1H 2008
BRIEF INDUSTRY TRENDS

10 YEARS OF CONVERGENCE
1998 - 2008

SKMM
MCMC

Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission

CONTENTS

FOREWORD

On behalf of the Malaysian Communications and Multimedia Commission (SKMM), it is my pleasure to present to our readers the first Brief Industry Trends report published for the first half of the year 2008. This report is planned to be done on a half-yearly basis to discuss and report on areas of topical interest and also to update on developments in the communications and multimedia industry in Malaysia and in comparison with overseas trends and developments.

This first half 2008 report has a snapshot of the status of Information and Communications Technology (ICT) worldwide and in Malaysia from the aspect of ICT spending. A snapshot in terms of Bit and Bites section features the development of the mobile sector, with an emphasis on reporting through numbers or take up.

There are discussions in the form of feature reports on Mobile Security – International Mobile Equipment Identity (IMEI); the deployment of convergence services and Fixed to Mobile Convergence (FMC) initiatives; the Digital Lifestyle in the Home; and a section on Location Based Services (LBS) approach and usage in Malaysia.

This issue could be obtained from the SKMM's website at:

http://www.skmm.gov.my/what_we_do/Research/bit.asp

I trust the publication will be useful to all our stakeholders including the Government, Industry Players, Educators, Consumers and the Public.

To improve this publication in the future, we welcome any comments, enquiries, suggestions and feedback on the information presented in this Bulletin. Please send them to webmaster@cmc.gov.my

Thank you

Datuk Dr. Halim Shafie
Chairman
Malaysian Communications and Multimedia Commission (SKMM)

Summary Highlights

Information and Communications Technology (ICT) Snapshot

Worldwide ICT spending amounted to USD3,433.3 billion in 2007 – up 10% from 2006. North America took the largest slice of the pie at 34%; followed by Western Europe at 15%. Asia Pacific is the third largest region spending ICT at USD877.8 billion (13%). Malaysia's ICT spending in 2008 is expected at USD14 million, with the spending on communications taking the largest slice of the pie at USD10.9 million or 78%. Meanwhile, three billion mobile phone subscribers are expected at end of 2007, with 45% from the Asia Pacific.

Bits and Bites

Online social networking – MySpace, Facebook and Friendster – is a global phenomenon with 530 million active members worldwide. Users of online social networking seek more presence and personalisation offerings. Early signs of take up success and significant growth in online social networking have operators devising ways for the application to take place on mobile devices. Although still a nascent market, mobile operators foresee such demands in mobile social networking to replicate the success of wired online version. Tasked with ensuring healthy and steady growth of users accessing the Web through mobile phones, operators are confident that social networking on the go is a potential service revenue to mobile ecosystems.

Mobile Security Feature – IMEI

Rapid increase of mobile phone theft globally demands means of curbing it. The technology of hand phone security, IMEI is key. The 15-digit unique number is assigned to every mobile phone in the market, and its functionality as security feature is used extensively in Europe, particularly in the UK. Likewise, Malaysia is in the midst of setting up a database of IMEI and introducing the national blocking systems in a move to reduce the incidence of mobile device thefts and ensure lost phones are immobilised to avoid undesirable situations encountered by users.

Towards Deployment of Convergence Services and Fixed Mobile Convergence (FMC) Initiatives

Convergence services involve seamless communications services to end-users. FMC in its ultimate form integrates the technologies of fixed and mobile networks over a converged IP platform network. Generally, Italy, Denmark and US are leading towards convergence development. Solving the migration from today's separate circuit and packet switch core network to a unified core network could facilitate successful convergence services for service providers. For FMC to take hold as leverage, key technology enablers such as SIP, VoIP, IMS, UMA, Fixed and Wireless Broadband and UMTS/HSPA needs to be in place. As many of these rely on standards for interoperable deployment, there need efforts towards this environment. Today, although no single standardisation body is responsible for FMC or NGN, 3GPP has adopted a common theme for NGN architecture. Among the leading FMC service providers are TWIN (Neuf Cegetal), HomeFree (Telia Sonera), Mio (Singtel), Unik (Orange), BT Fusion (BT) and Unica (Telecom Italia). Malaysia service provides are aware of this with some handsets in dual mode though not activated commercially.

