks and a teacher. In the six months since these students were given netbooks, it is clear that these netbooks had become an integral part of the lives of these students and also their family members.





En Hamizon, 5 students from SMK Teriang Hilir and the CBC managers at the school's IT room

### School Life

Sekolah Menengah Teriang Hilir is a large secondary school that serves students from the nearby Felda plantations and villages. It has a hostel for students, quarters for teachers and the school has been selected as one of the schools under the Smart Schools programme (Sekolah Bestari) of the Education Ministry.

Hairul Azan bin Mohd Husin, Mohd Akmal bin Kamarulzaman, Abdul Rahman bin Md Jadi, Mohd Nazrul Azri bin Md Jadi and Mohd Nazrul Azri bin Roslan are all sixteen year old students of the school and were recipients of the netbooks.

When we spoke with them, the first thing they conveyed was the joy of receiving the netbooks. All of them were extremely thankful to have received the netbooks. For all five students, this was the first time there was a computer in their house.

En Hamizon, the teacher in charge of IT education and services in the school, shared

that the netbooks had a positive impact on the students. For security reasons, the netbooks are not used directly in their school work. The students are not allowed to bring the netbooks to school during school hours. This was because a typical school day consists of many activities such as P.E. classes, laboratory sessions and recess. The school authorities decided that the constant moving about of students made it too risky to allow netbooks to be brought to the schools, especially after one student lost his netbook soon after receiving it last year.

Nevertheless, En Hamizon said that the students were encouraged to use the netbooks at home and elsewhere as educational tools. He found that many students were using their netbooks to search for information related to their studies. The students were also pointed to sites that provided tuition support so that they could improve their studies and prepare for their examinations.



En Hamizon added that Internet is also available in the school after school hours. WiFi is enabled at many areas in the school and the students who live nearer to the school generally go there to access the Internet. The students who stay in the hostels also have Internet access in their dormitories.

### At Home and CBCs

Like all teenagers of their age, these students have been avidly using their computers. All five of them have settled into a routine where they use the computer at least once daily. Not surprisingly, a large portion of their computer activities use is devoted to social networking applications and media consumption.

Internet access is not available at the homes of most of the students who received the netbooks. Out of the five students we spoke to, only one of them had a 3G USB dongle that allowed him to access the Internet at the home. For the rest of the students, access is available at the CBC.

It has become a routine for the students to find their way to the CBC a few times a week. Siti Nasarah said that students mostly go there in the early evening to take advantage of the WiFi service there. These students socialised as well as accessed the Internet when they are at the CBC and Siti Nasarah said that she was happy that the CBC had become a youth centre because of these netbooks. Siti Nasarah added that Noor Shazelin joined her in monitoring the activities of the students to ensure that they used the netbooks productively and that



Students engrossed with the 1 Malaysia netbook

the sites they visited were suitable. The CBC is also working on enhancing the computer skills of the netbook recipients through computer classes and guidance sessions.

As to their Internet activities, when we spoke to the students, it was hardly a surprise to find that Facebook ranked number one in their list. All of them have accounts on this social networking site. According to the students, one key result of their becoming computer users have been the widening of their circle of friends and acquaintances. All five of them have made new friends from outside their areas, some from as far away as Indonesia. These new friendships were forged through introductions and recommendations of existing friends.

At least one of these five students also uses Twitter. Another very popular site is YouTube, which they use heavily to listen to music and view videos that is of interest to them. The students also use their Internet time on searching for information, by visiting sites like Wikipedia.

### **Family PCs**

Interestingly, the netbooks are used by family members too. These netbooks have also become, as envisioned, means of Internet access to other family members of the recipients. All of them reported that family members also use these netbooks to surf the Net.

Generally, it was their siblings who benefited from having netbooks at home. The five students we interviewed said that their younger and older siblings were enthusiastic users of the netbooks, both for studies related use as well as for social networking purposes.

One of the students also reported that even his extended family members had become avid computer users as they too came over to his house fairly frequently to use the netbook. Another student said that his mother had also started using the netbook and was becoming a proficient computer user. Even though most of the other parents had not started using these netbooks yet, they still benefited as their children were occasionally called upon to use the netbooks to source work related information for their parents.

### Feedback

The five students interviewed were all generally happy with the performance of their netbooks but expressed some concern that the nearest service centre is apparently in Seremban city. Since Seremban is located two hours away, a lot of time would be wasted in the eventuality of a netbook breakdown. The students would have to get the computer to Seremban and another trip would have to be made on a later date to pick it up after repairs. They hope that arrangements can be made to have access to service at locations nearer to them.

The 1Malaysia Netbook programme stipulates that recipients will either have to subscribe for at least one year to either a subsidised broadband package that is priced at not more than RM25 per month or, subject to some terms and conditions, a commercial broadband package.

The recipients at Teriang Hilir were given subsidised broadband packages of RM20 per month. However, since they live in rural areas where wireless broadband speeds are not as fast as those found in urban locations, Internet access is mostly obtained by going to the CBC centre and connecting through the WiFi service there.

On the area of applications and content, En. Hamizon was keen to see more purpose built applications placed on these netbooks. He suggested that educational software should be made available to the recipients, either online or through CDs. He also felt that it would have been good to have an anti-virus application on the netbooks.

### Proliferating Knowledge Devices

SKMM is in the midst of distributing the remaining 527,000-odd units of netbooks within the First Half of 2011 under the Phase 3 rollout of the 1Malaysia netbook project.

The 1Malaysia netbooks which are being placed into the hands that really need them go a long way to bridge the Digital Divide. It is SKMM's vision that no one will be left out in the drive towards transforming the nation into a knowledge society.

Md Rusli Hj Ahmad

Dato' Seri Utama Dr. Rais Yatim, has served the nation for over three decades, holding various positions in the national Cabinet Committee and other State Government positions. He has previously been appointed a Minister in the Prime Minister's Department, Menteri Besar of Negeri Sembilan, Minister of Land and Regional Development and Minister of Foreign Affairs.

Presently serving as the Minister of Information, Communications and Culture, Dato' Seri Utama Dr. Rais Yatim shares his thoughts on the communications industry.

# DATO SERUTAMA DR RASYATIM



As the Minister for Information, Communication and Culture, what would you list as your main priorities and focus areas in the communication sector?

We are working towards building the next generation of networks and infrastructure. Malaysia is in an enviable position as we have always been at the forefront of communication technologies adoption.

The next generation of wired and wireless technologies will bring high speed broadband to key urban areas as well as broadband everywhere else. These projects are in full swing and citizens are already beginning to enjoy these new services.

Rural and underserved areas are not forgotten too. Here we are using WiFi technology to enable the people there to access Internet services.

At the same time, there is also focus on the creation of local content for these networks.

### The National Broadband Initiative (NBI) is an important undertaking that will help to raise the nation's competitiveness. What are the major lines of action of the NBI?

The ministry is working on five lines of action. It is setting up Rakyat Internet Centres (Pusat Internet Rakyat) and Mini Community Broadband Centres in many locations around the nation. The Ministry has also embarked on the 1Malaysia Netbook Initiative which is a notable project that will distribute notebook computers to deserving students nationwide.

Around 2000 villages around the nation are being equipped with wireless access through the implementation of Kampung Tanpa Wayar (WiFi Village) project and we are also expanding Community Broadband Centre (CBC) coverage to the home. By this I mean we are expanding broadband network coverage to the communities living around Community Broadband Centres and Community Broadband Centres and Community Broadband Libraries. The first phase of implementation involves 246 CBC areas started at the end of 2010.

There is also expansion of cellular coverage. Telecommunication towers and facilities for the expansion of cellular coverage nationwide are being built. More than 800 telecommunication towers are being built nationwide.

### Would you please tell us what kind of impact the NBI could have on the GDP?

Broadband has a very positive impact on the economy. A World Bank report reveals the impact of broadband on growth in 120 countries from 1980 to 2006. Its analysis revealed that each 10 percentage points of broadband penetration results in 1.21% increase in per capita GDP growth in developed countries, and 1.38% increase in developing countries. The facilitative aspect of broadband connectivity is recognised worldwide. A high speed communications network provides opportunities for new business opportunities and job creation. The Malaysian Government is not only highly supportive of this infrastructure development, but also usage needs in terms of content and applications development. Most of all, the Government's technology neutral approach to broadband coverage nationwide through wired or wireless means aims to provide this window of opportunity to every resident in the country.

Looking at the lines of action of the NBI, it is clear that you are paying a lot of attention to bridging the digital divide. There are Rakyat Internet Centres (Pusat Internet Rakyat) and Mini Community Broadband Centres as well as the 1Malaysia Netbook Initiative to distribute netbooks to poor students nationwide and the implementation of Kampung Tanpa Wayar and CBC to the Home. How is this NBI proceeding? Are you satisfied with its implementation thus far?

Things are progressing smoothly. There are many community broadband centres all over the country. These centres are bringing the Internet to places that have not experienced it. The response from the *rakyat* has been very enthusiastic. Everywhere we set up a CBC, many citizens become regular members and use the facilities regularly.

The 1 Malaysia Netbook initiative is also very satisfying. We are placing these netbooks in the hands of students who would never have been able to afford these netbooks. The objective is to increase PC ownership, ICT competency and literacy in the target population and also to increase the number of homes with broadband.

Recently the nation crossed the 50% household broadband penetration rate which is a major achievement under your tenure. Would you please elaborate on this achievement? Can you tell us how this landmark target was achieved and what is the next goal that is being targeted?

I think we are at 55% now, which is very commendable. Broadband has become a necessity these days and we are very pleased that we have crossed this significant threshold.

We are now working towards improving the quality of broadband service and lowering the cost for broadband service. By 2015 we will see even greater take up. We are aiming for 75% household penetration rate by then. We will also look into enhancing connection quality and generally increasing the broadband speeds all over the country.

There will also be increased emphasis on applications and content. Our aim in building next generation networks is for the people to be able to enjoy the fruits of the digital lifestyle. The Government will continue to educate the *rakyat* on the benefit of broadband.

In the Economic Tranformation Program (ETP), one of the National Key Economic Areas (NKEAs) is Communications, Content and Infrastructure. We are targeting for a Gross National Income (GNI) of RM58 billion by 2020 from this sector. Broadband service is the pillar for the overall achievement of the High Income Economy.

### Under the five key initiatives of the NBI, there is an effort to ensure expansion of cellular coverage. How will your Ministry drive this effort? What is the project timeline for this?

Our cellular coverage is on par with the best in the world as we have effectively achieved full cellular penetration in Malaysia. However there are still pockets of areas where we need to bring coverage to.

The USP funds are being utilised to ensure that coverage is brought to inaccessible areas.

With the completion of 1,000 towers nationwide in 2011, the cellular population coverage for the country will increase by 2% to reach the targeted 97%.

At the same time, I am also keen to see quality of service reach new levels. We must not just have cellular coverage but quality cellular coverage nationwide.

### How is the applications and content development effort in Malaysia?

After having focused on infrastructure development in the Ninth Malaysia Plan, it is now time to focus on the content industry.

The development of the content industry had taken on added urgency and importance. With broadband penetration having crossed 55%, there is a bright future for mobile content. The number of smartphone and broadband users are rising in Malaysia and there will be increased demand for content.

The ICT industry has been listed as one of the 12 National Key Economic Areas (NKEA). This sector has been given focus in the recent budget too with the allocation totalling RM319 million. Previously it was RM200 million for Dana Industri Kreatif. The Government targets the contribution of the ICT sector to the GDP to rise from RM22 billion in 2009 to RM58 billion by 2020.

### What kind of applications and content would you like to see being developed?

Developers tend to focus on games and entertainment but I think that they should also focus on areas such as education, health, tourism, agriculture, science and technology.

There will be demand from all sectors as companies and individuals see the benefits of broadband and a mobile lifestyle. Almost every task we carry out



these days will be moved online and onto mobile devices and I think it would be wise for developers to not just concentrate on currently popular areas.

### Do we have a target on the production of local content?

We are looking to create more than 40,000 jobs in this industry. We believe that this will be a very lucrative industry and plenty of jobs will be generated.

We are also keen to see that useful and appropriate local content is created through this initiative.

There are plenty of opportunities for content developers because our nation has a rich heritage and so much diversity. I am certain that Malaysians will favour local content if our developers are able to create compelling creative content.

The Government's approach in the ETP is private sector driven, thus more encouragement must be given to SMEs to participate in the content industry.

### On a personal note, what do you do when you access the Internet or mobile device? Which are your favourite websites or services?

I like to keep abreast with what is happening around the world. For that reason, most of my favourite websites are news sites from Malaysia and also international news websites.

### Where would you like to see the nation by 2020 in the areas of communications and multimedia?

By then, we should have 4G high speed mobile broadband as well as very high speed broadband available around the nation. I also hope that we would have world class content that has also been exported to the world.

I would like to see the *rakyat* benefiting from all these development with our world class infrastructure facilitating them to be connected socially and productive as well as making our nation competitive. The aim is to increase the quality of life for Malaysians through ubiquitous connectivity at affordable price.

It would be wonderful to enable the convergence of technology to be a platform for our local arts and culture content to generate new income streams for the economy.

Finally, we must strive to achieve world class communications and multimedia services, thereby enhancing our innate goal in creating 1Malaysia society.



Launch of Digital Jempol on 14th December 2010

# DIGITAL DISTRICTS

SKMM has embarked on a project that will enhance the digital competitiveness of localities in Malaysia. any countries are recognizing the importance of broadband, particularly for the creation of a knowledge based, service led economy. In this regard, various initiatives have been undertaken and developed to spur broadband development as a means to remain competitive. These initiatives involve an integrated approach, with equal focus being placed on infrastructure, affordability and the appropriate content to promote usage of the broadband services.

However, in today's global economy, competition does not occur between countries, but between cities, districts and municipalities. The establishment of a digital community is an investment by a city/district/ municipality in its citizens and businesses so that they can continue to compete in the global economy.

The digital district approach employed in Malaysia by the Malaysian Communications and Multimedia Commission (SKMM) takes the lines of development of digital district or digital cities initiatives in other countries, e.g. Digital Guro in Seoul, South Korea; Evora Digital District Project, Portugal; Digital Birmingham and the Shoreditch projects in the United Kingdom; the Kenniswijk project in the Netherlands; the Barcelona 22 initiative in Spain and the digital district project in Stockholm, Sweden. The scale and extent of these are however different from city to city. "The establishment of a digital community is an investment by a city/district/municipality in its citizens and businesses so that they can continue to compete in the global economy."

### Digital Guro in Seoul, South Korea

The Digital Guro initiative, led by the Mayor of Guro, is a district in Seoul, South Korea. Named the Silicon Valley of Seoul, Guro has successfully transformed and developed itself as a digital town with established digital network offering a range of interactive services. Located in the southwestern part of the city, Guro measures 20.11km<sup>2</sup> and is 3.3% of the total area of Seoul. In terms of basic infrastructure of Guro, an independent optical broadband communication network called U-GuroNet was established to realise a next generation electronic government in the era of ubiquity, and to improve the basic infrastructure of the information communication network. By utilising information and communication technology, the development of Digital Guro centred on providing citizenoriented digital administration services, utilising the newest IT tools and services such as mobile equipment and highspeed Internet and development of citizen-centred services.

The digital administration is the embodiment of e-Government standards. Guro combines high-tech information technology and administration to provide a digital administrative service to its citizens and a good business environment to companies. E-Services refers to e-procurement, health check-up appointments at the local office, civil affairs, tailored bidding information services available via the Internet, a cyber culture centre and cyber shopping mall for business. E-Administration e-approvals, knowledge refers to management and performance-based personnel management systems that allow quick and efficient paperless administration. E-Information is the **OPEN** (Online Procedures Enhancement for Civil Application) system, newsletters, Internet broadcasting and integrated administrative information system in order to provide citizens with real-time results on topics of civil affairs as well as wide range of useful information. E-Participation is emails to the Mayor,

environment-related reporting via the Internet, a Cyber Policy Forum, Cyber Citizen Panels, Citizen Opinion Polling with short message services through Internet and mobile tools, contests for citizen's best ideas, submission of citizens comments regarding regulations and citizens participating in the budget process.

Among many welfare administrative services, Guro especially has the u-healthcare system which is a service provided by Guro Public Health Centre's doctors through mobile phones or PDA to patients with diabetes, blood pressure, obesity or respitory diseases. Physicians retrieve data for diagnosis and treatment as needed. The Guro District also runs the Welfare and Computer Education Centres for the disabled, lends equipments for low-income disabled, supports in-house repairing and support many other activities.

### Evora Digital District Project, Portugal

Launched in 2005 with 75% funding from the European Union and the Portugese government and 25% from 4 project participants. These participants are Association of Municipalities of the District of Evora, Regional Development Agency of Alentenjo, University of Evora and Evora City Council. The Evora Digital District Project aims to bring local government, businesses and the region's tourism industry into the information age. This project which commenced with an initial budget of approximately  $6.5M \in$  (having spent  $6M \in$ ) include many sub-projects within it:

- Regional Portal
- Tourism Portal
- Business Portal
- GIS Portal
- Business Extranet
- Inovévor@-Innovation Centre
- Municipal Websites offering
   Online Services
- Municipal Intranets
- E-Commerce Portal
- Regional Hotspots
- Regional Data Centre

- Municipal MANs
- Evora Municipality Memory and Online Services
- Internet Mobile Vehicle

The fundamental reason the project was built was mainly because the citizens and enterprises were asking for e-Government services and also for better access to information.

The Evora Digital District Project gives the region's municipalities, businesses and tourism organisations the ability to provide information and services over the Internet. Common forms for all the municipalities were developed for online submissions and each municipal website comes with a basic set of functionalities such as security features, user registration, news and events, alerts, dynamic forms and polling, business opportunity and more.

Underpinning the project is a district portal (www.evoradistrictodigital.pt) that acts as an electronic front door to municipals, tourism and business services. Sitting under the main portal are individual websites of each of the 14 municipalities and regional subportals for regional promotion, business and tourism. A municipal Internet was implemented with high-speed broadband connecting local councils buildings within a municipality and each municipality to a regional data centre that provides central storage of all content used for the portal sites.

On a Business and Territorial promotion point of view, they developed a concept to help local businesses and potential investors know the region's advantages and opportunities. The main brand is Évora.BIZ, which is the business portal with a wide set of functionalities:

- Small Medium Businesses Directory
- Regional Products Directory
- Online simulator for investment grants
- Business opportunities to help entrepreneurs to manage, modernise or invest on the business
- Job database
- Business sector news with regional focus
- Training information

The main results are up-to-date information about county economy and SMBs to attract outside and inside investment. In order to give SMBs and local municipalities tools to compete with national procurement they deployed an e-commerce portal.

Besides bringing efficiency to local government service delivery, the Evora Digital District projects help boost the region's economic prospects and lay the foundation for a knowledge-based information society.

### **Kenniswijk Project**

The Dutch government in association with several private corporations, in 2002 built an experimental communications model called Kenniswijk.

The objective of this project was to create a "living" experimental environment in which consumers have access to innovative products and services in the area of computers, communications and the Internet. The project was initially managed by a foundation, which was subsequently taken over by a company called Kenniswijk BV. This company played a facilitative role, motivated and supported companies and institutions which were approached to make use of the available subsidy schemes, helped in building public-private partnership and forced breakthrough.

Tenders were called from municipalities wishing to participate in a broadband systems trial, and the first successful submission came from the town of Nuenen. The OnsNet Nuenen (our Net) was launched using a cooperative model of demand aggregation to roll out glass fibre infrastructure. The residents of Nuenen themselves own the network and their ownership was formalised within a co-operative society called Ons Net (Our Net). The fibre link provides 10Mbps bandwidth in an open-access network, that is, it is open to many service providers.

About 8,000 Nuenen homes, housing about 15,000 people, were connected free to a fibre-to-the-home network, representing a 96% take up. The government subsidised this experiment for a total cost of  $\notin 6.4$  million. Each connection cost was subsidised by  $\notin 800$ .

Many services offered may seem ordinary but are useful or important in people's everyday lives. They include parents videotaping their children's football matches to send them around the network to other team member or the capability to view, swap or edit digital photos, and educational channels that gave children access to experts for their projects.

When the period of free testbed access ended at the end of 2005, these services were offered at a cost of  $\epsilon$ 60 to  $\epsilon$ 75 a month, depending on the bundling discounts. About 80 percent of Nuenen residents chose to continue their broadband subscription on a paying basis.

### Stockholm

The City of Stockholm has actively encouraged the development of high-speed communications since 1994 through a wholly owned commercial enterprise known as AB Stokab. The members of the Board of Directors of Stokab are political appointees representing the City of Stockholm. Stokab's operations commenced at a time when Sweden had begun de-regulation of the telecommunications market. Stokab now has approximately 4,000 km of fibre cable for a total of 500,000 fibre kilometres.

The key elements of the Stokab business model include:-

- a) Building and operating a secure, accessible fibre-optic network.
- b) Leasing dark fibre to various organisations including carriers, commercial such as banks and technology companies, and municipalities, (Stokab does not offer any managed services).
- c) Contributing to the economy of the Stockholm region by ensuring that deficiencies in network capacity or availability do not impede business development.
- d) Stokab has an additional goal of leveraging municipal facilities such as tunnels and ducts in order to reduce the impact of excavation on city streets.

Stokab has approximately 60 telecom companies as customers. They include carriers, Internet service providers, cable companies and mobile telephone operators. Rather than constructing their own facilities, these companies lease dark fibre from Stokab. High-speed communications have made telecommuting, training, video conferencing, and telemedicine available to the citizens of Stockholm.





### **Barcelona**

Part of the Barcelona 22@ initiative (to create a new form of city for the knowledge economy) includes infrastructure renewal. The city is deploying its own dark fibre, and between each block, they have built two metre high galleries so extra dedicated connectivity can be provided between buildings. Around the top of each block they have implemented a ring for both power and data networks so an approved set of antennae and radio nodes can be added without ruining the historic sky line in the district.

The model is to be a neutral operator, supporting the city's own requirements, providing a range of community services, and providing an infrastructure that is open to other operators to deliver their broadband services.

One of the projects identified under this initiative is the "Virtual Memoria" which is aimed at bridging the digital divide and also grow social skills. Around 150 school children have been trained in media and IT skills and they then go out and interview older residents about their lives, work experience, historic events etc. These interviews, photographs and videos are then loaded onto a central repository and made available over the Internet.

The older participants are shown how they can access their own information via the Internet and even leave their comments over chat rooms and forums. The children also show the older participants how the Internet can help, especially in using community based applications such as health care and social benefits.

The end result is that the children develop new skills that would hold them in good stead in a knowledge based society, the history of the district is preserved and older people are being taught to use the Internet and bridge the divide.

### Shoreditch, England

The Shoreditch Digital Bridge (SDB) was developed by government funded community association The Shoreditch Trust Partners include Video Networks Lts, Hildebrand, Microsoft and ITN.

The goals for SDB were:-

- a) Improve the delivery of public services;
- b) Increase community engagement;
- c) Remove barriers between emergency service (particularly the police) and the community;
- d) Offer a wide range of useful services;
- e) Eliminate digital exclusion; and
- f) Prepare communities for the digital switch over.

SDB is a high speed network delivering online services to residents and businesses. Services are delivered over a high speed connection (8Mbps) and are accessible via either a TV set top box or PC. Services include broadband Internet on the TV, unlimited evening and weekend phone calls, digital TV and Shoreditch TV.

Shoreditch TV allows users to monitor a network of local cameras and watch the daily events in the city. This is particularly useful to monitor traffic conditions and also to regulate crime as one would be less inclined to commit crimes when the act could possibly be witnessed by a few hundred people.

The pilot project involved 1,000 tenants and intended to offer various community services, including:-

a) An education channel, allowing children and adults to take classes, complete on-line homework assignments and log-on to "virtual tutors";

- b) A health channel allowing patients to book GP appointments, provide virtual doctor/nurse consultations and online health and diagnosis information;
- c) A consumer channel, allowing online group buying common services such as gas, electricity and mobile phone tariffs; and
- d) An employment channel, providing online relevant courses, local job websites and virtual interview mentoring.

The results from the pilot indicate the following:-

- a) Video on demand audience share for flagship VoD was 35%;
- b) Interactive applications 66% of users view the interactive Crime Action Maps;
- c) Crime Reporting 46% of users reporting crime compared to 8% previously;
- d) 70%+ users voting in polling on perceptions of local services;
- e) Live Streaming 70%+ access and regularly use local webcam network;
- f) PC on TV 60%+ use PC on TV on a weekly basis and over 40 minutes per session.

### **Digital District, Malaysia**

The Digital District Inititiave undertaken by SKMM is based on the concept of the delivery of an ICT ecosystem to the smallest whole geographic unit or level, i.e the district (daerah) and the sub-district (mukim).

The strategy employs the building block approach where the individual districts or blocks will be delivered with network infrastructure and supported with programmes for demand stimulation.



Scene at an exhibition put up at the launch of a Digital District

With each district being developed, these blocks are integrated into the bigger building block, i.e. the state they belong to, hence the build up of digital states and thereon towards the creation of a digital nation.

The digital district ecosystem basically pillars on the 3Cs - Connectivity, Content and Capabilility - which are expected to spur the population in the district to use broadband to access the Internet for information, education and entertainment, to use e-mails for communication, to engage in social networking globally in cyberspace, to access information and transact on e-Government and e-commerce services, to enjoy new broadcast offerings, etc.

Connectivity is the creation of an infrastructure for a digitally connected district which will support future economic growth and help the people get online services. This consist of an array of communications infrastructure which covers wired copper and fibre optic networks, wireless broadband and cellular networks, WiFi hotspots, broadcasting and satellite networks.

Content would constitute the corresponding array of services and applications, which are delivered via these infrastructures and supported by digital devices which cover the range of voice, video and data.

Capability is the engagement with the people on the use of technologies to





The Prime Minister speaking at the launch of Digital Pekan

deliver inclusive and local solution while encouraging and developing the skills that will enable the people to exploit the economic, environmental and social benefits of digital innovation.

There have already been numerous ICT initiatives undertaken by various parties over the past two decades. As such, a digital district will inevitably incorporate a combination of earlier initiatives as well as new initiatives to be implemented in that district.

The initiatives of the digital district should not be seen as an end in itself, but is rather thought of as the continuation of all in-depth efforts to locally support the proliferation and adoption of technology and cause associative initiatives. It is designed to be part and parcel of a broader national agenda of delivering digital states.

As one of the ICT initiatives under the National Broadband agenda, it is aimed at delivering broadband services to the people and harnessing the offering of digital technologies for social and economic activities with the aim of moving the nation towards the benefits of adopting a digital lifestyle. The initiative, is expected to create an environment for information sharing, collaboration, interoperability and seamless experience for all its inhabitants.

The broad strategy for the initiative involves the following:-

- a) Promote deployment of broadband infrastructure, related products and use of broadband services in key public institutions such as library, hospital, schools and universities;
- b) To enhance communication through ICT between citizens, local government and businesses;
- c) To enable citizens to adopt new technologies as well as develop local creativity which would aid in human capital development;

The implementation towards a ubiquitious and digital society in Malaysia will essentially be in phases depending on the socio-economic status of the geographic area. As such, implementation of the initiative in one geographical area could essentially focus solely towards demand stimulation, education and awareness whilst covering the provision of basic infrastructure and access. In another geographical area where the adoption of broadband is more widespread, the focus could instead be on deploying applications that are more digital, interactive and ubiquitious in nature.

Hence, digital districts, as they emerge, may each be different and unique taking into account what is already in place, the characteristic features of the district and the plans and requirements for the district so as to enhance the building block.

### Digital Pekan, Digital Pagoh and Digital Jempol

Digital Pekan 1Malaysia with the theme "Driving Technology Culture", the maiden flagship of this digital district strategy was launched by Yang Amat Berhormat Dato' Sri Mohd Najib bin Tun Abdul Razak, Prime Minister of Malaysia, on 30 January 2010 at Dewan Konvensyen Sultan Ahmad Shah in Pekan, Pahang. In conjunction with the launch, an ICT Carnival was also held on 30 and 31 January 2010. The carnival hosted exhibition and booth activities by SKMM and a host of other organisations, ministry units, NGOs, private companies and agencies.

Digital Pagoh-Muar, which is the second in the series of the digital district initiative was launched on 6 June 2010 by Yang Amat Berhormat Tan Sri Muhyiddin Yassin, Deputy Prime Minister of Malaysia, at Kompleks Sukan Pagoh, Muar Johor.

This was followed by the launch of Digital Jempol on 14 December 2010 by the Minister of Information, Communications and Culture, Yang Berhormat Dato' Seri Utama Dr Rais Yatim at Kompleks Rakan Muda, Jempol, Negeri Sembilan.

The ecosystem of Digital District of Pekan, Pagoh-Muar and Jempol comprised several key projects covering the provision of infrastructure and access; applications and education; and



🖬 A student receiving a goodie bag from the Prime Minister of Malaysia during the launch of Digital Pekan

community contents. The initiative is developed through the support and collaboration of its many partners and sponsors – both from the private as well as public sector. These projects are:

- a) Project 1: Broadband Experience Centre – a one-stop information centre serving as training and an experience centre for new products and services;
- b) Project 2: Computers@Home

   to provide PCs (notebooks)
   packaged with broadband service.
   This project was subsequently
   subsumed under the 1Malaysia
   Netbook when it was launched;
- c) Project 3: Wireless@District to provide free access to Internet for a defined period, allowing the people to experience potential benefits of the service;
- d) Project 4: Virtual Memoria to promote local content development involving various demand creation activities such as Blogging Competition, Digital Story Telling, etc.
- e) Project 5: Intown Portal
- f) Project 6: Promotion and Awareness Campaigns – a series of launching activities and promotions to promote Internet and e-Government services;
- g) Project 7: e-District delivery and implementation of e-Government services.

Besides the above, it also included additional proposals by the industry players such as upgrading of broadband network in selected school in the district and other ongoing initiatives undertaken by the private sector that ropes in the participation of the community of these districts.

Focusing on a confined rural area such as Pekan, Pagoh and Jempol, which shares common characteristics with most other district in Malaysia, would enable SKMM to gauge the adoption of ICT offerings in a community that is largely rural for further adoption in other similar districts.

The chosen perimeter shares common characteristics with 40% of Malaysian rural, especially in terms of socio/economic aspects. Also, the local authorities' commitment is vital in ensuring the successful implementation and sustainability of the programmes outlined. The choice of the initial selected areas to be the maiden project implementation of the digital district strategy is based fundamentally on requiring a champion who can ensure the service delivery, skill and organisational efficiency of the local authority in the governance of such initiative. This can then serve as a model which we can utilise in our future endeavours with other districts.

The launching of the above digital districts marks the firm determination on the part of the Government to incorporate ICT and broadband under the digital district strategy in conjunction with the national agenda of 1Malaysia. The launch also reflects Malaysia's determination through KPKK and SKMM, in conveying the message that broadband and 'going digital with innovation as a way of life' will pave the way to create a better quality of life and a brighter future for Malaysians towards 1Malaysia. The Digital District programme is a key contributor to national economic growth towards achieving the National Broadband Plan targets.

#### References:

- a. Nick Leon (2006), The Well Connected City, a report on municipal networks supported by the Cloud.
- b. Evora County Association of Municipalities, The Evora County Digital Project-2004-2008.

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# BENCHMARKING MALAYSIAN TECHNOLOGIES

The SKMM Technology Lab will serve as a platform to experience and showcase Malaysian technology innovations.

he tenth anniversay of the Malaysian Communications and **Multimedia Commission** (SKMM) was marked not only by celebrations of a decade of achievements but also by consultations on directions for the new decade that would propel the industry towards new heights. One of the initiatives that was

### mooted and agreed upon was a benchmarking lab. Given the name SKMM Technology Lab, it was launched on 29 April 2010.

Also known as SKMM TecnoLab (Technology Innovation Lab), its objective is to provide a platform for the public and the industry to experience the latest interactive ICT and Multimedia technologies. The concept is to showcase live demonstrations and video montages, technology equipment and information on technology. The first showcase, which was put up at the common area near the meeting rooms at the SKMM headquarters, went on for two months.

The establishment of SKMM Technology Lab signified the increasingly important role of Malaysian companies in R&D and innovation. The idea of having a benchmarking lab in SKMM was mooted two months earlier in February by the SKKM Chairman during the Commission's Blue Ocean Strategy (BOS) session. Prior to that strategy session, the Chairman had attended the launch of the Amax City at the Technology Park Malaysia which was officiated by Dato' Seri Utama Dr. Rais Yatim, the Minister of Information, Communications and Culture. The wireless city concept promoted during the launch highlighted the need for SKMM to create a platform for evaluating various new communications devices and technologies entering the local market.

### The road to the Technology Lab

The SKMM Technology Lab is a collaboration effort between the Malaysian Technical Standards Forum Bhd (MTSFB), a forum designated under the Communications and Multimedia Act 1998 and under the purview of SKMM; MIMOS Bhd which is an agency under the Ministry of Science, Technology and Innovation) and MIMOS technology recipients Pernec Corporation Bhd and Nadi-Ayu Technologies as well as wireless communications company Packet One.

A working committee consisting of all the above named as well as SKMM's Property Management & Administration Department (PMAD), Strategic Information System Division (SISD) and Technology, Standards & Network Division (TSND) was set up to work towards the establishment of the benchmarking lab.

The working committee started work in March 2010. In choosing the theme of the first showcase, the working committee agreed that the technology recipients of MIMOS on communications products would be the highlights of this inaugural showcase. The aim was to increase awareness of Malaysian made product developments and locally manufactured products that will be entering the market.

### The Showcase

The concept of the SKMM Technology Lab is an interactive ICT and Multimedia Gallery Showcase. The launch saw several technologies and products on display. These included MIMOS WiWi technology, backed by IPv6 transport layer utilising the iDOLA ultra-portable computer (iDOLA netbook).

The WiWi access points are made by Pernec. Nadi-Ayu Technologies is the company that embeds government specific applications in the locally manufactured netbook known as iDOLA. Packet-One Networks provided Internet Protocol Version 6 (IPv6) network capabilities via dual-stack tunneling.

WiWi is a first in the world hybrid WiFi and WiMAX solution which operates on 2.3 GHz frequency. It is designed as an alternative for last mile broadband connectivity to accelerate Malaysia's broadband ecosystem.

The iDOLA is equipped with Integrated Service Delivery Platform (ISDP), a JAVA Version 6 platform software application for loading government applications. The WiMAX network is established to provide direct WiMAX to WiFi connectivity via the DV230 Modem sample unit provided by Packet One.

The features of the concept built around the exhibit comprised of a pop-up display system and booth with video montage, equipment display, working committee corporate info, technology info of the Advanced Manufacturing and Assembly techniques, including IPv6 technical specifications and the Live demo.

The choice of exhibits for the interactivity experience, the iDOLA and MIMOS WiWi as the network platform, are only the first of customer premise equipment (CPE) to be showcased. The Technology, Standards & Network Division has plans to introduce other new and competing communication technology equipment such as the Long Term Evolution (LTE) fourth generation mobile broadband network as soon as it is able to take possession of the technology equipment.

Also in the pipeline of the exhibits are other innovations from the radio communications, multimedia and broadcasting technologies

sectors. The exhibits at the showcase were specifically designed so that they could be reused at other events and roadshows such as during the launch of the Digital City. The Technology Lab was successfully built at a cost of about RM60,000.00 that was shared amongst the Technical Forum, invited parties and SKMM.

SKMM Technology Lab forms part of the National Broadband Initiatives (NBI) of the Government to facilitate the nation's growth through broadband and communication technologies. It is in line with efforts to transform Malaysia into a high value, high income economy.

The opening of the Lab in SKMM was a stamp of approval of Malaysia's attractiveness as an R&D location. The showcase exhibits demonstrated that Malaysia has good quality technology and research talent, as well as a comprehensive industry ecosystem with world-class technology capabilities. This highlighted the fact that the country is an ideal location for innovation and knowledge intensive industries.

This lab is envisaged to receive good support from the industry players as a platform to introduce their new communications technologies in years to come. Two showcases of convergence technologies are planned for 2011 where visitors will enjoy and experience the interactive concepts of the lab.

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# NURTURING YOUNG CREATIVE MINDS

The increase in broadband subscriptions and awareness, expansion of coverage due to rapid networks rollout coupled with the surge in high end smartphones that provide better user experience, a serious rethinking about multimedia development is in order. The Knowledge Economy needs a continuous supply of creative brain power and passion in innovation to turn the multimedia aspect of communication into a major economic driver for Malaysia. Roslan Mohamad shares his thoughts.

Feature

little girl speaks to a tablet looking device, tickles what appears to be a glass screen and giggles. She then speaks and says some ludicrous sounding child rhymes. A chipmunk-like voice emanates from the device repeating the ridiculous rhyme – the little girl is laughing really hard and looks very happy.

Who would have ever thought that by giving a powerful mobile device a touchscreen and 'senses' that approximates that of a human (via an accelerometer, proximity, ambient light sensors, a built-in microphone, speakers and more) could make the experience of using, playing or touching a machine so vastly enriching compared to a normal screen and keypad? A tablet computer is no longer just a prop on Star Trek today.

Granted, tablet-based computing with stylus has been around for awhile, but the experience was never this intuitively fun! Everything good about technology has finally been merged as one – the glue of which is great User Interfaces (UI) by new Operating Systems (OSes) which are mobile based and not just pale reproductions of the OS on your desk. It has come full circle with mobile OSes maturing to become tiny computers in their own right, extending way beyond basic phone capabilities.

Three years ago, a touchscreen was just that – it allowed the user to tell a machine what to do, by touching the screen to point towards options, much like a mouse on a computer.

### A Sea of Change

The entire scenario today has thus become remarkably topsy-turvy thanks to devices like the Apple's iPad, Google's Android devices and perhaps the new generation Windows Phone 7 OS. The integration of the hardware and software with remarkable new OSes has made a bulk of apps obsolete overnight in terms of giving user the best experience of use on mobile devices.

This calls for a different breed of content developers who can think outside of the Personal Computer box and TV screen. They have to think in the new ways within which these new technologies work. The new type of apps appear to be more 'personal' such as bedtime story apps where parents get to record and virtually read a bedtime story for their kids on the iPad when they cannot get back home in time.

Multimedia due to digitisation and proliferation of these new touch platforms such as the iPad or Android demand totally



different content. It is not just a matter of repackaging. Content developers need to look at what they have and see if anything can be redone, reworked and rethought. In most cases, it calls for a totally different approach when touching, tilting and accelerating the platform device coupled with interactivity are concerned.

The ease of tapping to try and buy apps from a marketplace at prices as low as 3 Ringgit is also a means for quick sales. Many people buy apps oblivious to the actual amount they have paid for apps. It's a fair bet that in most cases, people who buy apps from the Apple iStore would have a hard time remembering how much exactly they've spent in a week. The buying spree of low priced apps goes on unnoticed until they get the bill. Touch and convenience of purchase as well as very reasonably priced applications are to be blamed.

Touchscreen technology has upped the ante for mobile phones and other mobile devices – offering a new realm of possibilities and opportunities. Games, whimsical but entertaining apps and creative content of today on these devices, which bring in large amounts of money, absolutely differ from how older generation apps were made. Just to get an idea: over 2 billion apps were downloaded from Apple's iTune store in 2009, by January 2010 it was 3 billion and by October 2010 it reached a whopping 7 billion apps!

To look at just one type of creative content: the global animation market was estimated at USD79.7 billion in 2010, a growth of 16.5% from USD68.4 billion in 2008. Now that's a piece of the pie that we should aim for if we want to be serious about the 'next wave' to drive the nation into a high income economy while being driven by a solid knowledge economy.