Digital Lifestyle in the Home

In brief, digital home comprises of interoperable devices that have the capability to talk among the devices across the home network. The number of consumers with home network and users utilising full fledged digital home applications is considered still at an early stage. Drivers for the development of digital homes are broadband access and vice-versa, creating potential for both services. Many shortcomings exist such as terms of servicing on problems arising in the home network, device, user needs. There are also gaps in regard to awareness and network interoperability, including regulation – all this in accommodating the consumer desires for a digital lifestyle in the home. Issues on mandatory standards and specifications need to be resolved in order to drive digital interoperability and make a business success out of the digital home.

Location Based Services (LBS)

LBS has the capability to point us to our nearly exact location through mobile phone signals via the nearest base station. LBS extended through Global Positioning System (GPS), points us to our exact location. A chip embedded in advance phones communicates this via satellite. Currently, LBS is still at an infancy stage in Malaysia due to the limitations such as integration, customisation and content issues.

ICT Snapshot

ICT Spending Worldwide

Total Information and Communications Technology Spending 2007 (USD3,433.3 billion)

- Western Europe, 15% (USD1,030.1 billion)
- Asia Pacific, 13% (USD877.8 billion)
- Eastern Europe, 2% (USD127.5 billion)
- Latin America, 2% (USD129.7 billion)
- Middle East, 1% (USD62.5 billion)
- Africa, 1% (USD49.2 billion)
- North America, 34% (USD1,156.5 billion)
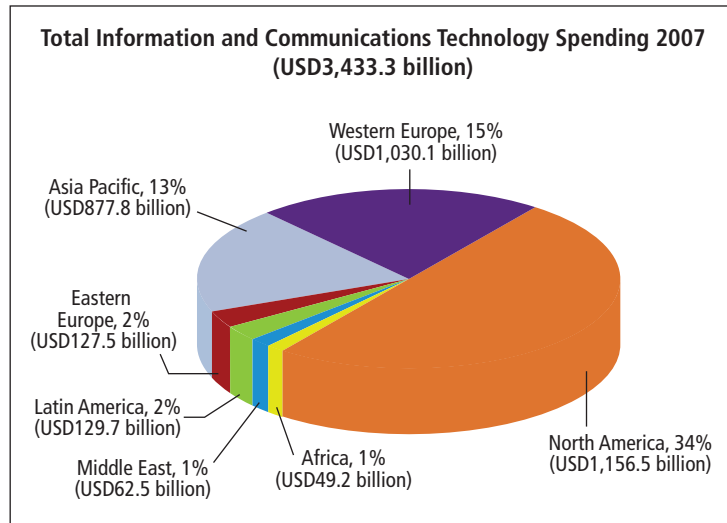
Source: Digital Planet 2008 – WITSA

Information and Communications Technology (ICT) is widely recognised as an enabler for socio-economic of a country. With this in view, the ICT spending trend is worth to note. Total ICT spending worldwide amounted to USD3,433.3 billion in 2007 – up 10% from 2006. From this, North America recorded the largest slice of the pie at 34%; followed by Western Europe at 15%. Asia Pacific region has the third largest ICT spending at USD877.8 billion (13%). The balance comes from Eastern Europe, and Latin America respectively at 2%; the Middle East and Africa region are at 1% respectively.

ICT Spending Growth: History and Forecast

Region	2003-2007	2007-2011
World	9.8	6.0
North America	6.5	3.5
Western Europe	9.4	4.0
Asia Pacific	11.0	10.5
Eastern Europe	23.0	9.5
Latin America	24.5	7.0
Middle East	15.5	11.0
Africa	18.0	6.0
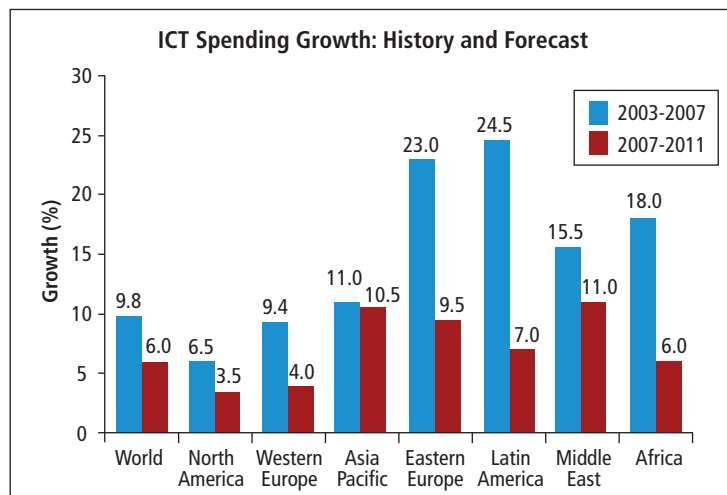
Source: Digital Planet 2008, Global Insight, Inc

ICT growth is expected to continue strong in the period 2007-2011, especially for the Asia Pacific region, Middle East and Eastern Europe regions at around 10%. From 2003 to 2007, the strongest growing regions in terms of ICT spending are Latin America and Eastern Europe, that is between 20-25%, albeit from smaller base of less than USD130 billion.

Overall, ICT spending has grown consistently over the past few years, with the highest spending in the communications sector.

Global ICT Spend by Segment 2007

	Africa	Middle East	Latin America	Eastern Europe	Asia Pacific	Western Europe	North America	World
Communications	37.9	49.5	101.9	92.5	611.6	545.2	521.6	1,960.2
Computer Services	4.6	5.3	10.4	10.0	115.2	225.9	340.3	711.7
Computer Software	2.4	2.1	3.7	8.5	38.9	109.9	130.3	295.8
Computer Hardware	4.3	5.6	13.7	16.5	112.1	149.1	164.4	465.7

Source: Digital Planet 2008 – WITSA

ICT SNAPSHOT

ICT Spending in Malaysia

Malaysia ICT Spend in USD billion (2003-2008)

Year	Communications	Computer Services	Computer Hardware	Computer Software
2008	10.9	1.1	1.4	0.7
2007	9.7	1.0	1.3	0.6
2006	8.2	0.9	1.1	0.5
2005	7.5	0.8	1.0	0.5
2004	6.9	0.7	0.9	0.4
2003	61	0.6	0.8	0.4

Source: Digital Planet 2008 – WITSA

Malaysia ICT Spend 2008: USD14 million by Segment

Communications, 78% (USD10.9 million)
Computer Hardware, 10% (USD1.4 million)
Computer Software, 4% (USD0.6 million)
Computer Services, 8% (USD0.6 million)

Source: Digital Planet 2008 – WITSA

Overall, the ICT sector in Malaysia has posted significant growth, particularly in the last decade – a result of the many developmental plans and initiatives leveraging ICT as an enabler to attain a target of developed nation status for Malaysia by 2020.

Malaysia ICT spending in 2008 is expected at USD14 million, with the spending on communications taking the largest slice of the pie at USD10.9 million or 78%. This is followed by computer hardware at USD1.4 million or 10% and computer software at USD0.6 million or 4%. Spending on computer services amounted to USD0.6 million (8%). World Information Technology and Services Alliance (WITSA) forecasts ICT spending in Malaysia to chart a 2008-2011 Compound Annual Growth Rate (CAGR) of 4.5%. The 2003-2007 CAGR is at 14%.