The creative industry is expected to grow 20 percent in revenue next year and currently the creative industry brings in a revenue of about RM9.4 billion according to a study commissioned by Multimedia Development Corporation (MDeC).

The next frontier, whether we are ready for it or not is not broadband but rather what ties the mobile segment to broadband. It is multimedia content that binds these two together. Recently, the Minister of Information, Communications and Culture, Dato' Seri Utama Dr. Rais Yatim, announced at the 1Malaysia Broadband Recognition Awards in December 2010, that the national household broadband penetration has reached 55 percent and that mobile phone penetration reached 109 percent. It was announced that of the 32 million mobile phone subscriptions, 7.9 million are for 3G services. There are also 17 million Internet users in the country.

With such a penetration of over 100 percent versus the household broadband penetration of about 55 percent, mobile phones (including other mobile devices such as tablets) are definitely the de facto conduit or terminal for the masses. As Nokia predicted as early as in 2005, the personal screen of choice will be the small screen, not the big screen. This has come true; given the popularity of small devices with great touchscreens today.

The MyIX (Malaysia Internet Exchange) which was set up to host and handle the load of local content is currently underutilised. Only 5Gbps of bandwidth of the 10Gbps capacity is being used by local content creators. We still

need to create a lot more content and the new breed of platform and apps might just be the catalyst to drive up local content creation. This in turn will help lower the bandwidth going out to search for content when Malaysians have more compelling reasons to get content locally instead.

### The Mandate Challenge

The Government has outlined National Key Economic Areas (NKEA) which include communications, content and infrastructure. This includes Malaysian Creative Content. The Government aspires to position Malaysia as a global content hub in line with Communications and Multimedia Act, 1998 (CMA 98) which is a National Policy Objective enshrined in the CMA 98. This is where the development of apps, content and the likes on any platform fall under.

Multimedia content is the most monetarily fulfilling or contributing segment of the creative content market. The Government is aware of this and is getting the Malaysian Communications and Multimedia Commission (SKMM) to drive this initiative to help transform Malaysia into a high income economy. Besides being the regulatory body, it should not be forgotten that SKMM is also entrusted with the task to drive the industry to greater heights. SKMM was also created to spearhead the role of growing Malaysia's multimedia industry which includes TV and radio broadcasts, the Internet and the mobile space.



The task of driving this wave towards a high income nation as a mandate is not an easy one. All the barriers to perception have to be broken down. Parents from years ago for example would definitely disagree if their child wanted to opt to become a cartoon artist, to make games or to make cute content for the above channels or media.

Equally society is still confused between the meaning of creativity and innovation. Creativity is definitely different from innovation. Being creative is harder. It requires a certain amount of originality. Being innovative requires a nimble enough mind to improve upon something which already exists.

Logically speaking, we should focus on creativity. SKMM's role is to create a conducive environment for creativity to thrive and turn multimedia content development into a real engine for the Government to move the Knowledge Economy to a High Income Economy. The national agenda towards a creative economy is where the next wave of economic wealth will hopefully come from.

This has been spelled out by the Government in the newly approved Creative Industry Policy which includes multimedia (including films, TV, Internet and games), art, culture and heritage (such as batik, architecture and crafts). SKMM is tasked to lead the way for the multimedia portion of the creative industry.

### What's Next?

How do we strategise all this into the nation's future in line with the Creative Industry Policy? The only way to have a guaranteed sustainable ecosystem is to build on our resources, i.e. the talent and the trained workforce to enter this foray. We need to get the young of today to be creative on these new platforms. That's not something you can teach overnight. Exposure and immersion are but two ways, but the thought management process to encourage creativity in this new light requires more planning and encouragement.

In fact the artistic skill inherent in great creative content is not just in the art design, programming, voice acting, music, effects, technicalities and such; it also hinges on a very crucial part: the story telling and the compelling characters associated.

That is why SKMM has been committed in many ways at all levels to sharpen the aspiring young minds to take up this monumental task of gearing Malaysia up for a new type of creative economy driven by knowledge and information resulting in the creation of high value intellectual property.



Liga Remaja Kreatif winners

### Programmes to Nurture Creative Young Minds

SKMM has developed programmes that aim to develop young creative minds and create a resource pool of local talents. The preferred approaches are collaboration and strategic partnerships. The idea is to include everyone in the cycle. It encompasses different levels from secondary school, to college level and the potential and active industry players as well. These fall under the Commission's task of capacity building. By encompassing the entire strata we can stand a higher chance of finding our own 'Mark Zuckerberg', 'Steve Jobs' or 'James Cameron' among us.

The Liga Remaja Kreatif programme for example, is an annual nationwide video creation contest for secondary schools where State-level winners will compete at the national level. The State level champions will have the opportunity to attend a development camp where they will go through courses, workshops, talks, and studio visits. They will have the opportunity to learn from experts from RTM, FINAS, Les Copaque, KRU, Astro, Inspidea, Akademi Seni Budaya dan Warisan Kebangsaan (ASWARA) and Filem Negara, just to name a few. The idea is to encourage students to be interested in joining the industry. The winners for this programme will be announced in early 2011.

SKMM will also be launching the SKMM Grant for Innovative Creative Content Application (MaGICCA). The MaGICCA is an effort by SKMM to unearth creative and innovative talents

at the tertiary level. Students from institutions of higher learning who have ideas for creative and innovative contents and applications will be given grants for them to develop their ideas and concept up to prototype level. They need to get an endorsement from their respective colleges and the colleges must be willing to assist the students to work towards commercialisation. The students will have the opportunity to pitch their projects to a group of venture capitalists or potential investors for full commercialisation. SKMM has allocated RM20 million for a duration of 5 years, with an estimated 20 projects per year.

SKMM also collaborates with Astro and MDeC in the NextGen Contentprenuer Awards as well as with Maxis and the Ministry of Information, Communications and Culture (KPKK) in the Mobile Content Challenge in an effort to uncover new talents and create awareness and interest among young minds to be part of this promising multimedia content industry. These competitions are annual events and open to all students in the Institute of Higher Learning.

SKMM is currently discussing with ASWARA, an institution of higher learning under KPPK that focuses on the creative industry, to have an industryuniversity driven strategic collaboration in the form of the establishment of an SKMM Multimedia and Animation Lab. This has been modeled from the successful collaboration between the University of Southern California with Spielberg Advanced Lab and George Lucas Visual Effects studio. All the above efforts are some of SKMM's initiatives in developing and nurturing young creative minds to drive and realise the National Policy Objectives in making Malaysia a global hub for content services.

### Conclusion

Nurturing young creative minds on how to make great apps indirectly by teaching them to think creatively is the first hurdle. Just like the saying goes that it is better to teach a man to fish than to give him fish, inculcating creativity among the youth will go a long way. This is the very foundation of SKMM's strategy to create some quick wins.

It is through the above-mentioned programmes and supporting initiatives that we hope to drive up the multimedia creation content industry in line with the Government's aspiration to make the nation a high income knowledge economy. We believe we can do it if we instill creative traits among the current young generation of developers within the ecosystem. That is the only way to encourage them to be competitive in this entirely new and exciting multimedia content market – an untapped goldmine for the nation.

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# THE NATIONAL POSTAL STRATEGY (2010-2014)

A roadmap for the development of postal and courier sectors in Malaysia has been determined and is now being implemented. Mohd Zaidi Abd Karim shares the rationale and details of this strategy.

### Why the Post and Courier Sector Matter

The postal and courier service is essential to the efficient functioning of the economy and society as a whole. Very few sectors in Malaysia come close to the level of physical connectivity with households, businesses and retail network across the country like the postal and courier sector. This ubiquitous network of post and courier provides the physical, financial and electronic connectivity to business and non-business users domestically and internationally; hence, it is an important enabler of economic viability.

The postal and courier sector remains an important policy area that commands the attention of the Government for a number of substantial reasons. The sector comprises a large part of the market economy. Its activities intersect with all aspects of the economy and involve in a number of complementary activities. There is a symbiotic relationship between the postal and courier sector with technological change such as the development of air transportation, logistics, sorting machinery and bar code technology, track and trace, and fund transfers. Furthermore it employs a large number of employees .

In Malaysia, the postal and courier sector recorded a turnover of nearly RM3 billion in 2009. The paragraphs below provide a snapshop of Malaysia's postal and courier sector.

The sector comprises Pos Malaysia Berhad as the universal service provider, 105 licensed courier operators and various other stakeholders such as the mailing houses; air, land and sea transport and logistics companies; and private fulfillment outlets.

The courier sector is a highly competitive service which has recorded an average annual growth rate of nearly 10% over the last seven years with a market size





of nearly RM1.7 billion recorded in 2009. The sector includes international giants such as DHL, FedEx, UPS and TNT.

Each day about three million pieces of postal articles are being delivered to more than 6.3 million addresses nationwide. Over 80% of mail is business mail which demonstrates the extent to which postal activity is integrally related to market activity such as advertisement mail, financial reporting, e-commerce, smallbusiness marketing and so on.

More than 20,000 postmen and couriers on a daily basis dedicated themselves to ensure letters, magazine, advertisement, small package, parcel and express items are delivered to the recipients throughout the country.

The post office network comprising more than 1,000 outlets nationwide is an important channel for the community with about 100 million transactions amounting to nearly RM15 billion recorded in 2009.

The sector remains a labour intensive sector with more than 34,000 workers.

As businesses adopt "just-in-time" production and strategies, the courier operators have played an increasingly important role in warehousing, logistics and supply-chain management. The international and domestic courier and express network supports some of the key national economic engines such as the electrical and electronic sector; the exchanges of specimens between bio-technology research and development centres; and the financial sector such as delivery of cheques and credit cards to name a few.

### **Changing Environment**

The Government recognises that the postal market is undergoing profound changes. Mail volumes in most part of the world are declining as a result of electronic substitution which is threatening the sustainability of universal postal service provisioning. To meet this challenge, the postal operator must step up its effort to modernize postal network, innovate and diversify its product portfolio, deliver high quality of service and develop human capital to ensure that it remains relevant to the consumers in the market place. On the bright side, the consumption of a small packet and parcel service is expected to grow in tandem with the development of e-commerce and online businesses as people and businesses still require postal articles and goods to be moved efficiently from one place to another as shown in the level of physical and information access trend in Exhibit 1 below.

As the nation grows from a middle income economy to a high income economy by 2020, the postal and courier service is expected to raise its quality and performance bar, to become an important component and integral part of the economic activities, and to provide quality jobs for the population. However, the future operating environment has changed from the present with many great challenges driven by the following factors:

- Challenging economic scenario
- High fuel prices
- Changing consumer behaviour
- Technological change which provides both the positive and negative impact to the overall growth of the sector
- Greater liberalisation in both postal and courier market worldwide
- Climate change
- Population increase and urbanisation



Exhibit 1: The Level of Physical and Information Access Has Risen Dramatically Over Time



### The National Postal Strategy (NPS)

The Government recognises that the construction of a postal and courier regulatory, development sector and governance environment is an essential ingredient for the successful performance of the postal and courier sector. The regulatory regime must adequately reflect technological change and global developments. The vision is to make Malaysia well connected physically and electronically both in urban and rural areas and to enhance the people's productivity and quality of life as digital and physical platforms are likely to complement each other and provide a powerful synergistic effect for the development of the economy.

The convergence between the post and telco is inevitable under the broadband platform. As such, the NPS covers the three important dimensions of the postal and courier service namely: physical, financial and electronic service dimensions (Exhibit 2).

These three dimensions must be nurtured as the sector can no longer focus on one segment of business. Product and service diversification and innovation are likely to be the key to weathering the economic crisis and reaping the opportunities from the digital economy.

The NPS sets out a roadmap for the development of postal and courier sector in Malaysia for a period from 2010 till 2014. The NPS lays an aggressive and coherent development agenda for the postal and courier sector in Malaysia.



Exhibit 2: Three dimensions of NPS

### Sustainable universal postal service

The objective is to stimulate a sustainable universal postal service which is adapted to the social, economic and technological environment.

### *Improve service quality*

The objective is to ensure the provision of timely, reliable delivery and improved customer service across all access points.

### Foster industry growth

The objective is to foster the growth of the physical, electronic and financial dimensions of postal and express markets.

### Improve productivity

The objective is to improve productivity through human capital development, process innovation and mechanization.

### Enhance international developement

The objective is to enhance international development of postal and express services.

Exhibit 3: The Five Strategic Thrusts in NPS (2010 – 2014)





They are designed to meet the changing needs of customers, market and operating environment driven mainly by the information revolution, globalization, and the changing economic climate.

The framework has been adopted from the Universal Postal Union's (UPU) Strategy Framework with some fine tuning to suit the local environment.

Established in 1874, the UPU with its headquarters in the Swiss capital Berne, is the second oldest international organisation worldwide. With its 191 member countries, the UPU is the primary forum for cooperation between postal sector players. It helps to ensure a truly universal network of up-to-date products and services. In this way, the organisation fulfils an advisory, mediating and liaison role, and provides technical assistance where needed. It sets the rules for international mail exchanges and makes recommendations to stimulate growth in mail, parcel and financial services volumes and improve quality of service for customers.

The NPS is organised around the five strategic thrusts (Exhibit 3) and which are elaborated as follows.

### Sustainable Universal Postal Service

The first thrust aims to stimulate a sustainable universal postal service which is adapted to the social, economic and technological environment.

Programmes will be carried out to achieve this objective. The Government will work towards developing a universal postal regulation and criteria. It will also build a robust tariff regime. A funding model for universal postal service will also be established along with improved access to postal outlets nationwide and lastly, a programme to improve mail delivery service coverage in rural areas.

### Improve Service Quality

Another objective is to ensure the provision of timely, reliable delivery and improved customer service across all access points.

Here work will be done to develop a quality of service performance standard as well as a measurement system for the postal and express services. There will also be focus on enhancing consumer satisfaction and in stimulating the use of technology to improve service performance. Lastly steps will be taken to enhance security and trust.

### Industry Growth

The third thrust fosters the growth of the physical, electronic and financial dimensions of the postal and express markets.

One of the programmes that will be undertaken will promote fair competition through appropriate regulation whilst fostering cooperation among industry stakeholders. Growth will be fostered through the development of new products and services. The express service sector coverage would also be expanded nationwide.

A robust licensing regime is expected to be developed under this thrust. Yet another programme will nurture increase involvement in electronic commerce and service. Efforts that promote philatelic interest nationally will also be taken.

### Improve Productivity

Another thrust seeks to improve productivity through human capital development, process innovation and mechanisation.

Programmes will be undertaken to stimulate the use of technology to improve productivity. Among them will be automation of mail and parcel handling as well as self service terminals. Another programme will promote network sharing.

Human capital development and capacity building exercises will be undertaken. National postal addressing and postcode systems will be improved.

At the same time, this trust will also undertake programmes that protect the environment. The promotion of a health and safety culture will be another priority programme.

### International Development

The fifth and final thrust will focus on enhancing the profile of the nation in the international arena.

The nation will play a leadership role in the Universal Postal Union (UPU) and Asian Pacific Postal Union (APPU). It will seek top leverage on the Free Trade Agreements and also escalate Malaysia's standing in international fora. Malaysia's connectivity to the international postal and courier network will be strengthened.

Exhibit 4 shows all the thrusts and programmes in the context of the vision and mission of the National Postal Strategy.

	The postal and express sector – an essential component of the Malaysian economy							
To drive the	<b>MISSION</b> To drive the development and growth of a robust postal and express sector in line with the economic and social needs of the nation							
THRUST 1	THRUST 2	THRUST 3	THRUST 4	THRUST 5				
Universal Postal Service	Quality of Service	Industry Growth	Improve Productivity	International Development				
		OBJECTIVES						
Stimulating a sustainable universal postal service which is adapted to the social, economic and technological environment	Providing timely, reliable delivery, and improved customer service across all access points	Fostering the growth of postal and express market	Improving productivity through human capital development, process innovation and mechanization	Enhancing international development				
		PROGRAMMES						
Develop a universal postal regulation and criteria	Develop quality of service performance standard and measurement system for the postal and express services	Promote fair competition through appropriate regulation whilst fostering cooperation among industry stakeholders	Stimulate the use of technology to improve productivity - mail and parcel automation and self service terminal	Play leadership role in the Universal Postal Union (UPU) and Asian Pacific Postal Union (APPU)				
Develop a robust tariff regime	Enhance consumer satisfaction	Foster growth via development of new products and services	Promote network sharing	Leverage on the Free Trade Agreements				
Establish a funding model for universal postal service	Stimulate the use of technology to improve service performance	Expand the express service coverage nationwide	Nurture human capital development and capacity building	Escalate Malaysia's standing in international fora				
Improve access to the postal outlets nationwide	Enhance security and trust	Develop robust licensing regime	Improve national postal addressing and postcode system	Strengthen Malaysia's connectivity to the international postal and express network				
Improve mail delivery service coverage in rural areas		Increase involvement in electronic commerce and service	Protect the environment					

Promote development of national philately Promote health and safety culture

Exhibit 4: The NPS Framework

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		END OF YEAR								
INDICATOR	2010	2011	2012	2013	2014					
THRUST 1 - UNIVERSAL POSTAL SERVICE										
Review postal tariff	1									
Home delivery service coverage nationwide (USO)	77%	-	-	-	95%					
Postal outlet per population nationwide (USO)	22,400	-	-	-	15,000					
New Postal Services Act		$\checkmark$								
THRUST 2 - QUALITY OF SERVICE										
Compliance with domestic ordinary mail quality performance	>88%	>88%	>88%	>88%	>88%					
Average courier service quality performance	>88%	>88%	>88%	>89%	>90%					
THRUST 3 - IMPROVE PRODUCTIVITY										
Level of automated mail processing in the national mail and parcel hub	>10%	>15%	>30%	>35%	>50%					
Best practices seminar through SKMM Academy	1	1	1	1	1					
Review national postcode system				1						
Establish sustainable development policy			1							
Stamps design award		1	1	1	1					
THRUST 4 – INDUSTRY GROWTH										
New courier licensing policy		1								
Aggregate courier service coverage (% population)					>90%					
THRUST 5 – INTERNATIONAL DEVELOPMENT										
Commencement of international postal electronic remittance service	1									
Commencement of the UPU RFID Global Monitoring System for international mail	1									
Develop a liberalisation policy for the postal and courier sector		1								
Secure UPU Postal Operation Council seat at the UPU Doha Congress 2012			1							

Exhibit 5: The Strategic Outcomes

### **Outcomes**

The implementation of the National Postal Strategy is expected to lead to major transformations in the postal and courier industries. Each of the five strategic thrusts will result in fulfilling the key targets.

These goals are expected at various points in the years leading to 2014. A full view of the new landscape that is expected can be seen in Exhibit 5. In a nutshell, the NPS anticipates the changing environment under which the postal and courier sector is operating and ensures the country is having the right strategies for the development of postal and courier sector, which is an important social and economic eco-system suporting the nation as it moves towards a high income economy by 2020.





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# beep Green

# TELCO'S JOURNEY TOWARDS ENVIRONMENTAL SUSTAINABILITY

DiGi Telecommunications shares, through a series of mini articles, their journey thus far in their Deep Green path.

### DiGi Deep Green Programme Shares Malaysia's Climate Ambition

In December 2009, local newspapers reported that Prime Minister Dato' Sri Najib Tun Abdul Razak had committed to Malaysia reducing its CO2 emissions by 40% in terms of GDP emissions intensity by 2020 compared to its 2005 levels during his participation in the Copenhagen Climate Talks.

Dato' Sri Najib said, "Despite the many problems and difficulties we see on the long road ahead to address climate change, Malaysia is willing to contribute to the global efforts. We have therefore decided on setting for ourselves voluntary national indicators to measure our progress in climate action."

DiGi is supportive of this commitment as it is very much aligned to the company's own target to reduce CO2 emissions. This target is part of the company's Deep Green programme which aims to embed environmental sustainability across the company's value chain. Besides its internal emissions reduction target, DiGi also hopes to work with its various stakeholders to come up with solutions that help to reduce its shared climate impact. DiGi's CEO, Henrik Clausen said, "The telco industry is well poised to help Malaysia reduce its emissions. At DiGi, we are taking the lead on this, by addressing our CO2 emissions and in that way, offering our customers more CO2 efficient services."

DiGi got its wake up call from a revelation of the "Smart 2020 Report on Enabling a Low Carbon Economy in the Information Age" by the Climate Group & Global e-Sustainability Initiative which was published in 2007. This was the world's first comprehensive global study of the Information and Communication Technology (ICT) sector's growing significance for the world's climate.

- In 2007 Total emissions from ICT industry was 830,000,000 tons which is estimated to be 2% of global emissions (based on a Gartner Study).
- CO2 emissions in the ICT industry is expected to grow at about 6% annually until 2020 – at which point ICT industry will be emitting approximately 1.43 Gigatonnes CO2; aviation industry's emissions is expected to grow at only 3% annually.

- Currently, emissions from ICT industry are estimated to be similar to emissions from the aviation industry.
- Therefore, in the next few years, the ICT industry could actually overtake the aviation industry as one of the top polluters.
- However, specific ICT opportunities identified in this report can lead to emission reductions five times the size of the sector's own footprint. In total, ICTs could deliver approximately 15% of emissions savings in 2020 based on a BAU (Business As Usual) estimation. This represents a saving of CO2 greater than the current annual emissions of either the US or China.

The primary contributor to CO2 emissions by ICT companies is the heavy use of electricity. Most countries are highly dependent on the combustion of fossil fuels to generate electricity.

In Malaysia for example, for every one Gigawatt of electricity produced, more than 600 tonnes of CO2 is emitted from the combustion process. The conversion factor varies from country to country depending on the source of electricity generated.



### DiGi's Deep Green Programme Reduces 38% of CO2 Emissions

As of the end of 2009, DiGi had achieved 38% reduction of its carbon dioxide (CO2) emissions from the 50% ambition set as part of its Deep Green Programme launched in 2008.

"Deep Green has a holistic approach which helps to map out and internalise our approach towards environmental sustainability," said DiGi's Head of Corporate Affairs, Zaiton Hj. Idrus.

Zaiton further added that the name of the programme was inspired by DiGi's intention to embed environmental sustainability deeply into every level of its operations including employee engagement, supply chain practices, business partners, customers and community at large.

CO2 reductions have mainly come from efforts to be more energy and fuel efficient across DiGi's telecommunications network, buildings as well as transport. In 2009, DiGi stepped up efforts to be more energy efficient, by switching to alternative sources of electricity; and initiating energy efficient solutions for cooling and lighting. Other workplace initiatives introduced to reduce its carbon footprint include employee carpooling; reducing non-essential business travel by encouraging more virtual meetings and the inclusion of environmental criteria into its procurement evaluation.

From a consumer perspective, the company also offers its customers a range of environmentally friendly products and services.

To drive the sustainable mindset closer to home, DiGi actively operates a paper-less working environment and to this end most internal administrative systems are electronic, substantially reducing paper use. Within the office environment employees are also encouraged to separate their waste. The company also carries out regular employee awareness activities to keep reminding employees about the urgency and importance of the issue.



### Greening the Network is Good for Business

When DiGi first measured its carbon footprint, it was not surprised to find that its telecommunications network accounted for more than 80% of its total emissions and likewise, offered the most significant opportunity to achieve energy and CO2 efficiencies. About 60% of emissions are attributed to ventilation and air conditioning.

DiGi's Deputy CTO, Karim Fakir Ali said at the launch of the Deep Green programme, "Implementing energy optimization in our 3G equipment will not only reduce the ecological impact but also cut network costs and help make communications more affordable for everyone."

Other than procurement of energy efficient equipment, the company has also been testing various initiatives intended to improve its energy efficiency such as reducing cooling requirements while maintaining hardware performance; optimising cooling efficiency in the company's new Technology Operations Centre and targeting an ambitious 2.0 Power Usage Efficiency (PUE) factor through Mechanical & Engineering Design and Specifications. The average PUE of data centres in Malaysia is approximately 2.5 to 3.0.

Since 2009, the company has also embarked on converting its base transmission sites (BTS) that are located off the national electricity grid and powered by diesel-based generators; to on-grid electricity. Besides saving operational costs in the long run, this initiative significantly contributes to DiGi's CO2 reduction target. This is due to the fact that each litre of diesel consumed results in about 2.7kg of CO2 being emitted. Since the start of this programme, the company has reduced its dependency on diesel and saved 224,326 litres of diesel. Close to 115,000 litres of the fuel saved is from the network.

Besides energy efficiency, DiGi's Network Engineering team has been exploring the use of renewable energy, especially solar power for its transmission



DiGi's Deep Green Climate Change programme



sites. To-date the company has established a solar powered site on the rooftop of its headquarters and in this regard, it is purportedly the first telecommunications company to receive a 100% Investment Tax Allowance from the Malaysian Industrial Development Authority (MIDA) for this initiative. Next year, the company plans to convert more of its off-grid BTS with hybrid solar power; which will be a hybrid of solar and diesel generated power. The company continues to explore funding mechanisms that will make renewable energy viable for its network operations, especially when compared to Malaysia's highly subsidised electricity tariffs.

Zaiton says, "This is where the Government can play a more active role to create a more conducive environment through a mix of incentives and policies, for businesses to use renewable energy." Until such a time, DiGi continues to push the envelope on energy efficiency across its network.



### Greener Solutions for DiGi Customers

As part of its Deep Green initiative, DiGi continues to encourage its customers to opt out from receiving paper bills and get on board the company's e-billing initiatives in an effort to reduce paper usage. In December 2009, DiGi launched an e-billing campaign to raise funds to reforest up to 120,000 square metres of the Kinabatangan forest. This three-month campaign saw DiGi donating RM3 to WWF-Malaysia for each postpaid customer who opted for electronic billing and unsubscribed the paper billing. The company achieved its objective of raising RM100,000 and the contribution was used to support the Kinabatangan Corridor of Life (K-CoL) reforestation project. In November this year, DiGi successfully rolled out another campaign to convert all Corporate Clients with more than 50 lines onto e-billing. The aim was to empower DiGi's customers to

reduce their shared climate impact as well as to provide an efficient and timely service.

Another initiative that DiGi has implemented for its customers is the handset recycling facility available at all DiGi centres nationwide. With the hand phone increasingly becoming a lifestyle and status symbol, the rate of changing handsets has significantly increased over the years. The random disposal of handsets can bring many harmful effects to the environment, such as contamination from the oxidation of various metals and chemicals that can be found in handsets. With this initiative, all handsets collected at DiGi centres are sent to a handset recycling company to ensure that the components are stripped down in an environmentally conscious manner.

DiGi's Head of Marketing, Albern Murty, said, "While DiGi is not directly responsible for the manufacturing of hand phones, they are a key part of our value chain and we definitely have a role to play to ensure that handsets are disposed off in an environmentally responsible manner. It's also a way of engaging our customers to do their part for the environment."

DiGi and students from 10 local varsities hosted a Yellow Green Shack bazaar in October 2010 - an eco-friendly recycling initiative to encourage buying of previously owned goods.

The garage-sale bazaar saw student participation from Universiti Malava, International Islamic University, Universiti Malavsia, Universiti Putra Malavsia, Universiti Pendidikan Sultan Idris (UPSI), Tunku Abdul Rahman College, Multimedia University Cyberjaya, Multimedia University Melaka, Universiti Teknologi Mara and UNITEN.

Students from each university set up booths to help find new owners for used items, and material recycled into newer more useful and 'sellable' items. For example, participants sold new handbags and phone pouches created from donated jeans as well as cleaning detergents made from fruit and vegetable enzymes.

Zaiton said the initiative was part of DiGi's commitment to address green issues by activating our youths. "Youths are integral to Malaysia's eco-future and we took the opportunity to provide a platform for

them to share and express their passion for environmental conservation."

"When approached with the idea, the students were very enthusiastic to do their part in reducing wastage and pollution, using their creativity to convert or identify sellable used goods," she added.

Avy Chong from UPSI said, "We're excited to be a part of this project. Our team spent two months sewing and refurbishing goods to sell. We understand the importance of recycling to save the environment; together with the other varsities I think we did a great job to further this cause."

Proceeds collected from the bazaar by the students amounted to over RM3,500 and has been donated to the Environmental Protection Society of Malaysia (EPSM).

### **Green Procurement**

DiGi has put in place green procurement criterion for sourcing exercises exceeding RM500,000. This criterion carries a 10% evaluation weightage and addresses issues relating to energy efficiency, waste disposal and the recycling of waste material as well as the use of environmentally friendly products and materials. DiGi sees this move not just contributing towards its CO2 emission reduction targets, but also as being good for its business and bringing greater value to its customers.

Over the last year, DiGi has launched a set of mandatory Supplier Code of Principles which all its suppliers are required to comply with. These principles include several environmental requirements such as compliance with local environmental regulations; the elimination of ozone depleting substances, etc. Monthly assessments are conducted to ensure compliance with this Code.

### DiGi is the First Malaysian Telco to Achieve ISO14001

In July, DiGi obtained ISO14001 Certification for its Environmental Management System with the aim of ensuring that its environmental focus is firmly rooted in the company's operations. To this end, all of its ISO14001 targets are closely aligned to the company's Deep Green ambition. The telecommunications company received third party certification from SIRIM and the certification covers its Central Region operations.

As part of its Environmental Management System, the company has appointed an Environmental Management Representative (EMR) as well as established annual targets relating to the number of handsets recycled, CO2 emissions, Paper reduction targets, E-billing and Fleet Management. Progress is monitored on a monthly basis by a working group and reported to top management on a quarterly basis.

DiGi's EMR, Khor Choo Lin said, "Our efforts to achieve ISO14001 is a reflection of DiGi's commitment and resolve to better manage the impact our business has on the environment."

### Working with the Community to Unearth Greener Solutions

In July 2009, DiGi reached out to the community through a pilot competition called Deep Green Challenge for Change. The first installation of Deep Green Challenge for Change required university students to showcase applications of renewable energy solutions for underserved communities in Malaysia. DiGi worked with partners Ericsson, Intel, TNB Research, and the Energy Commission of Malaysia, to reach out to students to discover viable energy solutions, with the winners getting the opportunity for their solutions to be potentially incubated, developed and commercialised by DiGi and partners. Team D'Regen from Universiti Sains Malaysia and Feng from Universiti Malaysia Sarawak were crowned the champions of the main and topical challenges.

In 2010, DiGi continued with the second installation of the programme, calling on all Malaysians to take part in the challenge to showcase their best green technology and social venture ideas. This round, the competition was aimed at instilling values of sustainability and encouraging entrepreneurship among all Malaysians.

Zaiton said, "The second year's programme focuses on entrepreneurship of green practices and gives local talents international exposure. Additionally, we've also aligned the programme to incorporate environmental practices at Community Broadband Centres (CBC) to enhance our support for development of broadband in rural areas."

Participants have taken part in two challenges -- the Social Venture Challenge and the CleanTech Global Ideas Challenge. The Social Venture Challenge is open to students from colleges and universities in Malaysia, who must develop a sustainable business idea that could be implemented at any of DiGi's CBCs, covering the categories



of Energy, Environment, Agriculture and Education.

The 10 final university teams were announced recently and had completed a bootcamp and study trip in DiGi's CBC in Mersing, aimed at giving finalists an opportunity to gather information for their entries. The overall winner will be announced in February 2011 and can win up to RM10,000 in cash.

Zaiton further adds, "I am delighted to see so many strong submissions by private and public universities with ideas to improve and empower the communities surrounding DiGi's CBCs."

The second challenge, called the CleanTech Global Ideas Challenge was open to all Malaysians. Participants were required to create an eco-friendly and viable business ideas. In November 2010, Dr. Chew Heng Hai was crowned the winner of this challenge, where part of the prize required him to represent Malaysia at the global leg of the CleanTech Open in San Jose, United States. His entry was selected as one of the top five green inventions in this global leg, which is the world's largest clean technology business competition.

Dr. Chew's creation, the EZ Flush, was the first medical submission received in the US-hosted leg and prompted the international panel to include a healthcare category in the 2011 edition.

The EZ Flush is an IV drip set unit which eliminates the need of new syringes and needles, therefore reducing the need for multiple IV sets, which are usually incinerated after use. The device also enhances patient safety as the IV drip set need not be replaced repeatedly, thereby reducing the risk of infections and blood clots.

Kevin Braithwaite, Chairperson and judge of the Global CTO competition said, "The global entries were impressive and we were really ecstatic to receive so many strong and quality submissions from around the world. The submissions made it very difficult for the judges to come to a decision. Everyone here is already a winner."

Commenting on his success, Dr. Chew said, "I thank DiGi and the team for making this happen. I am very proud to present Malaysia at this global platform and I am honoured to be part of a community that makes a difference."

### Conclusion

DiGi has taken a holistic approach to environmental sustainability, addressing both its internal operations by working towards avoiding further CO2 emissions through energy efficiency initiatives; as well as by working with its key stakeholders to come up with more Climate-friendly solutions.

For its efforts, the company was awarded the Starbiz ICRM Award for the Environment Category in March this year, and was recently rated in the Asian Sustainability Ratings, as the top company in Malaysia and the top telco in Asia (excluding Japan) for its sustainability efforts.

Going forward the company hopes to share its experiences with other like minded organisations and contribute towards a more climate-conscious corporate Malaysia.



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# MALAYSIAN HAND PHONE USERS TRULY UBIQUITOUS

In Malaysia, the number of hand phone users has grown by leaps and bounds. Customer records show that the hand phone has found its way into almost every Malaysian's hands. Surveys conducted by the Malaysian Communications and Multimedia Commission shed light on users and usage, something not apparent from customer records. Koay Hock Eng highlights some findings.

ensuses, the precursors of surveys, were known to be conducted as far back as 3000 BC in ancient Egypt. While they are still around, it is their cousins, the smaller and more agile surveys that grab headlines every now and then. The Malaysian Communications and Multimedia Commission (SKMM) has been conducting surveys since 2004 from its very own Computer Aided Telephone Interview (CATI) Centre. While not exactly attention grabbers, these surveys have proven very useful. The SKMM Hand Phone Users Survey (HPUS) is one such survey. While administrative data are useful in the compilation of, for example, the basic penetration rate, it is left to the survey to provide a more in-depth understanding of the distribution of the penetration by say gender, age group and geography, as well as to give an insight into what users do with their phones. The survey has an unbroken history since it first started in 2004.

At time of writing, the 2010 survey was underway while the 2009 survey results were already published. This survey starts with questions relating to socioeconomics and ends with the user trends and experiences. The 2009 survey was particularly interesting as it was the first in the series to also touch on use of PCs and Internet access.

### **Survey Specifications**

The reference date of the survey was set at 31 March 2009, which means that even though the survey was canvassed at a later date, the questions and answers relate to 31 March 2009. As at reference date, there were 28,194,000 hand phone subscriptions to a population of 28,162,800. This gives a subscriptions-to-population ratio of 100.1 percent.

The survey target population includes all main users of hand phones on all digital platforms in the states and territories making up Malaysia. Both postpaid and prepaid users were covered.

The sample size was determined as 4,925 units to give estimates at 99 percent confidence level with a precision of +/- 2 percent premised on multinomial variables. There was only one stage of sample selection as meaningful stratification was not possible because a suitable variable for stratification was not available before hand.

The survey was canvassed using a Computer Assisted Telephone Interview (CATI) system operating out of SKMM CATI Centre in Kuala Lumpur. Trained interviewers call up main users of selected hand phone numbers to seek their cooperation. Answers given to precoded questions were clicked in, while open ended answers were typed in. Calls were made from 10.00 am to 6.00 pm on weekdays and 10.00 am to 9.00 pm on weekends.

Confidentiality is very important in garnering support and participation in any survey. To ensure confidentiality, all interviewers had to sign a confidentiality statement before they started work. The data capture system was also designed in such a way that no information can be traced to any respondent.

### Some Findings: Demographics and Socioeconomics

### Nationality

First off in the survey was a question on nationality. It is common knowledge that Malaysia is an attractive destination for foreign workers; and foreign workers nowadays find the hand phone a necessity be it to communicate at work or to get in touch with loved ones at home. The survey found that 11.5 percent of hand phone users are foreigners while the remaining 88.5 percent are Malaysians.

		Percentage									
Nationality	2005	2006	2007	2008	2009						
Malaysian	93.7	92.5	90.3	89.6	88.5						
Non-Malaysian	6.3	7.5	9.7	10.4	11.5						

### Usual state of residence

The survey included a question on usual state of residence and the results together with those of the past four years are shown below. The distribution by usual state of residence shows a remarkable consistency over the years.

Selangor (including the Federal Territory of Putrajaya) has the largest share of hand phone subscriptions. This has been the case since 2004 when the HPUS started. For 2009, Selangor accounted for 19.1 percent of all hand phone subscriptions, a drop from the 22.0 percent a year ago but the lion's share nevertheless.

Johor came in second with 12.6 percent. This is followed by Federal Territory of Kuala Lumpur (9.5 percent), Sabah (nine percent) and Perak (8.9 percent). Among other states, Sarawak, Kedah, Pulau Pinang, have shares between 6.2 to 6.5 percent, while Kelantan, Pahang, Negeri Sembilan, Melaka, Terengganu have shares between 3 to 5.1 percent. Perlis has one percent. These proportions are used together with the subscription base as well as estimated state population to calculate the subscriptions to population ratios of each state.

Charles .			Percentag				
State	2005	2006	2007	2008	2009	Average	
Johor	13.7	13.0	13.5	13.8	12.6	13.3	
Kedah	5.9	6.6	6.6	6.3	6.5	6.4	
Kelantan	3.7	4.6	4.2	4.6	5.1	4.4	
Melaka	3.0	3.7	3.7	3.2	3.3	3.3	
Negeri Sembilan	3.9	4.3	4.2	3.8	4.1	4.1	
Pahang	4.5	4.8	5.1	5.4	4.9	4.9	
Pulau Pinang	7.4	6.4	6.5	6.4	6.2	6.6	
Perak	7.3	7.7	7.8	8.3	8.9	8.0	
Perlis	0.8	0.9	0.8	0.9	1.0	0.9	
Selangor*	24.7	21.7	22.1	22.0	19.1	21.9	
Terengganu	2.9	3.8	3.7	2.8	3.3	3.3	
Sabah**	6.4	6.4	7.1	7.7	9.0	7.4	
Sarawak	5.9	7.1	6.1	6.6	6.5	6.4	
F.T Kuala Lumpur	9.7	8.6	8.6	8.2	9.5	8.9	

### Gender

Survey results showed that males made up 55.7 percent; and females, 44.3 percent of users as at 2009. When compared with the findings of past surveys what emerges shows that over time the difference in take-up between the two genders has narrowed.

Condor	Percentage									
Gender	2005	2006	2007	2008	2009					
Male	57.4	58.3	56.4	56.3	55.7					
Female	42.6	41.7	43.6	43.7	44.3					

#### Age

45 - 49

Above 50

The hand phone user base has always been characterised by its youthfulness.

The age distribution, used in this analysis however, has two modes. From 2.3 percent in the 'Below 15' group it rises sharply to 12.4 percent in the '15-19' group and peaks at 20.0 percent in the '20-24' group. From there it falls to 15.9 percent in the '25-29' group and 14.2 percent in the '30-34' group. It then tapers to 9.3 percent in the '35-39' group, 8.1 percent in the '40-44' group and 5.9 percent in the '45-49' group before peaking again at 11.8 percent in the 'above 50' group. Although the 'above 50' group has more hand phones than '35-39', '40-44' and '45-49' age groups preceding it, it must be noted that it is an open-ended age group. Besides, as people age, they tend to bring their practices with them into the next cohort. Coupled with a longer life expectancy the percentage share in this group is expected to hold or even grow.