ICT Service Connections 2007 – Selected Countries

	US	UK	Australia	Singapore	Japan	Brunei	Korea(Rep)	HongKong	Taiwan	Malaysia	Thailand	China	Indonesia	Philippines	Vietnam	India	Lao P.D.R.	Cambodia	Myanmar
Fixed line	53	55	47	42	36	21	48	54	63	16	11	28	8	4	33	3	2	0	1
Mobile Cellular	84	118	102	127	79	79	90	146	106	88	80	41	35	51	27	20	25	18	0
Internet users	72	66	54	61	73	42	72	55	64	56	21	16	6	6	20	17	2	0	0
Broadband	21	26	23	20	22	2	31	26	21	5	1	5	0.1	1	1	0	0	0	0

Source: ITU World Stats

BITS AND BITES

Social Networking and the Mobile Phone

Mobile Phones as a Social Networking Device

The invention of mobile phone over 30 years ago opened up a wealth of communication possibilities from the basic needs of user to communicate with family, friends, relatives and co-workers in voice communication to text messaging and even video – all on the go! Effectively, the mobile phone with its address book feature has already been a social networking device and community tool for sometime.

Online Social Networking

The online social networking trend has become a recent global phenomenon. Today, the number of active social networking members has grown to represent more than one-third of the total worldwide Internet user base, that is, 530 million members worldwide[1]. There seems to be a global race among social networking sites to be on the popularity top spot in countries across the world as more and more end-users take-up communications services offering presence and personalisation.

Top 3 Social Networking Sites by Country		
Country	Sites by Rank	Source
Canada	1. Facebook	Comscore
	2. Blogger	
	3. Windows Live Spaces	
Australia	1. MySpace	Hitwise
	2. Facebook	
	3. YouTube	
China	1. YeeYoo	iResearch
	2. 9158.com	
	3. Zhiji.com	
Brazil	1. Orkut	Alexa
	2. YouTube	
	3. Photobucket	
Mexico	1. YouTube	Alexa
	2. Hi5	
	3. MySpace	
USA	1. MySpace	Nielsen Online
	2. Facebook	
	3. Classmates	

Top 3 Social Networking Sites by Country		
Country	Sites	Source
United Kingdom	1. Facebook	Nielsen Online
	2. Blogger	
	3. MySpace	
France	1. Skyrock	Nielsen Online
	2. Overblog	
	3. Blogger	
Germany	1. Classmates	Nielsen Online
	2. Blogger	
	3. MySpace	
Italy	1. Blogger	Nielsen Online
	2. Windows Live Spaces	
	3. Libero Community	
Spain	1. Blogger	Nielsen Online
	2. Windows Live Spaces	
	3. WordPress.com	
Switzerland	1. Blogger	Nielsen Online
	2. MySpace	
	3. Netlog	

Nielsen Online indicates that social networking sites like MySpace and Facebook in US received a total of more than 60 million and 24 million unique audiences respectively in March 2008, an 8% increase for MySpace and significant 98% increase for Facebook as compared to the same month in 2007.

In Malaysia, according to traffic details by Alexa, Friendster is still the number one most visited social networking site by Malaysians followed by MySpace and Facebook.

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[1] "950 Million Users will be Accessing Social Networking Sites via Mobile Devices by 2012", by Wireless Design and Development Asia, 12 March 2008.

Social Networking on the Go

With trends clearly showing the shift towards a more user centric "Me"-portals and the success of sites like MySpace and Facebook, mobile operators are seeing the potential to replicate the success in the mobile space. What they see, is an extension to their services by providing interoperability between social networking and mobile devices. Even social networking sites themselves are providing platforms that broadens their applications to work on mobile devices.

Additionally, the need for mobility among users and the need for connectedness, especially among the younger generation are driving mobile devices as the ultimate social networking tool. Coupled with the healthy and steady growth in the numbers of users accessing the Web through their mobile phones, it is assured that social networking through mobile devices is the next big thing. This development is not only seen in the US, but also seen to be more widespread in other countries as well, especially in the Asia Pacific including Malaysia.