6.6

9.1

5.7

10.5

5.4

13.1

5.9

11.8

6.3

8.7

### Monthly income

Handsets have become very affordable and tariffs very competitive. This brings hand phones and basic mobile telephony within the reach of just about anyone old enough to sign up, making the hand phone truly ubiquitous. Among hand phone users, 61.7 percent have incomes below RM1,000 while 31.4 percent had incomes between RM1,000 and RM3,000. 4.5 percent reported monthly incomes ranging from RM3,000 to RM5,000 and 2.4 percent had incomes in excess of RM5,000. In all income groups, there are subscribers with multiple subscriptions testifying to the affordability of the service.



Monthly income		Percentage	
monthly income	2007	2008	2009
RM1,000 and below	60.9	61.5	61.7
RM1,000 - RM3,000	30.8	30.3	31.4
RM3,000 - RM5,000	5.3	5.5	4.5
More than RM5,000	3.0	2.7	2.4
Amounts include unner houng	tany		

Amounts include upper boundary

### Trends and Experiences

### Multiple phone ownership

As noted above, affordability has lead to multiple ownership. In fact there are more hand phones than people in the country! The survey found that as high as 23.8 percent of hand phone users contacted have two to five subscriptions.

### Camera in hand phones and its use

Nowadays, people clicking away using cameras built into hand phones are common sight. The survey showed that 58.0 percent of hand phone users have hand phones with built-in cameras.



Friends and family are pet subjects to 74.1 percent of those with hand phones with built-in cameras. Reportedly 59.5 percent of them like to take pictures of themselves, spurred by built-in cameras that are user friendly, coming with aids that allow users to take snaps of themselves at arm's length. Other photo subjects include scenery (39.6 percent), the unexpected/unusual (10.9 percent) and parking spot (5.5 percent). Other uses, including 3G value-added services such as video calls attracted 20.6 percent of users.

### Monthly charges incurred

50.3 percent of hand phone users do not incur charges of more than RM50 per month, while 31.6 percent spent between RM50 and RM100. Nine percent spent between RM100 and RM150 followed by 3.2 percent between RM150 and RM200. Only six percent had charges over RM200.



### Participation in TV programmes

Only 6.3 percent of hand phone users participated in TV programmes in 2009. This is practically similar to the 6.2 percent reported a year ago. Among those who participated in TV programmes, 72.8 percent reported participation in the form of voting. Donations came in second with 22.0 percent. These are followed by contests, chat shows and others. In any form of participation, 77.3 percent of participants are willing to spend up to RM10 at each sitting through their SMSes, 19.7 percent between RM10 and RM50, 1.3 percent between RM50 and RM100 and 1.6 percent RM100 and above. This mirrors closely the responses of a year ago.



#### Participation in TV programmes

### Awareness of mobile TV

38.2 percent of hand phone users reported awareness of mobile TV. This represents a marginal increase of 3.2 percentage points from the previous survey. Secondary data shows that currently there are about 37,000 subscriptions to mobile TV in the country.



### Awareness of mobile payment

The wallet is going to be just as ubiquitous as the hand phone for a while more. This is because only 15.2 percent of hand phone users are aware of mobile payment; and even fewer subscribe to this service. Among those who subscribe to this service, the most frequent payments were for utilities 46.2 percent; followed by entertainment, 30.8 percent; and food 7.7 percent.

### Hand phone users and the computer

50.2 percent of respondents reported that they used computers in 2009. Under the assumption that a sample of hand phone users would be representative of the general population it can be inferred that 50.2 percent of inhabitants used personal computers and this amounts to 14.1 million users.



Among those who use personal computers, the usage was mostly at home, at 61.9 percent; in the workplace, 46.8 percent; in Internet cafés, 31.9 percent; and in schools/universities, 18.8 percent. Three places with relatively smaller proportions were public access places, Rural Internet Centres and other places.



### Hand phone users and the Internet

The survey found that 16.3 percent of users accessed the Internet through their hand phones.

In addition, 23.0 percent of hand phone users have an Internet connection at home.

Internet through hand phone



The access mode of choice as recorded by 86.9 percent of this subgroup is broadband with the remaining 13.1 percent choosing dial-up.

#### Internet connection at home



### **The Road Ahead**

The SKMM Hand Phone Users Survey counts among its users; ministries, regulators, planning agencies, market researchers, industry players and academics, foreign as well as local. Changes in user demands and expectations, and technology advances and innovations fuel each other resulting in a fast changing environment and a dearth of data that has to be filled. The SKMM Hand Phone Users Survey fills that niche very well through sharing sessions with industry and users each time a survey report is published and more of the same when planning a new survey round. It is this and the dedication of its statisticians and its front line troops at SKMM CATI Centre that keeps users coming back for more.



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# SKMM CATI centre: The frontline troops



The many survey reports produced by the Malaysian Communications and Multimedia Commission (SKMM), would not be possible without its frontline troops who engage the public to collect the required data.

Established in 2004, the SKMM's CATI (Computer Aided Telephone Interview) centre is currently located in an easily accessible location at Kampung Attap in Kuala Lumpur.

The front line troops, i.e. the interviewers, conduct interviews in nationwide sample surveys by telephone to determine mobile cellular penetration, fixed line penetration, broadband penetration, customer usage patterns, as well as customer satisfaction with telephone, broadband, broadcast and postal services all year round.

The survey questionnaires are developed by SKMM's statisticians and scripted to run on a CATI platform. The survey software presents the set of questions to be asked by each interviewer, together with a number to call. The interviewer calls the number to conduct the survey, entering the responses with their keyboard and mouse.

The software is smart enough to know when to skip over certain sets of questions which are irrelevant to the respondent being interviewed based on the replies given. For example, if the person at the other end of the line does not have children, it would skip questions related to practice of child online protection at home.

The job is challenging. It calls upon the interviewers' best persuasive and people relationship management skills. It also requires a great deal of discipline and patience to cope with members of the public who come from all walks of life; some are suspicious and some can be less than polite with the caller.

.myConvergence talks to some of these frontline troops about their job and the challenges they face.

Kishore Kumar has worked full time at the centre for close to a year now; and typically works there six hours a day, seven days a week. Armed with a diploma in business administration, Kishore has been working in various call centres for almost six years.

"I'm happy to talk to people. Working at the SKMM's CATI centre has helped me understand customer satisfaction issues with the various services," said Kishore. "However, I sometimes get respondents who want to call back to the centre to confirm our authenticity."

While most of the interviews are conducted in Bahasa Malaysia

and English, a knowledge of the local dialects is definitely useful. Kishore himself is also proficient in Tamil. Kishore says that though a lot of people he calls are receptive and cooperative, there are at the other end of the spectrum respondents who can be less receptive, mostly because of time constraints or an inbuilt sense of caution.



must like people. You have people and yet remain cool and calm throughout. Ann has been with SKMM CATI Centre for a year now.

The interviewers are all part time staff of the SKMM and are paid based on the number of successful interviews. The surveys are usually short containing around 15 to 20 questions but the challenge is to keep the person at the other end

of the line engaged and willing to go along with the survey till completion.

Depending on the difficulty of the survey, interviewers sometimes manage to complete only 10 surveys per day, while on other days they can complete 30 or more surveys. The centre has 50 seats and conducts surveys all year round.



Azura is a secretary with a legal firm during the week but works at the centre during weekends to supplement her income for about six years now. Saturday and Sunday are usually the best days for conducting surveys, since people are usually in.

"I'm proficient in Bahasa Malaysia and English, and I face the same experiences as Kishore," Azura said.

Home maker Ann tells us that to be a successful interviewer you to be prepared to meet all kinds of



# RELIABLE COMMUNICATIONS AT ABOVE 25 GHZ IN THE TROPICS

With spectrum increasingly becoming scarce, especially at low frequencies, the push is on to find technologies that enable reliable communications above 25GHz in the tropics.

pectrum below 10GHz is rather congested, forcing wireless operators and service providers to use higher frequency bands, such as the Ku-band (12 to 18GHz), the Ka-band (26 to 40 GHz), to deliver both terrestrial and satellite services such as two-way voice, video, data and Internet to end-user devices.

For an example, Ka-band frequencies are used in Local Multipoint Distribution Services (LMDS), which is a Line of Sight (LOS) service, broadband wireless point-tomultipoint communication system offering an alternative to wired (copper or coaxial cable) and existing fixed wireless systems to provide voice, data or video service to customers. In Malaysia, LMDS systems are allowed to operate in the frequency range of 24.25GHz to 29.5GHz and 31GHz to 31.3GHz and researches are being conducted to study the use of mitigation techniques and solutions to address severe attenuation due to heavy rain fall so as to enable its reliable use.

The advantages of large spectrum availability at frequencies above 25GHz which include potentially less interference and smaller sized antenna are dampened by the fact that the band is more susceptible to tropospheric propagation impairments, such as fog, dust particles and rainfall, than the lower frequency band. Among the impairments, rain has been identified as the principal reason for outage of communication system and service unavailability making it difficult to establish reliable communications especially in the tropics where rainfall is both heavy and frequent throughout the year. As such, information on rain attenuation at these frequencies in a particular locality of operation is required for the design of a reliable terrestrial and earth space wireless communication link.



However, most available data on the effects of rain induced attenuation are based on conditions and situations in temperate regions, which cannot be reliably applied to address such problems of communications due to rain in tropical regions.

For an example, Malaysia is surrounded by water – i.e. major expanses of seas and oceans on all sides and is affected by the North East monsoon from October to March and the South East Monsoon from April to September; resulting in 150 to 200 rainy days in a year, with mean annual rainfall of between 2400 and 3200 mm.

Noting the issues and the value to the industry if a solution can be found, the Malaysian Communications and Multimedia Commision (SKMM) collaborated with researchers in several universities to perform studies on communications systems above 25GHz. The scope of the research was to understand the extent of signal fading due to rain and propagation impairments in the tropics, and whether techniques such as coding and modulation, diversity techniques and better design of Radio Frequency (RF) front end can help to improve the situation. Two groups of researchers collaborated in research to find solutions to the problem that rainfall poses to communications in the Ka-band.

The first group of researchers or Group One worked in three teams focussing on improvements to different parts of a communications system. Improvement gain in each part can be assessed whilst the full impact can be analysed when they are put together or integrated to form a complete system. This group was lead by Universiti Putra Malaysia (UPM).

Of the three teams from Group One, Team One agreed to study on rain and propagation with University Technologi Malaysia (UTM) as the lead institution with team members and collaborators comprised Associate Professor Dr. Jafri Din, Professor Dr. Tharek Abdul Rahman and Dr. Sharifah Kamilah Syed Yusof, all from UTM, Associate Professor Dr. A. Fadzil Ismail of International Islamic University Malaysia (IIUM), Dr. David Rogers and Dr. Cesar Amaya of the Communications Research Centre Canada (CRC Canada).

Team Two agreed to study on use of adaptive modulation and coding techniques, led by Universiti Putra Malaysia (UPM), with team members and collaborators comprised Associate Professor Dr. Nor Kamariah Noordin, Prof. Dr. Borhanuddin Mohd Ali, Associate Professor Dr. Sabira Khatun, Dr. Raja Syamsul Azmir Raja Abdullah, Dr. Alyani Ismail, Dr. Ahmad Fauzi Abas, Dr. Mohd Fadlee A. Rasid and Dr. M. Iqbal Saripan, all from UPM.

The last team from Group One, i.e. Team Three worked on developing and improving the Radio Frequency (RF) Front End area – i.e. a low-noise amplifier, and bandpass filter. It was led by Universiti Sains Malaysia (USM) with team members and collaborators comprised Dr. Mohd Fadzil Ain, Professor Dr. Syed Idris Syed Hassan, Dr. Mohd. Fadzli Salleh and Dr. Mandeep Singh, all from USM.

Group Two on the other hand, comprised Associate Professor Chuah Teong Chee, Mr Thennarasan Sabapathy (Master degree student) both from Multimedia University, and Dr Daniel Wong from Malaysia University of Science and Technology (MUST). This group conducted study and analysis on using cell site diversity (CSD) as a possible mitigation technique to overcome signal fading or channel impairment faced by LMDS network (operating at 28GHz) due to rain attenuation. The study made use of computer simulations to explore if at all the proposed technique could improve system reliability.

### Modelling Rain Fade at a Locality (By Group One, Team One)

Although fog, clouds and dust particles affect the propagation of signals significantly, rain is the dominant factor that adversely affects the propagation of signal at frequencies above 25GHz. In order to be able to deploy proper rain fade mitigation techniques, Team One worked on developing a tool to predict attenuation of communications signals due to rainfall at 105 stations across Peninsular Malaysia, Sabah and Sarawak based on one-minute rain rate statistics at each of these locations.



Three teams from Group One researching on various areas of improvement in a communication link

Availability of a link can be determined from its annual cumulative distribution. The cumulative distribution of measured beacon attenuation during rainfall at the station for the first year and the extrapolated two years were measured for a 38GHz signal. It was obtained through research work and the findings were provided as data in estimating the rain induced attenuation margins required for a given link reliability. Thus, knowing the rain induced attenuation margins will assist in acquiring the desired link performance.

Team One proceeded to develop a computer program (with Graphical User Interface) using MATRIX LABORATORY or commonly known as MATLAB (a numerical computing environment and fourth generation programming language, which allows matrix manipulations and implementation of algorithms) to predict attenuation due to rainfall. In order to ensure accuracy, the developed prediction tool is based on latest ITU-R recommendations and using locally collected rain data (for several years) as an input. The tool is able to predict attenuation due to rainfall at any location within Malaysia, as well as the attenuation due to rain between any two points, by using latitude, longitude, probability level, polarisation and frequency as an input. This tool can be used to perform pre-implementation analysis, which is essential to estimate or predict the reliability of the end system.

Using the known coordinates of two stations in a link, i.e. transmitting Station A and receiving Station B, as well as the desired probability level, the program obtains known rainfall rates at the nearest point to Station A and Station B, out of the 105 locations available. The system will then compare them at the highest probability level and determines the highest rain rates at each of the two stations (for

			Predicted Attenuation at 0.01 % probability level $A_{0.01} \; (dB)$								
	Rain Rate at 0.01 % probabilit y level	Path Length	15 G Pola	Hz rity	23 G Polai	Hz rity	26 G Pola	Hz	38 G Pola	Hz rity	
Location	R <sub>0.01</sub> (mm/hr)	(Km)	V	Н	V	Н	V	Н	V	Н	
Johor Bahru	125	3 4	21 28	26 34	40 51	51 66	47 61	60 78	72 93	86 112	
		5	34	42	63	80	/5	94	714	136	
Kuala Lumpur	133	3	23 29	28 37	42 55	54 70	50 65	64 82	76 98	91	
		5	36	45	66	85	79	100	119	143	

Sample output produced by the prediction tool using probability level of 0.01% at three locations in Malaysia.

terrestrial link, locality of station A and B are normally quite close - thus analysis of one locality will suffice), so as to consider the worst case scenario and calculate the path length between the two stations. The program also reads in user-provided information on type of polarisation and operational frequency to work out the ITU-R alpha ( $\alpha$ ) and regression coefficients k, for specific attenuation for the exact frequency. The reduction factor was computed using the modified CETUC model (rain attenuation model developed by Centre for Studies in Telecommunications, Brazil) and after calculation and consideration of all these parameters, the program will provide results containing the predicted total rain attenuation along the radio path, based on highest rain rates at Stations A and B together with the path length between these two stations.

### Rain Fade Mitigation Technique Using Adaptive Modulation and Coding (AMC) (By Group One, Team Two)

AMC is one of the key enabling techniques used in 3rd-Generation (3G) cellular systems to achieve high spectral efficiency on fading channels and the team aimed to explore its use in the project. With the adaptive technique, the team set a target of maximum Bit Error Rate (BER) of  $10^{-5}$  (1/100 000), which means one error bit for every 100,000 bits transmitted.

The core idea behind AMC is to dynamically change the modulation and coding scheme in terms of constellation size, code rate and signal power, to adapt the overall spectral efficiency to the prevailing channel condition, based on feedback from the





receiver on its observed channel condition at its location and fed back to the transmitter in each frame.

AMC allows the optimisation of each active user link efficiently by independently adapting to the time and location dependent link signal-to-noise interference ratio (SNIR).

This approach allows the optimisation of average throughput at the expense of the link bit rate variability. In case of constant bit rate or latency constrained services, downlink resource management plays a major role to guarantee the quality of service required.

Adaptive modulation systems improve the bit transmission rates and/or BER by using the channel information in the transmitter and such systems are known to greatly improve throughput performance compared to systems which do not use channel information at the transmitter.

AMC system developed by Team Two (from Group One) uses convolutional coding at the transmitter and Viterbi decoder at the receiver. Convolutional code is a type of error correcting code which is being used extensively in numerous applications in order to achieve reliable data transfer, including digital video, radio, mobile and satellite communication. Besides this, convolutional coding also managed to overcome some setback in block coding which is frame oriented in nature and require very accurate frame synchronization and each transmitted frame has to be completely received before decoding and which results in undesirable system latency.

At the receiving end a Viterbi decoder is employed. It uses the Viterbi algorithm (developed by Andrew J Vertibi) for decoding the convolution coded bitstream from the transmitter.

### How Modulation and Coding May Be Adapted to Counteract Rain Fade

The AMC system works on threshold based adaptation, whereby it uses instantaneous Signal to Noise Ratio (SNR) of the channel. The estimated instantaneous SNR will be used to select the suitable modulation mode by comparing it with a set of switching thresholds as referred in the figure below. The method switches between the different modes depending upon the estimated channel SNR during each frame. For example, if the estimated instantaneous SNR was between values of th1 and th2, (please refer to figure below) the 4QAM was chosen for the next transmission burst.



Switching algorithms

### **Adaptive Modulation**

By itself, a carrier signal is just a wave travelling through space, very much like a blank DVD that contains no digital information until its amplitude, frequency or phase is varied in accordance with the input baseband signal, which can then be extracted at the receiving end.

We are already very familiar with Amplitude Modulation (AM) and Frequency Modulation (FM) which are two very popular and very different methods of sending information over the airwaves. But what is modulation? It is the act of modifying a certain aspect of the carrier signal in accordance to the information being sent (baseband signal). AM modifies the amplitude of the carrier signal while FM modifies its frequency. Basically it is about how the "information" rides on the carrier frequency.

Quadrature Amplitude Modulation (QAM) technique has become the dominant modulation mechanism for high speed digital signals. QAM conveys data by changing the amplitude of two waves, which are 90 degrees out of phase with each other. These two carriers are known as quadrature carriers, whereas the set of possible combinations of amplitudes are called the QAM constellation or constellation points. This constellation represents the number of bits that can be transmitted at any point of time, for example 64QAM transmits 6 bits per symbol ( $2^6$  = 64). Using such a high order constellation ensure high bitrates and faster throughput, but it requires good signal-to-noise ratios (SNR), in order to overcome interference issues and maintain a certain bit error rate (BER).

### Adaptive Coding

Adaptive coding refers to variants of entropy encoding methods of lossless data compression. They are particularly suited to streaming data, as they adapt to localise changes in the characteristics of the data, and do not require a first pass over the data to calculate a probability model. The cost paid for these advantages are that the encoder and decoder will have to be complex to keep their states synchronized and higher computational power is needed to adapt the encoder/decoder state.

In adaptive coding, the encoder and decoder are instead equipped with identical rules about how they will alter their models/states in response to the actual content of the data, and otherwise start with a blank slate, meaning that no initial model needs to be transmitted. As the data is transmitted, both encoder and decoder adapt their models, so that unless the character of the data changes radically, the model becomes better adapted to the data it is handling and compresses it more efficiently. However, when the received instantaneous SNR was below th1, where the channel was in a deep fade, the transmission was disabled. According to the switching algorithm, the highest modulation level is used when the channel is at its best. When the channel degraded, a more robust but less spectrally efficient modulation level is used.

### Modelling and Simulation Results

In the field of engineering, a pre-implementation analysis is very much required to predict the reliability of the end system. As such the proposed AMC system was tested by developing the algorithm and system model using MATLAB and Simulink respectively. Simulink is a commercial tool for modelling, simulating and analyzing multi domain dynamic system with graphical block diagramming tool and customizable set of block libraries.

Figure below shows the BER and throughput performance of AMC, based on simulation done on the algorithm developed using MATLAB.

Below are the findings based on the study:

- i. When SNR is less than 7dB, AMC ceases transmission.
- ii. Lower modulation mode were chosen at lower SNR.
- iii. An uncoded high modulation mode (64QAM) is selected for clear sky.
- iv. Improvement of SNR of 3dB (maximum) is observed.
- v. Target BER is achieved when using AMC.



Switching Threshold determination for Adaptive Modulation and Coding

![](_page_49_Figure_13.jpeg)

AMC in Simulink

The system design (using MATLAB) was then analysed using Simulink. The AMC in Simulink Figure shows the operation of it where the AMC algorithm will be activated when SNR is within the range of 7dB <SNR<26dB. This SNR value will then be passed to the transmitter so that it can choose the best modulation modes (based on pre-defined threshold values) for the next transmission.

Based on the results obtained from the simulation using Simulink (as shown in the mentioned Figure), it was found that:

- i. When SNR is less than 7dB, there is no transmission of signal in AMC.
- System switches to lower modulation mode when instantaneous SNR is low.
- System switches to higher modulation mode when instantaneous SNR is high in order to increase the transmission throughput.
- iv. System switches to uncoded higher modulation modes of 64 QAM when instantaneous SNR is more than 26 dB.

The simulation results obtained from MATLAB and Simulink showed that AMC can be applied as a reliable operational technique to overcome signal fading due to rain. The integration between adaptive modulation and adaptive coding is done to achieve the targeted BER and improve the throughput and mitigate losses due to rain in the tropical regions. Simulation result also proves that the proposed system can improve the efficiency by providing better throughput performance at SNR less than 23 dB, by using AMC to meet the target BER of 10<sup>-5</sup>.

### Improvements to RF Front End Design (Group One, Team Three)

In order for the receiver to receive and correctly decode signals under adverse rain conditions and to be able to mitigate the effects of propagation impairment and improve grade of service; Team Three designed and developed a low-noise amplifier (LNA), and band pass filter which would be integrated into the radiofrequency front-end equipment, just after the antenna at the receiver-end of the communication link. The LNA is a key component which amplifies the weak incoming microwave signals while keeping noise to a minimum. Thus with a good LNA, the effect of noise from subsequent stages of the receiver chain is reduced due to the signal gain provided by the LNA. As such,

![](_page_50_Figure_0.jpeg)

![](_page_50_Figure_1.jpeg)

![](_page_50_Figure_2.jpeg)

Noise Figure for three stages LNA

Gain of three stages LNA

it is necessary for LNA to boost the desired signal power while adding as little noise and distortion as possible so that the retrieval of this signal is possible in the later stages of the system. Team Three started off with designing a single stage amplifier, and the simulation results showed it achieved noise figure of 2.146 dB and gain of 5.458 dB. In order to enhance the results from the single stage amplifier a cascade technique was used to build a three stage LNA. Based on simulation results the noise figure and gain are increased to 3.47dB and 10dB respectively.

However, the Team faced many challenges and difficulties during the fabrication of the designed LNA on the Printed Circuit Board (PCB) and are held back from coming up with a good LNA for the front end. Issues such as fine wire bonding and small size of transistor and the available tool at their disposal hampered their effort. With improved tools, it is expected that the LNA can be produced to meet the designed performance.

The Team has also designed a Bandpass Filter to be placed after the LNA in the receiver chain. It is supposed to filter unwanted signal from other transmitters as well as to eliminate the harmonics generated from LNA. The Team successfully fabricated and tested the designed filter.

### Rain Fade Mitigation Technique Using Cell-Site Diversity (Csd) (By Group Two)

Based on the studies done by UTM together with IIUM, and MMU together with MUST, Cell Site Diversity (CSD) was proposed as another approach to address rain fade as it was postulated that it may be possible

![](_page_50_Figure_12.jpeg)

![](_page_51_Figure_0.jpeg)

to establish signal reception from a distant interferer instead of from a nearby default base station (BS). As we know, in tropical regions, high intensity rain is confined to a small area whereas low-intensity rain normally covers uniformly a wider region. So in heavy rain environments, CSD creates a temporary opportunity for the cell site to switch to another BS in order to achieve better reception in terms of SINR. Under this condition, the distant interferer temporarily acts as the desired BS. This makes the CSD method highly suitable or effective in improving the link reliability in heavy rain environments. However, detailed analysis on the overall coverage area of LMDS networks employing CSD is yet to be done but research done by MMU have covered the worst case scenario of such a deployment.

Based on the simulation results as shown in Figure below, in general it can

F1H BTS	F2V 61	F2V	F1H <b>562</b>	F1H BT	F2V <b>563</b>	F2V BT	ғ1н <b>564</b>	F1H BT	F2V 565	F2V	F1Н <b>66</b>
F2H	F1V	F1V	F2H	F2H	F1V	F1V	F2H	F2H	F1V	F1V	F2H
F2H BT	F1V <b>551</b>	F1V BT	F2H <b>552</b>	F2H BT	F1V <b>553</b>	F1V BT	F2H <b>554</b>	F2H BT	F1V <b>\$55</b>	F1V BT	F2H <b>556</b>
F1H	F2V	F2V	F1H	F1H	F2V	F2V	F1H	F1H	F2V	F2V	F1H
F1H BT	F2V <b>41</b>	F2V BT	F1Н <b>542</b>	F1H BT	F2V <b>543</b>	F2V BT	F1H <b>\$44</b>	F1H BT	F2V <b>545</b>	F2V	F1Н <b>46</b>
F2H	F1V	F1V	F2H	F2H	F1V	F1V	F2H	F2H	F1V	F1V	F2H
F2H BT	F1V <b>531</b>	F1V BT	F2H 532	F2H	F1V <b>533</b>	F1V BT	F2H <b>534</b>	F2H	F1V <b>535</b>	F1V BT	F2H <b>536</b>
F1H	F2V	F2V	È1H	FIA CS2	F2V	F2V	F1H	F1H	F2V	F2V	F1H
F1H BTS	F2V 21	F2V	F1H 522	F1H BT	F2V <b>523</b>	F2V BT	F1H <b>524</b>	F1H BT	F2V 525	F2V	F1H <b>26</b>
F2H	F1V	F1V	F2H	F2H	F1V	F1V	F2H	F2H	F1V	F1V	F2H
F2H	F1V <b>511</b>	F1V BT	F2H <b>512</b>	F2H BT	F1V <b>513</b>	F1V BT	F2H <b>514</b>	F2H	F1V <b>\$15</b>	F1V BT	F2H
FTH CS1	<u>+ - F2</u> V	F2V	F1H	F1H	F2V	F2V	F1H	F1H	F2V	F2V	F1H
O BT	S site		site		Desired	l signal		Div	ersity si	ignal	

Illustration of an available nearest diversity base stations (BTS) for CS 1 and CS 2 in a 36km x 36km service area.

be observed that the outage probability increases as the rain rate increases. The average outage probability for CS 2 (which employs CSD technique) is the least and average gain of 30% could be achieved during rain rate of 80-120mm/h. However, CS 1 (located at the corner of service area) suffers from the worst performance degradation at higher rain rates due to insufficient number of nearest BS, and thus it has to connect to distant BS, which causes the path length of a communication link between a transmitting point from diversity BS and Customer Station (CS) to increase, which may substantially increase the blocking effect. This serves as a restriction on the use of CSD at certain CS and to overcome this disadvantage, the group research team has proposed to use switched beamforming (SB) techniques in CSD.

### Combined Switched Beamforming (SB) and CSD

Switched beamforming (SB) is a technique that is capable of steering the main beam of an antenna to the new desired direction while suppressing interference signals from other directions. An averaged normalized gain of 0 dB and -40 dB can be obtained at the desired angle and interference angle respectively. When there is heavy downpour in a particular cell, the signal from the desired BTS is attenuated or blocked, whereby the SINR may be less than the threshold level. At this point, using the switched beamforming cell site diversity (SB-CSD) technique the main beam of the smart antenna will be steered towards an alternative BS which could be an interferer earlier. Smart antennas (which usually refer to adaptive array antennas or multiple antennas elements) are equipped with

![](_page_52_Figure_0.jpeg)

Average outage probability performance of the CS at the corner of a cell

![](_page_52_Figure_2.jpeg)

Average outage probability for SB-CSD compared to conventional antenna model

smart signal processing algorithms used to identify spatial signal signatures such as the direction of arrival (DOA) of the signal, and use it to calculate beamforming vectors, to track and locate the antenna beam on the target.

The average outage probability of the LMDS system with SB-CSD is presented in the simulation results as shown in above. In general, the outage probability increases as the rain rate increases. The result indicates that the Cell Site (CS) with conventional antenna suffers the worst performance degradation at higher rain rates compared to CS that combines the CSD technique with its conventional antenna. It is very obvious from the simulation result that SB-CSD based CS achieved significant improvement in communication link performance in terms of average outage probability in the simulated study. At the rain rate of 80-140mm/hour, about 20% performance gain is achieved.

### Conclusion and Future Works

As mentioned earlier, findings by all the three teams in Group One (UPM, UTM, USM, and IIUM) are to be integrated for final analysis of a total system improvement. However, due to some fabrication issues in the LNA (designed by Team 3 from Group 1), more time and improved (higher precision) tools are required to complete it. Alternatively a commercially available LNA can be used to assemble the final system for analysis – confirming the effectiveness of the other techniques developed in the other parts of the communication link. Nevertheless, the Adaptive Modulation and Coding (AMC) technique developed by UPM seems to be an improved operational technique to overcome signal fading during rain. Simulation results show that the proposed algorithm can improve the efficiency by providing better throughput performance at SNR less than 23dB, to achieve the targeted BER of  $10^{-5}$ . The findings of this research will definitely be a good reference for future studies, planning and implementation of emerging technologies in tropical region for communication links above 20 GHz.

The proposed Cell Site Diversity (CSD) technique by Group Two (MMU and MUST), appears to be another possibility to mitigate rain fade. Based on simulation results, at an average rain rate of 120mm/h the average outage probability of a cell site could be improved from 0.45 to 0.1 by using the CSD technique.

The CSD technique can be further improved by integrating Switched Beamforming (SB) algorithm, which is able to address the limitation in CSD technique especially when it is used at corner base station sites of a service area. Simulation results show that SB-CSD based cell sites can achieve 20% performance gain at rain rate of 80-140mm/hour.

The results of the work done by both groups of researchers are based on simulations and further work can be explored to apply the mitigation techniques in the field. Use of dual bands i.e. Ka-Band with an alternative licensed free frequency bands (such as 2.4/5.8GHz or 700MHz white space) as a final fall back in heavy rain fade condition could also be explored. Interested parties may contact the authors to know more about the state of the research and further collaboration.

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![](_page_53_Picture_0.jpeg)

**INTEGRATIONS AND AUXILIARY OF COMMUNICATIONS AND MULTIMEDIA INDUSTRY** 

The MTSFB Forum is bringing together local industry players to achieve its goal of making a mark in the international technologies arena. Amirul Ahmad shares the developments to date.

n developed countries, it is almost vital for specific industry players to come together to form a group or an association to able their respective enterprise to work together for many reasons including to achieve a greater agenda nationally and internationally. In today's fast and convergence communications and multimedia technologies, it is a fundamental factor behind the

Feature

TMAX.

### success of the whole industry to collaborate and harmonise.

We have seen how mobile phone technologies evolved from the 1st generation (1G) beginning in 1979 with less harmonisation among players to the 2nd generation (2G) in 1991 where the GSM (Global System for Mobile Communications which was originally derived from Groupe Spécial Mobile) where players started to come together to collaborate as a group and the success was phenomenonal with over 80% of mobile phone subscribers globally. Then in 2001, the 3rd generation (3G) came in and next the 4th generation (4G) that are already currently under technical trials. With such a rapid evolution period of within 10~12 years, the global industry players have now realised the importance of collaboration to harmonise their efforts for a greater achievement in this global 'economics of scale' game.

mps

### Collaborate

Yes, it is a '1 Global' collaboration by multinational companies. Let's take the example of mobile phone technologies again. We heard names like GSM Association for the 2G; 3GPP (3rd Generation Partnership Project) which is a greater collaboration for 3G and now WiMax Forum and Long Term Evolution (LTE) for the upcoming 4G.

In actuality collaboration begins at national and regional level. All these mobile phone technologies were successful submissions to the International Telecommunication Union (ITU), an agency under the United Nations (UN) which has coordinated and promoted harmonisation of information and communication technology and industry for nearly 145 years. Collaboration of groups or associations like the Telecommunications Standards Institute (ETSI) of Europe, the Association of Radio Industries and Businesses (ARIB) and the Telecommunication Technology Committee (TTC) of Japan, China Communications Standards Association (CCSA) in China, the Alliance for Telecommunications Industry Solutions (ATIS) of North America and Telecommunications the Technology Association (TTC) of South Korea are among the major technological contributors to ITU.

### Where are We?

In Malaysia, SKMM was the first regulator in the world to enact a law that recognises technology and service convergence when the Communications and Multimedia Act 1998 (CMA) came into effect on 1 April 1999. The collaboration spirit which the CMA embraced is through a self-regulation mechanism based on basic principles of transparency, promoting competition, technology neutrality and flexibility for the development of the industry and its ecosystem as a whole.

Through this visionary regulatory the Government regime change, acknowledges the importance of collaboration among local industry players to build our very own technological group which may one day be able to submit proposals to the ITU as a candidate for future mobile phone generations. It is a long way to go, but as a nation, we have to start somewhere. Take the example of South Korea. Their government established a formal corresponding system to ITU beginning in 1983 where their initial participation at that time was merely as observer to acquire advanced knowledge. Today in less than 30 years, South Korea is one of the leading countries in the world to contribute to ITU (Table 1).

With that in mind, an industry forum namely the Malaysian Technical Standards Forum Bhd (MTSFB) was officially designated by Malaysian Communications and Multimedia Commission (SKMM) on 27 October 2004 to enshrine the national policy and objective of self regulation in accordance to Section 94 and 184 of the CMA particularly on the harmonisation of technical standards for the nation.

But can we grow this organic collaboration within our industry players for greater achievement for the country only with the legislative instruments? Perhaps we may start by emulating the Korean success by strategically participating in ITU as a beginner to catch on technological advancements. At present nine local companies are registered within three types of sectoral membership to ITU (Table 2). But the question remains: When and how many technological submissions by Malaysia can be registered to ITU? Great challenges are ahead for all of us.

### **Do We Participate?**

If we refer to Table 2, we are not much different from Korea, but let's analyze further our participation inside each of the two main ITU sectors.

There are ten main/active Study Groups (SG) in ITU-T sector while six main/active Study Groups in ITU-R sector as shown in Table 3. Each of the SG are further divided into respective Working Party (WP).

### National Corresponding Structure to ITU

It is our desire to have a similar national ITU structure that mirrors the Korean one (Table 4a).

The ITU, MTSFB and others generally agree that the standardisation gap between developed and developing countries are due to the following shortcomings within developing nations:

- i. the lack of human resource;
- ii. the lack of capital resources and assistance; and,
- iii. the lack of technology experts.

The ITU Strategic Plan for 2008-2011 seeks to address these gaps, and, in line with this plan, the MTSFB organised a three-day seminar titled "Bridging the Standardisation Gap and Interactive Training Session" at the SKMM Auditorium in Cyberjaya in July last year. The event was a collaborative effort between the MTSFB, the SKMM, the ITU-T standardisation sector and the Korean Telecommunication Technology Association (TTA). It drew technology and standardisation experts from Korea, Switzerland and the United States as well as over 150 participants from countries in ASEAN.

One of the conclusions of the three-day seminar was that developing countries including companies tend to be risk-averse when it comes to investments in ICT. They have other priorities and prefer not to spend their resources on acquiring or developing advanced technologies, which hampers their role in participating on standardisation of the global ICT industry. This could

Year	Korea		U.S		Japan		Europe		China		Others		
	Num.	Per.	Num.	Per.	Num.	Per.	Num.	Per.	Num.	Per.	Num.	Per.	Total
2005	338	6.7%	743	14.8%	385	7.7%	1,028	20.5%	333	6.6%	2,188	43.6%	5,015
2006	453	9.7%	599	12.8%	353	7.5%	952	20.3%	473	10.1%	1,859	39.6%	4,689
2007	526	14.8%	355	10%	340	9.6%	591	16.7%	410	11.6%	1,322	37.3%	3,544
2008	657	12.3%	504	9.5%	477	8.9%	906	17%	650	12.2%	2,139	40.1%	5,333
2009	589	11.1%	485	9.1%	467	8.8%	950	17.8%	697	13.1%	2,136	40.1%	5,324
2010	127	15.7%	107	13.3%	75	9.3%	115	14.3%	126	15.6%	257	31.8%	807

Table 1: Share of contributions submitted to ITU's R/T/D by selected countries

Country	Date of Entry	Туре	ITU-R	ITU-T	ITU-D	Total
Malaysia	3 Feb 1958	Members States	4	3	10	16
		Sector Members	3	3	7	9
China	1 Sept 1920	Members States	9	12	4	16
		Sector Members	9	12	4	13
Japan	29 Jan 1879	Members States	26	27	10	55
		Sector Members	26	27	10	40
Korea	31 Jan 1952	Members States	7	4	5	18
		Sector Members	6	4	5	10
US	7 July 1908	Members States	33	46	29	138
		Sector Members	25	39	21	59
	Fotal	Members States	191	191	191	191
	IUlai	Sector Members	259	277	320	561

Table 2 : ITU membership of selected countries according to type and sectors – ITU's R/T/D

be a barrier towards the country's development as a whole in becoming a high income nation. It is sometime seen as a burden due to its resources being channeled to fulfil more urgent commercially profitable investments or other urgent obligations.

The South Korean approach to the standardisation gap was cited as a good example of how a developing nation can rise to become a respected leader in the ICT industry. 30 years ago, the South Korean government made a considerable investment into acquiring foreign advanced technologies which they then used to set up their own enterprises to produce their own products. Today, the country is one of the world's leading innovators and boasts internationally-accepted brands, products and technologies.