Pyramid Research forecasts the number of mobile social networking users is expected to grow to 950 million users worldwide by 2012; an 18% market share of the total worldwide mobile subscribers. Likewise, eMarketer has also predicted an almost similar total where the number of mobile social networks users will rise from 82 million in 2007 to 803 million users worldwide in 2012, or an 18.8% out of the total global mobile phone subscribers. Nielsen Mobile, on the other hand, has indicated that UK and US are taking the lead in accessing social networks via mobile.
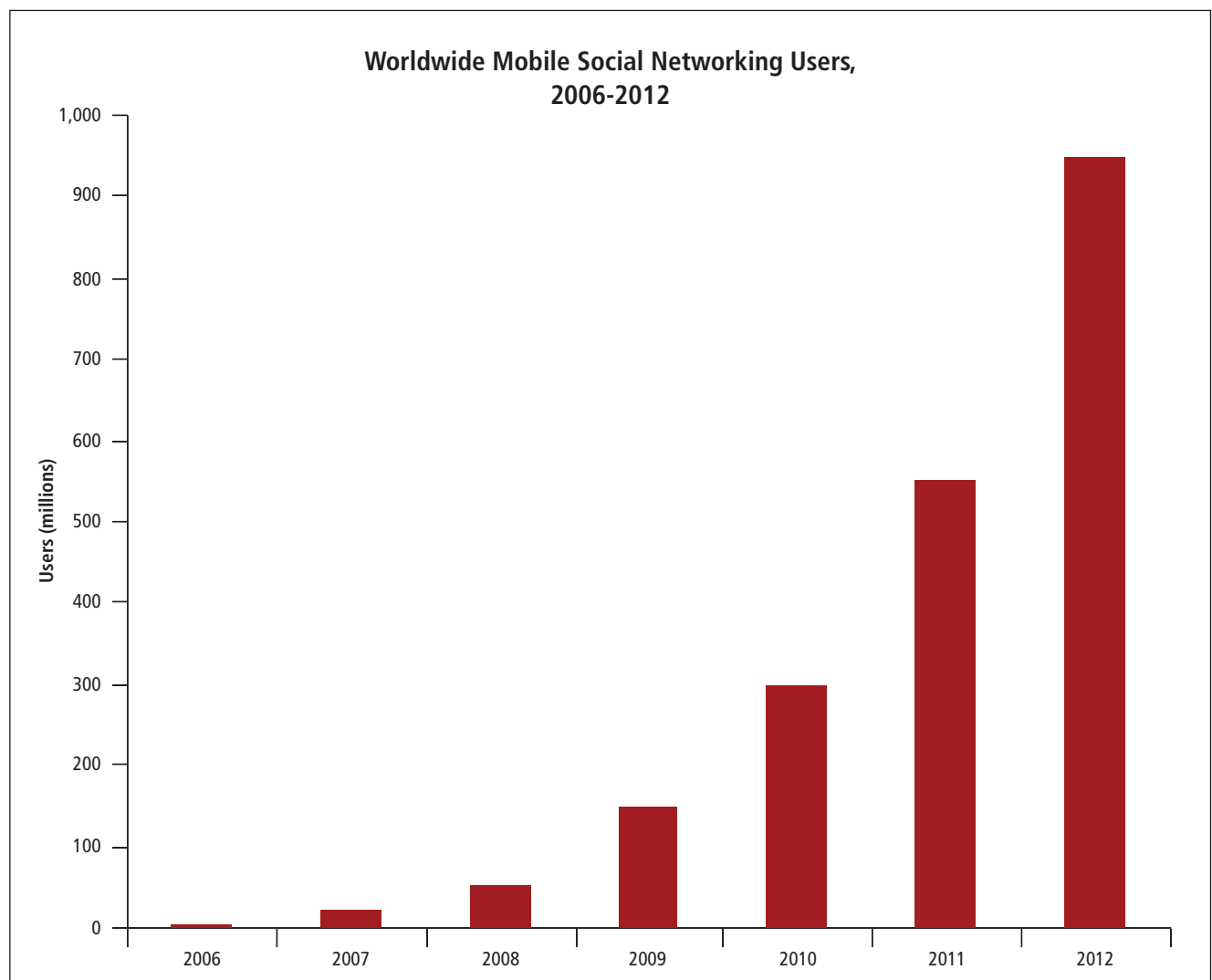
Source: Pyramid Research