SG	Chair	Members
		ITU - T Sector
SG2	КТ	KCC(RRA), KT, LGT, ETRI, KISDI, DACOM, KISA
SG3	ETRI	KT, ETRI, SKT, KCC(RRA), Universities
SG5	RRA	KCC(RRA), SAMSUNG Elec., KEPCO, KRISS, ETRI, KETI, ETRI, DWE, LG Elec., LGT, SKT, KT, KITECH, Universities, etc
SG9	RRA	KCC(RRA), KT, ETRI, CNM, Alticast, Tbroad, Klabs, Powercomm, Universities, etc
SG11	ETRI	KCC(RRA), ETRI, KT, Xener Systems, Universities
SG12	кт	KCC(RRA), ETRI, KT, Universities, Samsung Elec., KETI, NIA
SG13	ETRI	KCC(RRA), ETRI, KT, Universities(14)
SG15	Bookyung Univ.	KCC(RRA), ETRI, KT, LS cable, Actus Networks, SAMSUNG Optical Comm., University
SG	Chair	Members
SG16	HUFS (Univ.)	KCC(RRA), ETRI, KT, SAMSUNG Elec., LG Elec., SKT, SAIT, NetnTV, Universities,
SG17	SCH Univ.	KCC(RRA), ETRI, KISA, Bank of Korea, FSA, Universities
		ITU - R Sector
SG1	RRA	KCC(RRA, CRMO), ETRI, Qualcomm, KASI, Universities
SG3	RRA	KCC(RRA, CRMO), ETRI, Universities
SG4	RRA	KCC(RRA, CRMO), Ministry of Defense, ADD, KT, SKT, ETRI, Universities, AR Technology,
SG5	RRA	KCC(RRA), LGT, SKT, KT, MBC, SBS, KARI, Samsung Elec., Samsung Thales, Intel, ETRI, SK Broadband, KORPA, DAPA, ETRI, Universities
SG6	RRA	KCC(RRA), MBC, KBS, SBS, LG Elec., Samsung Elec.,
SG7	KASI	KCC(RRA), KMA, Universities

Table 3: Study group members

	ITU-T and ITU-R Study Group					
	ITU-R Radiocommunication Sector	ITU – T Standardisation Sector				
1	Study Group 1 (SG 1) - Spectrum management	Study Group 2 (SG 2) – Operational Aspects				
2	Study Group 3 (SG 3) - Radiowave propagation	Study Group 3 (SG 3) – Economic and Policy				
3	Study Group 4 (SG 4) - Satellite services	<ol> <li>Study Group 5 (SG 5) – Environment and Climate Change</li> <li>iElectromagnetic compatibility (EMC), to safety and to health effects connected with electromagnetic fields produced by telecommunication installations and devices, including cellular phones.</li> <li>Responsible for studies on the existing copper network outside plant and related indoor installations.</li> <li>Responsible for studies on methodologies for evaluating the ICT effects on climate change, publishing guidelines for using ICTs in an Eco-Friendly Way, and energy efficiency of the power feeding system.</li> </ol>				
4	<ul> <li>Study Group 5 (SG 5) - Terrestrial services</li> <li>1. Working Party 5A (WP 5A) - Land mobile service above 30 MHz*(excluding IMT); wireless access in the fixed service;</li> <li>2. amateur and amateur-satellite services</li> <li>3. Working Party 5B (WP 5B) - Maritime mobile service including Global Maritime Distress and Safety System (GMDSS);</li> <li>4. aeronautical mobile service and radiodetermination service</li> <li>5. Working Party 5C (WP 5C) - Fixed wireless systems; HF and other systems below 30 MHz in the fixed and land mobile services</li> <li>6. Working Party 5D (WP 5D) - IMT Systems</li> <li>7. Joint Task Group 5-6 - Studies on the use of the band 790-862 MHz by mobile applications and by other services</li> </ul>	Study Group 9 (SG 9) – Broadband Cable and TV				
5	<ol> <li>Study Group 6 (SG 6) - Broadcasting service</li> <li>Working Party 6A (WP 6A) - Terrestrial broadcasting delivery*</li> <li>Working Party 6B (WP 6B) - Broadcast service assembly and access**</li> <li>Working Party 6C (WP 6C) - Programme production and quality</li> <li>assessment***</li> <li>Joint Task Group 5-6 - Studies on the use of the band 790-862 MHz by mobile applications and by other services</li> </ol>	Study Group 11 (SG 11) – Protocols and Test Specifications				
6	Study Group 7 (SG 7) - Science services	Study Group 12 (SG 12) – Performance, QoS & QoE Responsible for Recommendations on performance, Quality of Service (QoS) and Quality of Experience (QoE) for the full spectrum of terminals, networks and services ranging from speech over fixed circuit-based networks to multimedia applications over networks that are mobile and packet based. Included in this scope are the operational aspects of performance, QoS and QoE. A special focus is given to interoperability to ensure end-to-end users' satisfaction. Study Group 12 is Lead study group on quality of service and quality of experience.				
7		Study Group 13 (SG 13) – Future Networks Responsible for studies relating to the requirements, architecture, evolution and convergence of future networks. Also includes NGN project management coordination across study groups and release planning, implementation scenarios and deployment models, network and service capabilities, interoperability, impact of IPv6, NGN mobility and network convergence, public data network aspects and network aspects of IdM. Responsible for studies relating to network aspects of mobile telecommunication networks, including International Mobile Telecommunications (IMT), wireless Internet, convergence of mobile and fixed networks, mobility management, mobile multimedia network functions, Internetworking, interoperability and enhancements to existing ITU T Recommendations on IMT.				
8		Study Group 15 (SG 15) – Transport and Access				
9		Study Group 16 (SG 16) – Multimedia				
10		Study Group 17( SG 17) - Security				

Table 3a – ITU-T and ITU-R Study Group

### We are Here to Collaborate

As the appointed technical industry forum, MTSFB is a company limited by guarantee, responsible for the establishment and maintenance of the technical codes or technical standards through collaboration among our registered members.

At present MTSFB have 53 registered members divided into two categories as below:

- 1. Ordinary Members 18 registered corporate members
- 2. Associate Members 35 registered corporate members

As stipulated in our charter, MTSFB plays a key role in developing technical codes for the communications and multimedia industry through the formation of specific working groups either through industry owned initiatives or upon request by SKMM. Six years since it was founded, 18 working groups as listed below have been operational:

- 1. Broadcasting Network Infrastructure Working Group (BNI WG)
- 2. Digital Radio Broadcast Working Group (DRB WG)

- 3. Digital Terrestrial Television Broadcasting Working Group (DTT WG)
- 4. Fixed Network Infrastructure Working Group (FNI WG)
- 5. Fixed Terminal Working Group (FT WG)
- 6. Green Information Communication Technology Working Group (GICT WG)
- International Mobile Telecommunications Working Group (IMT WG)
- 8. Internet Protocol Television Working Group (IPTV WG)

![](_page_57_Figure_0.jpeg)

![](_page_57_Figure_1.jpeg)

![](_page_57_Figure_2.jpeg)

- 9. Internet Protocol Version 6 Working Group (IPV6 WG)
- 10. Multimedia Terminal Working Group (MMT WG)
- 11. Next Generation Network Working Group (NGN WG)
- 12. Occupational Safety & Health Working Group (OSH WG)
- 13. Power Line Communications Working Group (PLC WG)
- 14. Radiocommunications Network Infrastructure (External) Working Group [RNI (EX) WG]
- 15. Radiocommunications Network Infrastructure (Internal) Working Group [RNI (IN) WG]
- 16. Satellite Broadcast Terminal Working Group (SBT WG)
- 17. Wireless Industry Emission Working Group (WIE WG)
- Wireless Terminal Working Group (WT WG)

MTSFB has successfully developed 21 documents (Table 5). These documents have been registered or gazetted under 3 different categories namely as a Mandatory Standard or a Technical Code by SKMM or as a Malaysian Standard by SIRIM through the Ministry of Science, Technology and Innovation (MOSTI).

A Mandatory Standard registration is determined by SKMM and compliance is mandatory.

Technical Codes are registered as a Voluntary Code by SKMM and

No.	Series	Name
1	MTSFB 001:2005	Guideline on Next Generation Network (NGN) Realisation
2	MTSFB 002:2005	Technical Standard on Digital Terrestrial Television (DTTB)
3	MTSFB 003:2005	Guidelines for Broadband Over Powerline (BPL) Physical Network Layer
4	MTSFB 004:2005	Technical Standard on RF Emission Control of Cellular Radio Sites
5	MTSFB 005:2005	Digital Sound Broadcast (DSB) Technical Standard
6	MTSFB 006:2005	Technical Standard and Infrastructure Requirements (Broadcast Network Infrastructure)
7	MTSFB 007:2005	Technical Standard and Infrastructure Requirements (Occupational Safety and Health Work Practices Guidelines)
8	MTSFB 008:2005	Technical Standard and Infrastructure Requirements (Fixed Network Infrastructure)
9	MTSFB 009:2005	Quality of Service for Voice, SMS and Packet-Switched Traffic for Public Cellular Services
10	MTSFB 001:2006	Technical Standard for Wireless Broadband – WiMAX
11	MTSFB 002:2006	Guideline on IPv6 Implementation and Compliant Test
12	MTSFB 001:2008	Technical Standard For Free To Air Digital Terrestrial Receiver (Set Top Box)
13	MTSFB 002:2008	IP Multimedia Subsystem (IMS) Guidelines
14	MTSFB 003:2008	Mobile Broadcast TV Guidelines
15	MTSFB 001:2009	Technical Standard and Infrastructure Requirements (Radiocommunications Network Infrastructure - External)
16	MTSFB 002:2009	Technical Standard of In Building Fibre Cabling for Fibre-To-The-Premise (FFTP)
17	MTSFB 001:2010	Technical Standards of International Mobile Telecommunications (IMT)
18	MTSFB 002:2010	Technical Specification for Direct to Home Satellite Receiving Antenna
19	MTSFB 001:2011	Technical Specification for Direct-to-Home Satellite Receiver (DTH Set Top Box)
20	MTSFB 002:2011	Technical Standards of International Mobile Telecommunications (IMT)
21	MTSFB 003:2011	Technical Specification for Analogue Calling Line Identity Presentation (A-Clip) Facility for Connection to Public Switched Telephone Network (PSTN)

Table 5 – MTSFB documents

compliance is voluntary and these Technical Codes can be of the following types.

- a. Technical Standard which is interoperability or safety related for the provision of network facility or service by providers.
- b. Technical Specification which relates to consumer product, equipment or access device related to Type Approval/Certification.
- c. Guideline which is general information, recommendation or work practice.

A Malaysian Standard issued by SIRIM is the National Standard and stands as voluntary.

Among the achievements of MTSFB through this collaboration are having two documents registered as Mandatory Standards (Determination No. 1:2004 on 3G & Determination No. 2:2006 on DTTB) which certainly carry regulatory weight for local industry players to comply with while three other documents were gazetted as Malaysian Standard (MS 1903:2006 on NGN, MS 1902:2006 on BPL & MS 2235:2009 on IPv6).

### Challenges

Malaysia's participation in global standardisation and harmonisation is vital to the success of the country's ICT industry. Moving forward, the challenge is to address the three identified reasons for the standardisation gap to be reduced. We must acquire ICT technologies for the country and promote the importance of standard development activities to the national economy.

Having set the base, MTSFB can move on to address many of the challenges facing the industry today, such as standardisation gaps within ICT technologies and interoperability with competing technologies. Besides aligning Malaysia's technological expertise and objectives to those of international bodies, Malaysia's experience may soon allow us to submit home-grown technology proposals to the ITU as candidates for future world communications technologies.

#### **MTSFB Board of Directors and Reference Panel members**

No.	Name	Organisation	
1	Dato' Ismail Osman – Chairman	Asiaspace	
	(Alt. Dir.) Nor Izhar Mohd Zain		
2	Poh Kee Seng	Maxis	
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	(Alt. Dir.) Zakaria bin Ahmad		
4	Azim Ng Abdullah	SIRIM	
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7	Shahrul Imran Sultan	MBNS (Astro)	
	(Alt. Dir.) Mustafa Kamal Mamat		
8	Dato' Rosman Ridzwan	UMobile	
	(Alt. Dir.) Hamzah Burok		

No.	۷ Grou	Vorking ıp/Leaders	Name	Organisation		
1	-		Ratnam NA – RP Chairman	MBNS (Astro)		
2	-		Amirul Ahmad – RP Vice Chairman	MTSFB		
3	-		Abdul Ghani Zainal Abidin	SIRIM		
	In-recess Working Group					
4	DTT	Chairman	Dato' Ismail bin Osman	Asiaspace		
		V. Chairman	Ahmad Afandi Abu Hasim	RTM		
		Secretary	Omar Giri Valliappan	DigitalTV Labs		
5	FNI	Chairman	Mohd Yusairi Abu Hassan	Telekom Malavsia		
		V Chairman	Hasfarudin Haron			
		V. Chairman	Muhammad Zaim Halilul Pahuman	Tolokom Malavsia		
<u> </u>	CT.	Chairman				
0			About Hamid Mustala			
		V. Chairman	Annau Faizan Parui	Talaham Malausia		
-7	OIOT	Obsimum	Nur Rasilidari Abas Azirii			
	GICT					
		V. Chairman	Dr Timothy Senathirajah	Ericsson		
		Secretary	Adi Effendi Abu Bakar	NFE Consulting		
8	IMT	Chairman	Kevin Koo Jenn Mang	DiGi		
		V. Chairman	Hamzah Burok	U Mobile		
		Secretary	Khairul Akmal Zahri	Packet One		
9	IPV6	Chairman	Gopinath Rao Sinniah	Mimos		
		V. Chairman	Ronhazli Adam	Celcom		
		Secretary	Azura Mat Salim	Telekom Malaysia		
10	IPTV	Chairman	Mustafa Kamal Mamat	MBNS (Astro)		
		V. Chairman	Nik Maziah Nik Mohamad	Telekom Malaysia		
		Secretary	ary Muzaffar Fakharuddin Sony	Sony		
11	MMT	Chairman	Hj Mohd Jaafar Mohamad Abu Bakar	Telekom Malaysia		
		V. Chairman	Dr Rohmad Fakeh	RTM		
		Secretary	Razaini Mohd Razali	SIRIM		
12	OSH	Chairman	Bruce de Netto	Maxis		
		V. Chairman	Maj (R) Jimi Ng	UEM		
		Secretary	Suzamri Salleh	Maxis		
13	RNI	Chairman	Nor Izhar Mohd Zain	Asiaspace		
	(⊏x)	V. Chairman	Kevin Koo Jenn Mang	DiGi		
		Secretary	Khairul Akmal Zahri	Packet One		
14	RNI (In)	Chairman	Hamzah Burok			
	(111)	V. Chairman	Muhamad Hafiz Senin	Packet One		
45		Secretary	Delina Snamsuddin			
15	281	Chairman	Shahrui Imran Sultan	MBNS (Astro)		
		V. Chairnan	Zui Deresiu Rozoini Mohd Rozoli			
16	W/T	Chairman	Razalili Mollu Razali			
10	VVI	V Chairman	Glen Cha	Nokia		
		Secretary	Najib Fadil Mohd Bisri	TM Malaysia		
	In-recess Working Group					
17	BNI	-	Vacant	-		
18	DSB	-	Vacant	-		
19	NGN	-	Vacant	-		
20	PLC	-	Vacant	-		
21	WIE	-	Vacant	1-		

Table 5b – MTSFB Reference Panels (RP) 2010/2011 session including respective working group leaders

Amirul Ahmad can be contacted at amirul@mtsfb.org.my

![](_page_58_Picture_14.jpeg)

Table 5a – MTSFB Board of Directors 2010/2011 session

### State-level MyIX and CBC Launching in Lundu

The MyIX (Malaysia Internet Exchange) and the Community Broadband Centre initiatives for Sarawak, was launched by the Minister of Information, Communications and Culture, Dato' Seri Utama Dr Rais Yatim in Lundu, Sarawak. The effort will give the local community the opportunity to experience the benefits and convenience of broadband.

The MyIX and the Community Broadband Centre initiatives are part of the Government's effort to develop the nation into a high income nation through ICT.

An exhibition and promotion related to the communications and multimedia industry was also held by the ministry via its agency, SKMM. Themed, 'From the people, for the people, to the people. Broadband for all', it was intended to raise awareness and inform the local community of the broadband services offered by service providers.

Concurrent with the launch, another closing ceremony was held for the ICT Literacy Camp at the Community Broadband Centre in

![](_page_59_Picture_6.jpeg)

Julau, officiated by the Deputy Minister, Datuk Joseph Salang. The main attraction was the live video conference between the Minister in Lundu and Deputy Minister in Julau and the MyIX centre in Kuala Lumpur. The local population attended both events from 10 a.m. to 6 p.m.

### Malaysia to Start Implementation of New Public Cellular Phone Numbering

SKMM announced that Malaysia is in the midst of implementing a new public cellular phone numbering format which is 3 + 8. The announcement was made at a briefing held at SKMM Headquarters, attended by industry members, regulatory bodies, the media, consumer forums and interested parties. The briefing was to aid understanding of the new public cellular numbering system.

The new public cellular phone numbering will take the prefix-011 followed by eight digit numbers (011 1XXX XXXX).

This forms as a long term measure by SKMM, taking into consideration that the existing public cellular phone numbering format of 3 + 7 is running out fast and will not be able to accommodate future demand. This implementation is a result of the increase in cellular service providers and the potential of various service applications available due to the advancement of communication technologies.

### Ministry of Information, Communications and Culture Gives Out 1Malaysia Broadband Awards

National Broadband Awareness and Promotions Programme Award winners were announced at the 1Malaysia Broadband Recognition Night 2010. The awareness programme was launched in June last year by the Ministry of Information, Communications and Culture in collaboration with SKMM.

As part of the Government's effort to raise awareness of broadband and ICT applications, the programme aims to reach students, parents, rural folks and the SMEs based in semi-urban and rural areas.

The Minister of Information, Communications and Culture, Dato' Seri Utama Dr. Rais Yatim, announced the latest broadband penetration figure at 55 percent, exceeding the target for end 2010 of 50 percent. The BB Trail, a nationwide mobile roadshow visited over 500 locations to create more awareness and educate in the advantages of broadband in general and the useful applications associated with broadband.

The 1Malaysia Broadband Recognition Awards went to 8 recipients: Best Broadband Package went to Telekom Malaysia; Highest Take Up went to Celcom; Most Creative Programme went to Maxis; Most User Friendly Website went to U Mobile; Best Broadband TV Commercial during BB Trail went to DiGi; Best Radio Advertisement went to Packet One; Best Print Ad Campaign Advertisement went to Celcom and Most Participative Service Provider in BB Trail went to Telekom Malaysia.

### eHalal Track and Trace Project between Malaysia, Hong Kong and China

This formed part of the initiative of the SKMM Digital Lifestyle Malaysia (DLM) eHalal RFID Track and Trace programme that was completed successfully and launched on Oct 23, 2010 in Guangzhou, China in conjunction with the Asian Games China 2010. The POC project was to track and trace the Halal route from food manufacturers in Malaysia all the way to consumers in China. This project was initiated by SKMM and supported by JAKIM, SIRIM, Guangdong RFID Center, Guangdong Government Authorities, Smartag, Federation Malaysian Manufacturer, Kontena Nasional, NorthPort and various other vendors and manufacturing companies. SKMM was represented by Mr Yow Lock Sen and Mr John Tay at the launching.

The eHalal Track and Trace project was awarded the 5th best RFID Application solution by RFID World China for the Year 2010.

![](_page_59_Picture_20.jpeg)

![](_page_59_Picture_21.jpeg)

John Tay of SKMM with Shawn Sim, Malaysian Trade Commissioner, Consulate General Malaysia and Hj Kamarudin Md Dolmion, Director, Jakim

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### National Spectrum Consultative Committee and SKMM, Double Time: Wireless 1Malaysia Kick Off

Last March Dato' Seri Utama Dr Rais Yatim, Minister of Information, Communications and Culture launched the National Spectrum Consultative Committee (NSCC) witnessed by SKMM Chairman Tan Sri Khalid Ramli, industry experts, academics, analysts, market leaders and government agencies.

The function of the NSCC is to provide a consultative platform involving all key stakeholders to ensure that strategic spectrum issues receive robust consultation as well as to improve on and supplement the existing public consultative process.

Back in 2008, SKMM had embarked on a Spectrum Management and Strategy Review (SMSR). Its objective was to review the current spectrum management framework and best practices and to develop a forward looking framework. It came up

with proposals for strengthening the process of policy making with the establishment of the NSCC. The initiative was to bolster SKMM's role in spectrum management; to provide a responsive and flexible approach to meet the needs of spectrum users.

![](_page_60_Picture_6.jpeg)

In conjunction with the launching, the SKMM Double Time dialogue returned for its second installment with great speakers and notable topics. It presented the opportunity to converse with global industry experts to facilitate the collective advancement in the communications and multimedia arena and keep the industry current and relevant.

### **ASEAN ICT Masterplan 2015 Launched at Ministers Meeting**

![](_page_60_Picture_9.jpeg)

The 10th ASEAN Telecommunications and Information Technology Ministers meeting (TELMIN) took place in Kuala Lumpur in January 2011. The meeting was preceded by the 11th ASEAN Telecommunications & Information Technology Meeting at which senior ASEAN officials fine-tuned the agenda for the Ministers Meeting.

Prime Minister Dato' Sri Mohd Najib delivered a keynote address in which he emphasised the importance of telecommunications and ICT as the primary enabler for economic development and growth and as an instrument to connect ASEAN to the mainstream of global development. He also proposed that TELMIN should consider focusing resources on improving pan ASEAN connectivity in order to lower the cost of bandwidth in the region.

The Ministers agreed to chart out an execution plan for the development of the ASEAN ICT sector by 2015 and beyond in an integrated manner to support other sectors in the implementation of the ASEAN Economic Community Blueprint, the Roadmap for an ASEAN Community, and the Master Plan of ASEAN Connectivity.

In this regard, the Ministers issued the Kuala Lumpur Statement on "ICT: Positioning ASEAN for the Future", which officially announced the adoption of the ASEAN ICT Masterplan 2015 ('AIM2015') with the Vision "Towards an Empowering and Transformational ICT: Creating an Inclusive, Vibrant and Integrated ASEAN".

The AIM2015 is a comprehensive plan of specific actions and projects with clear targets and timelines in six strategic thrusts to be implemented in the next five years and beyond with the aim to deliver four key outcomes, namely: (i) ICT as an engine of growth for ASEAN Member States, (ii) recognition for ASEAN as a global ICT hub, (iii) enhanced quality of life for the peoples of ASEAN, and (iv) contribution towards ASEAN integration.

The ASEAN Telecommunications and IT Ministers also held separate meetings with their counterparts from China, Japan and the Republic of Korea.

### **SKMM is APIRA Secretary General**

The Asia-Pacific Internet Research Alliance (APIRA) held its 7th Board Meeting and International Conference in New Delhi 5 – 6 August 2010. The event was hosted by the Internet Service Providers Association of India (ISPAI). As at past APIRA conferences, member organisations present country findings from Internet usage surveys based on APIRA's harmonized questionnaire.

The Board Meeting saw the election of SKMM as APIRA Secretary General. SKMM is represented by the Statistical and Knowledge Resource Department that carries out the SKMM Household Use of the Internet Survey annually.

![](_page_60_Picture_20.jpeg)

SKMM representative and new Secretary General of APIRA presenting a memento to conference host, ISPAI

![](_page_60_Picture_22.jpeg)

### Two Billion Online at End of 2010

There would be 2 billion people online worldwide at the end of last year, 1.2 billion of which are in developing countries, according

to International Telecommunication Union (ITU) estimates. This represents a doubling of the number of Internet users from 2005

to 2010 and the latest statistics showed 226 million new Internet users in 2010, of which 162 million are in the developing countries, according to the ITU's report, The World in 2010 ICT Facts and Figures.

With 420 million Internet users, China is the largest market. Nevertheless Internet penetration was still skewed towards the developed countries, with 76% of population versus 21% in developing countries. Africa lagged badly with penetration of 9.6% compared to the world average of 30% and 21% in developing countries.

Household penetration of TV in homes in developing countries stood at 72.4%. 22.5% of homes had computers and 15.8% had Internet access, compared to 98%, 71% and 65.6% respectively in developed countries. Over 80% of homes in South Korea, Netherlands and Sweden had Internet access, most of which was broadband.

While the number of fixed (wired) broadband connections grew worldwide, from 471 million (6.9% penetration) in 2009 to an estimated 555 million (8%) in 2010, there remains a huge wired broadband divide, with 4.4% subscriptions per person in developing countries, versus 24.6% in developed countries.

However, while Africa's wired broadband numbers grew, its penetration of a mere 1% indicated continuing challenges to deployment of high-speed, high-capacity Internet in this region.

Meanwhile, broadband speeds worldwide range from the ITU minimum of 256Kbps to a high of 100Mbps, and while fixed broadband access costs dropped by an average of 42% between 2008 and 2009, there is a huge difference in its affordability across different countries.

For example, when adjusted for purchasing power parity (PPP), an entry-level fixed broadband connection in developing countries cost 190 PPP dollars per month versus 28 PPP dollars per month in developed countries.

This significantly impacts the uptake of ICT services in the developing world, where on the other hand, the cost of mobile are very much cheaper at around 20 PPP dollars per month.

Meanwhile, mobile coverage reaches 90% of the world's population of which 80% live in rural areas. Mobile subscriptions are forecasted to have reached 5.3 billion at the end of 2010.

Of those, slightly under a billion were 3G (third-generation) mobile subscribers. 3G was available in 143 countries at the end of 2010, except for Greenland, some African, central Asian and Middle-Eastern countries. Some countries such as Sweden, Norway, the Ukraine and United States had begun to offer fourth-generation (4G) service.

Meanwhile the number of SMS sent worldwide tripled from an estimated 1.8 trillion sent in 2007 to 6.1 trillion in 2010, or 200,000 per second, generating an estimated US\$14,000 in revenue per second based on US 7 cents each. In 2009, SMS revenue accounted for 12% of the total revenue of China's largest operator. That same year, the United States and the Philippines combined accounted for 35% of SMS sent.

![](_page_61_Figure_15.jpeg)

### **IDA Introduces a Revised Code to Promote Competition**

Singapore's regulator, the Infocomm Development Authority (IDA) revised its Telecom Competition Code on 22 December, 2010 to cater to market developments since its last review between 2003 and 2005.

Key changes which further safeguard consumers' interests include the prohibition of telecom licensees from "cross-terminating" a consumer's service agreement if the consumer breaches the terms and conditions of another service agreement from an affiliated operator or if the consumer is subscribed to a basic telephone service.

This is to prevent telecom operators from exerting undue pressure on consumers to make payment of disputed charges through threatening to terminate services offered by an affiliated telecom operator, unless the services are offered under the same service agreement. The rights of consumers to the use of basic telephone service will also be protected unless there is a breach of the agreement for the basic telephone service in itself.

Secondly, telecom licensees no longer can automatically charge consumers after a free trial of their service has ended, unless they have obtained express agreement from the consumer. This move was in response to consumer complaints over being automatically subscribed to and being charged for which they were unaware of, due to the terms and conditions being buried in fine print on their service contact.

The IDA believes that these changes will help to ensure licensees treat consumers fairly.

Among other changes, an amendment allows the IDA to prohibit the abuse of their dominant position by any licensees which are found to have significant market power even though they may not yet be classified by IDA as Dominant Licensees.

While IDA believes that effective and sustainable competition is achieved through facilities-based competition, it will also take proactive measures towards promoting services-based competition for the benefit of consumers, particularly in markets where the infrastructure deployment is difficult.

It will also continue to monitor developments in the telecom sector as well as consumer feedback, and implement measures which are required to improve consumers' experience.

### **ICT in Reducing Greenhouse Gases**

![](_page_62_Picture_2.jpeg)

### The ITU and the Global

**e-Sustainability Initiative (GeSI)** launched a report on 6 December, 2010, on the use of information and communications technology (ICT) in dealing with climate change.

It describes concrete examples of how ICTs can achieve these goals by:-

- By driving down emissions in the ICT sector itself.
- By cutting emissions and raising energy efficiency in other sectors.
- By using ICT-based systems to monitor weather and the environment worldwide, as well as to swiftly transmit data, analysis and alerts.

These measures include the introduction of more efficient equipment and networks, alongside better waste management through the entire lifecycle of electronic devices. The report notes that for every watt of energy saved by a billion end users of ICT equipment, a whole power plant can be dispensed with.

All sectors of the economy can significantly reduce their energy needs and lower their greenhouse gas emissions

through leveraging on ICT. For example, ICT can maximize the efficiency of power systems in "smart" grids that distribute electricity more efficiently with less wastage, while effectively harnessing power from renewable resources.

ICT is also crucial in monitoring the Earth's climate and weather, and in warning of impending natural disasters. Such monitoring systems have save thousands of lives each year by using data from satellites, as well as sensors on land and sea.

The report also notes that computing power and broadband networks are essential for monitoring data and transmitting the results, and that especially broadband Internet is playing a role in delivering services which create and support a sustainable future, as ICT can greatly help reduce greenhouse gas emissions in other sectors.

It also enables online access to education and medical services, even in remote communities, and information that helps protect food security.

Earlier on 17 November, the ITU and GeSI sign agreement to collaborate on measuring the ICT impact.

### Ofcom Publishes Draft Annual Plan

The United Kingdom regulator, Ofcom published its draft annual plan on 7 January, 2011, which will remain open to comments till 1 March and the final version will be published at the end of March.

The plan, which covers 1 April, 2011 till 31 March, 2012, has two key priorities – i.e. to help communications markets work for consumers and to provide appropriate assurance to viewers and listeners on standards.

The plan's key objectives are the following.

Promote effective and sustainable competition, including the fair and effective competition in the delivery of pay TV services and in promoting competition and investment in superfast broadband.

Promote the efficient use of public assets, including the release of prime chunks of spectrum and to safeguard the necessary frequencies for the London 2012 Olympic and Paralympic Games.

Help communications markets work for consumers, including to ensure that communications providers provide clear information so that broadband customers can make informed choices and enable consumers to switch providers easily.

Provide appropriate assurance to audiences on standards, including streamlining of broadcasting standards procedures and to consider new regulatory approaches to content regulation.

Contribute to and implement public policy defined by Parliament, including preparation to take over the regulation of postal services, the implementation of provisions around online copyright infringement and preparation to report to the Government on the licensing arrangements for Channel 3 and 5 when the current licences expire in 2014.

![](_page_62_Picture_25.jpeg)

### ITU Collaboration with WHO

● The ITU announced on 17 December that it would participate in the World Health Organisation's (WHO) Commission on Information and Accountability for Women's and Children's Health – a new high-level United Nations commission.

ITU Secretary-General Dr Hamadoun Touré will serve as co-Vice Chair of the Commission, alongside WHO Director-General Dr Margaret Chan. Dr Touré will contribute his expertise in the field of information and communication technologies (ICTs) as tools to advance and improve healthcare.

"ICTs are among the most powerful tools we have at our disposal to dramatically improve health outcomes for infants and their mothers," said Dr Touré. "Together, we can harness the power of technology to make a real and lasting difference to child and maternal health worldwide."

The World Health Organisation will lead the Commission, which will be co-Chaired by President Jakaya Kikwete of the United Republic of Tanzania, and Prime Minister Stephen Harper of Canada.

One of the Commission's objectives is to create an accountability mechanism that helps countries monitor where resources go and which will provide the evidence needed to show which programmes are most effective in saving women and children who are dying from preventable diseases.

![](_page_63_Picture_1.jpeg)

![](_page_63_Picture_2.jpeg)

Everyone knows that Malaysia has many beautiful beaches. Locations like Penang, Langkawi, Tioman and Perhentian islands are world renowned for their lovely beaches. The only problem is that they're not next door to Kuala Lumpur. However residents around the Klang Valley can still enjoy a quick beach outing because there are other perhaps less famous or less known beaches nearby.

They may not be as breathtakingly beautiful as the better beaches but the good thing about them is that they are all within reach. A quick drive can get you there for a nice relaxation time. Here's a quick guide to the equally beautiful but less crowded beaches next door. And we won't even talk about Port Dickson because everyone knows where that is.

### Morib

Perhaps the most famous beach out of the less famous ones is Morib. Surrounded by casuarinas and palm trees, you can run through the beaches of Morib during low tide. It is definitely a good place to search for or watch seashells disappear into the sand.

Despite the proximity to KL, you will be surprised to find that there is a good chance that you can even spread out a mat and have a nice picnic lunch beside a shady casuarinas grove without others watching you eat. It is one and a half hour drive from KL.

### **Bagan Lalang**

Ever feel that tall buildings are blocking the great sunset view? Here is a place where you can absorb the beauty of sunsets. Pair this with a beach and you will get an awesome photo for your camera. That is one of the many activities you can do in Bagan Lalang.

The shallow puddles of water and big space is ideal for kids to stride without straining a muscle or run around. This beach is also famous for its barbecued fish. Restaurants providing various fish and other seafood dishes are open till late night to cater for late night diners. It is a 30-minute drive from Kuala Lumpur International Airport (KLIA).

#### **Pulau Carey**

Here lies another hidden beach called Pulau Carey. It is situated northwest of Morib, across the sea from Port Klang. The island is largely comprised of oil palm estates owned by a plantation company. The island is also home to the Mah Meri, a native tribe known for their traditional woodcarvings, representing their ancestral spirits.

The tribe has kept the folklores of their ancestors alive through these ornaments and stories told to any willing visitors. All you have to do is ask around. Of course there is a beach on the island. It faces the Straits of Malacca and you can see the straits kept busy with many big ships.

### Tanjung Bidara

Let's move a little further south to Tanjung Bidara. Situated between Port Dickson and Malacca, you can take a leisurely walk along the beach. It may be a little further than usual but it's still possible to plan a day trip there.

There are some close by villages that are colourful and welcoming with some budget accommodation. The food sellers in Tanjung Bidara provide cheap meals in a relaxing location. It is definitely a good place to kick back and relax.

# The Correct Posture to Use a Computer

If there is one thing most people do during the weekdays, it is to sit in front of the computer for hours. Many end up doing the same during the weekends too, surfing the Internet. Common complaints among PC users are stiff necks or back pains, which happen after long hours in front of the computer. That happens because you are sitting at the wrong position.

Everything about your posture sends messages to your body and you want to make sure that it is the right message. Just like staring at a computer for too long is bad for the eyes, sitting incorrectly will affect you too.

The first step is to make sure that your chair is at the right height. When you sit on the chair, it is best if you can place your feet flat on the floor with your knees bending at a 90 degree angle. Just make sure that your thighs are balanced horizontally and any parts below your knees are straight vertically.

With that step down, it is time to check your computer monitor. Make sure that your eye level is at the top of the monitor. Once you established that, tilt the angle of the computer upwards at 15 degrees. This is an optimal neck position that will greatly reduce any strain on the spine. Remember to distance your eyes 50 centimetres away from the monitor if you want to reduce your time with your opticians. Your other best friend, the keyboard, can help you too. Make sure that the keyboard is level with the height of your arms when your arms hang loose at the side.

If you are prone to lower back pain, you may find that a firm cushion placed in the small of the back gives you the support you need. If you have the money and opted for a long term solution, buy a chair that follows the shape of your back. Expensive, maybe, but since it is for your back, go for it.

Here is also a little tip for your wrist. Your wrist can get sore moving the mouse all the time. The fastest solution for this is to move the mouse with your shoulder instead of your wrist. You may want to use a reinforced wrist brace too. It helps cushion your wrist instead of having it press to the hard table.

Finally, remember to take breaks by moving around as in actually getting off your chair. During your breaks, instead of going instantly from your desk to cafeteria, take a moment to stretch your limbs, rotating each joint gradually in both directions.

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### FOOD Steakhouse Madness

![](_page_64_Picture_2.jpeg)

![](_page_64_Picture_3.jpeg)

You can have it medium, medium rare, mediumwell or well done. The juicy tender meat that men (and women) love is everywhere nowadays. What makes you want more is the fact that it melts in your mouth and fills it with rich taste. Steaks come in a variety of cuts and grades, and they also offer a surprising range of flavours and textures. So where can you find delicious steaks in Malaysia? Here is the best five from affordable to expensive steak.

Las Vacas, Mont Kiara, KL. You get to choose which cuts of steak you want from the counter. Once that is done, they will cook it to your liking. It is quick, simple and has reasonable price. Their Wagyu Sirloin Steak is definitely the one to go for. The prices for their steaks are between RM35 to RM60.

**Suzi's Corner, Lorong Ampang Hulu, Ampang, KL**. It may look like any other food court but once you enter the food court, you will discover its allure. The steak there is as good as any in a fine dining restaurant. With a price ranged between RM35 to RM45, it will not burn a hole in your wallet.

Laman Grill, Laman Seri Business Park, Shah Alam. This is a celebrity chef restaurant by Chef Zubir Zain. It is an open concept here: customers can interact with the chef while he or she cooks. With a different ambience than other restaurants, the price is reasonable, around RM40 to RM50.

Gaucho Grill, Chulan Square, Jalan Raja Chulan, KL. For steak lovers who do not mind spending a bit more, here is a place that lives up to it claims. Imagine eating a whopping 450 grams of T-bone steak. Prepare your wallet because it will cost you between RM68 and RM80.

Victoria Station, Jalan Barat, PJ. Here is a name everyone recognises. Specialising in choice steaks from U.S.A. and New Zealand, it is a family restaurant with a unique decor featuring railway coaches. There are other outlets too around KL. Normally, a steak here will cost around RM35 to RM45.

**Outback Steakhouse, Bangsar Village I, Jalan Telawi Satu**. Here is a steakhouse that guarantees you fresh food every time. Their Outback Sirloin is the one to order because of its tenderness. Eating the steak here will cost you between RM42 and RM63.

## Having Proper Rest

![](_page_64_Picture_13.jpeg)

Athletes know that to perform well, they need proper rest. The same holds true for our work life. With proper rest, we can boost our everyday performance. Even if it is a 20-minute power nap or 8 hours of sleep, make sure you get the rest you need.

When you have a proper rest, it can reduce your stress level significantly. When your body lacks sleep, it goes into a state of stress. Every little thing just ticks you off. This is because your body's functions are put on high alert, which causes an increase in blood pressure and a production of stress hormones. Now you know why certain people are moody throughout the day.

But how do you actually attain proper rest? Firstly, one should always get enough sleep, which is around 8 hours on average. If you feel tired after some time in the morning, it shows that you did not get enough sleep during the night before. Think about it, if you need to wake up early the next morning because you have a lot to achieve, the best thing you can do is to sleep early.

But that's not all. None of us can concentrate for long at a time. It is suggested that people can concentrate for about 45 minutes. You could try taking, say, a ten minute break every hour, or working for a couple of hours then having half an hour's rest. Try sitting in silence for a few minutes, perhaps with your eyes closed. It is surprising how taking just five minutes like this can help you refocus on the next task.

This may sound weird to workers but try sleeping on the job. Of course pick the right time to do so. A quick nap around 20 minutes can make us active again because of the proper relaxation your body feels. Our forefathers knew what they were doing when they observed the siesta.

Now that takes cares of the quantity; it is time to look at the quality. The first step to this is to try to go to bed and get up at the same time every day. Once you train your body to follow the same routine every time, your body will feel more comfortable to the time you have set. When you stop experiencing morning drowsiness, you have established your individual sleep pattern.

With enough rest, get ready to tap your inner limitless creativity and productivity at work. With such simple adjustment into your daily routine, it can do wonders. What are you waiting for? Sit back and relax. You deserve it.

![](_page_65_Figure_1.jpeg)

![](_page_66_Picture_0.jpeg)

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# LEADING THE COMMUNICATIONS AND MULTIMEDIA INDUSTRY IN MALAYSIA

When it comes to transforming Malaysia to be a highly competitive nation in the global communications and multimedia industry, we are in the lead.

For more on how we fulfill Malaysia's aspirations in the communications and multimedia industry, visit **www.skmm.gov.my** 

![](_page_67_Picture_4.jpeg)

The Internet is not a threat to our children if we educate them on how to use it safely and responsibly. Let our children's mind be unleashed by the wonders of the world when they surf the Internet, They will be safe as long as we are by their side.

## A WINDOW TO GLOBAL OPORTUNITIES WHAT CAN BROADBAND DO FOR US?

The Internet has changed the way we live by connecting us to the world whilst uniting all Malaysians.

Broadband brings value and benefits to the 'rakyat' - driving the country forward towards a developed nation status.

See how Broadband can transform your life by visiting www.skmm.gov.my or www.broadband.my.

![](_page_67_Picture_10.jpeg)

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We are looking for creative Malaysians like you. Get your creativity funded and be a part of the booming content industry in Malaysia.

For more information on Networked Content Development Grant (NCDG), visit www.skmm.gov.my

![](_page_67_Picture_15.jpeg)

![](_page_67_Picture_17.jpeg)