Worldwide Mobile Social Network Users, 2007–2012						
	2007	**2008**	**2009**	**2010**	**2011**	**2012**
Mobile phone subscribers*	3,078	3,418	3,697	3,894	4,150	4,275
Mobile Internet users	406	490	596	757	982	1,228
Mobile social network users**	**82**	**147**	**243**	**369**	**554**	**803**
Mobile social network users as % of mobile phone subscribers	2.7%	4.3%	6.6%	9.5%	13.3%	18.8%

*For 2007–2010 from European Information Technology Observatory (EITO), March 2007
**Registered users (identified by their mobile number) who create, edit and view personal content using their phone
Source: eMarketer, April 2008

Mobile Social Networking Reach – US and Europe		
	% of mobile subscribers who access social networks over the mobile Internet	**Number of mobile subscribers who access social networks per month, over their phone**
United States	1.6	4,079,000
United Kingdom	1.7	812,000
Italy	0.6	293,000
Spain	0.8	291,000
France	0.6	255,000
Germany	0.2	141,000

Source: Nielsen Mobile; EU data Q1 2008, US data December 2007

Similarly, in Malaysia, mobile operators are expected to be taking similar routes and picking up the momentum in offering social networking mobility. With social networking sites like Friendster, MySpace and Facebook leading the way in Malaysia, it opens doors to new revenue streams and monetising value added services in terms of advertising returns, mobile data usage and subscription fees. For example, Maxis Communications lately has launched the access to social networking sites through their mobile network for its customers. By "mobilising" sites like Facebook and Flickr for users, Maxis is able to offer not only content to enrich its customers' lifestyle but also content communication applications for a more engaging experience.

In Malaysia, there is a genuine and strong desire to create and share own content by users; among peers, specifically so among the younger generation of the population. This evolving consumer behaviour and desires in regard to content communications is a potential service revenue to the mobile ecosystems in Malaysia that may garner new revenue and growth.

Mobile Snapshots

3 billion **mobile phone subscribers end 2007**, with 45% from the Asia Pacific. The number is expected to grow to 4.5 billion by 2012.
Source: Infonetics

800 million **mobile banking consumers** will be accessing banking services and products through their mobile phones by 2011.
Source: Juniper Research

470 million **NFC-enabled handsets worldwide** expected by 2011. This is equivalent to 12% of the total mobile phones in circulation that will offer support for contactless payment, specifically NFC.
Source: Juniper Research

2.6 billion **mobile tickets expected to be delivered** to just over 208 million mobile phone users by 2011, with the sector gearing up for major launches over the next few years.
Source: Juniper Research

USD19 billion **mobile marketing and advertising value** is expected by 2011, including mobile search and video advertising.
Source: ABI Research

USD1.8 billion **mobile social networking global revenue** is expected for mobile social networking or User Generated Content (UGC) in 2008. This is to hit USD11.2 billion in 2013, which account for 50% of the global market.
Source: Juniper Research

10%–15% **increase in mobile phone sales worldwide** in 2008, but the value of the market will be lower than expected.
Source: Gartner

USD80 billion **is the estimated value for mobile Internet service market** by 2011. Also, the number of mobile Internet users worldwide is to approach 1 billion, a 191% increase from 2006.
Source: IBM Institute for Business Value

USD22 billion **is the estimated value for Mobile Web 2.0** by 2013. The future is about location, Instant Messaging, social web and search – much like the present Web 2.0, but mobile.
Source: Juniper Research

833 million **touchscreen mobile devices** by 2013; spurred by popularity of Apple's iPhone and touch screen display modules set to prevail in the mobile phone market.
Source: iSuppli

MOBILE SECURITY – IMEI

Introduction and Overview of IMEI

Pervasive growth of mobile phone usage globally and in Malaysia today certainly shows the ease and accessibility mobile communications services can offer. Mobile phones are able to transmit messages promptly and easily over great distances. Along with this, it is estimated that 10,000 mobile phones are reported stolen every month in the UK[2].

In Malaysia, there were 23.3 million mobile line subscribers in 2007 indicating a usage growth rate of 5.8% from previous year. In the same year, 100,000 mobile phones were reported lost[3]. The authorities anticipate the real figure may be higher, excluding those not reported.

A means of curbing such uptrend crime of stolen mobile phones is a measure that may be instituted by the authorities and the operators together to make the devices worthless in the black market. This is by implementing the IMEI or International Mobile Equipment Identity of the mobile phone, which is used for security purposes as part of a national and eventually an international anti-theft measures. This is provided the mobile phone users register their details at the requisite websites.

IMEI Number

The IMEI is a unique 15-digit code which is an identification number for a handset in a GSM (Global System for Mobile) and UMTS (Universal Mobile Telecommunication System) mobile phone network. The IMEI number can be found on the back of the phone, that is, if you open the back lid of the mobile phone, the IMEI is printed usually underneath the battery. Alternatively, we can assess our mobile phone IMEI number by entering the code *# 06 # on the keypad.

If the IMEI number obtained from these two methods is not the same, your phone may have been reprogrammed, indicating possible fraud. Thus, mobile phone users are encouraged to check their IMEI on the handset against the IMEI number usually printed on the sticker of the manual box before purchasing the handset. This is to authenticate that the phone is a genuine original. Customarily, the software developers utilise IMEI as part of a software protection plan to prevent piracy. Changing of IMEI numbers can only be lawfully performed by "the manufacturer, or a person acting with the manufacturer's consent[4]." However, there are no legitimate reasons for them to do so.

Unique IMEI Number

The GSM Association plays a role to ensure that there will be no two devices produced with the same IMEI by managing allocations of IMEIs from their database to mobile phone producers. The manufacturers are not being charged by the GSMA for the IMEI allocation procedure.

The GSM IMEI database also stores some basic information related to the IMEI such as manufacturer's name, model identifier of the particular mobile phone, and some technical capabilities of the mobile phone such as its power class and frequency bands. By doing so, enables GSM association members, which include GSM and UMTS network operators globally, and qualified industry alliances such as manufacturers of device management products, to access the IMEI Database.

A general reference of IMEI is available as a shared database by all mobile phone operators, regulators and the Global System for Mobiles Association so that reported stolen or lost of mobile phones can promptly be barred on all registered networks.

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[2] *UK Metropolitan Police website, www.met.police.uk/crimeprevention/phone*
[3] *Industry Performance Report 2007 by SKMM*
[4] *www.gsmworld.com/gsmeurope/documents/positions/gsme_proposals_mobile_thefts_imei_security.pdf*

MOBILE SECURITY – IMEI

IMEI Database and its Purpose

IMEI database is also a useful tool to maintain a "black list" on GSM or 3G devices reported as faulty, stolen, lost or any other reasons causing the phone to be unacceptable for use. The IMEI database acts as a central system for network operators to share their individual black lists so that devices that have been denied service or blacklisted by one network will not work on other network even if the SIM (Subscriber Identity Module) card in the device is changed[5]. This ensures repudiated service on mobile networks for all handsets.

For any action to be taken on a report of lost of handset and related grievances in the respective countries where the handset is sold, there is a requirement for the user to register their IMEI numbers. For example, in the UK, an online service sponsored by global Law Enforcement, industry and government called *Immobilise Property Crime* (www.immobilise.com) offers online service for such registration. From a shared database of this kind, the respective network operators in the country or even other operators in a particular region can retrieve its customers' information, including features which can empower the network operators to support the legitimate day-to-day services to the customers via their networks.

Case Study on IMEI Usage

IMEI is quite well-established in the UK environment, with seven years of experience. In contrast, IMEI is just starting in Malaysia. These cases are highlighted as follows:

1. Tackling Mobile Phone Theft in the UK

The UK authorities are continuously committed to combat the rising trend in mobile phone theft. They have developed expertise and success in various ways to overcome mobile phone theft in UK. In January 2001, MICAF (Mobile Industry Crime Action Forum) was formed as a result of a resolution made between the Police, Government and the telecommunications Industry. It is an active organisation comprising all major mobile communications industry stakeholders. MICAF focuses on any issues arising in terms of mobile phone theft, including abuse, and works to address these issues. In fact, it is a sharing-platform for common action amongst its members and enables them to learn from each other's experiences.

MICAF partners with the local Government and Law Enforcement Agencies under NMPCU (National Mobile Phone Crime Unit). One of the security practices is to share the IMEI database of stolen mobile phones through Central Equipment Identity Register (CEIR).

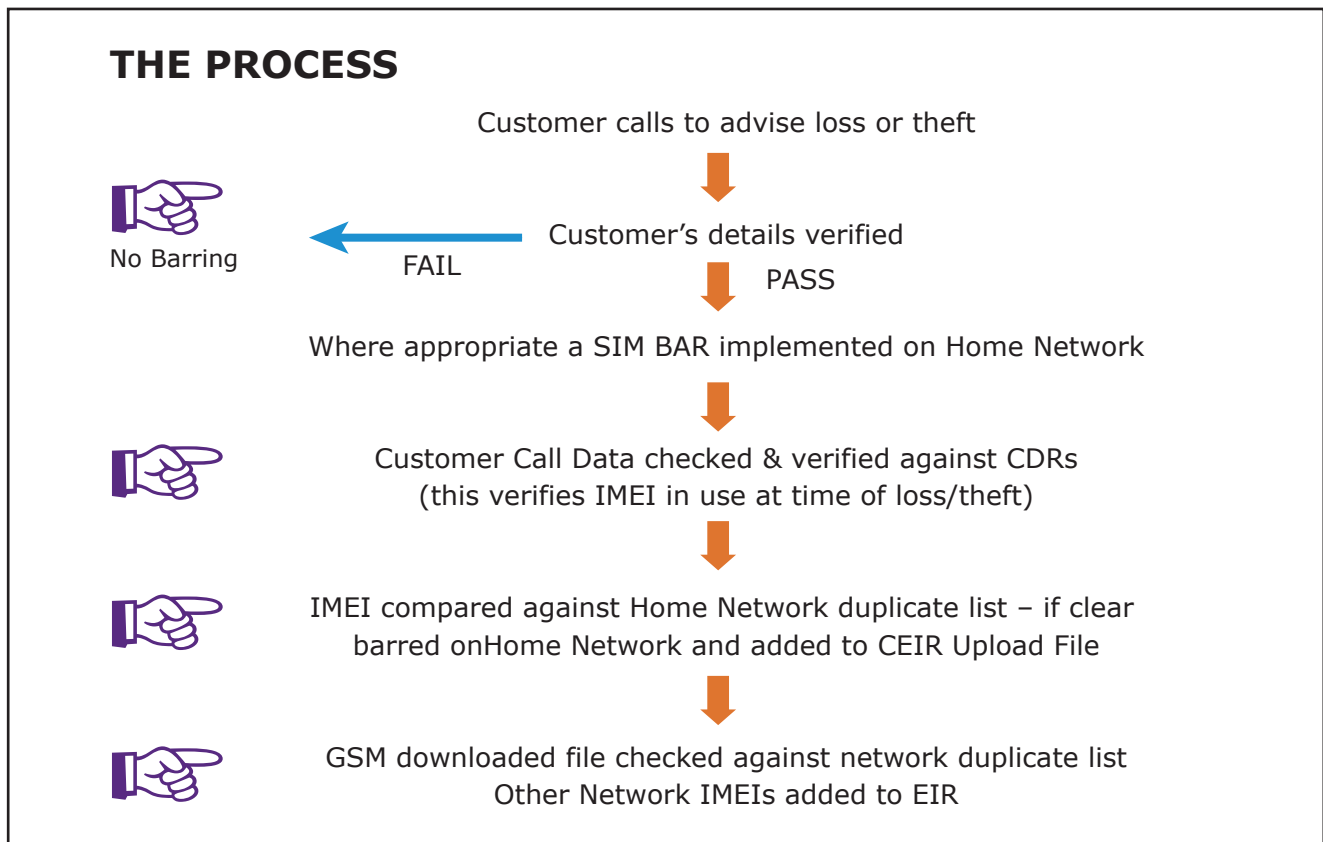### CEIR (Central Equipment Identity Register) in the UK
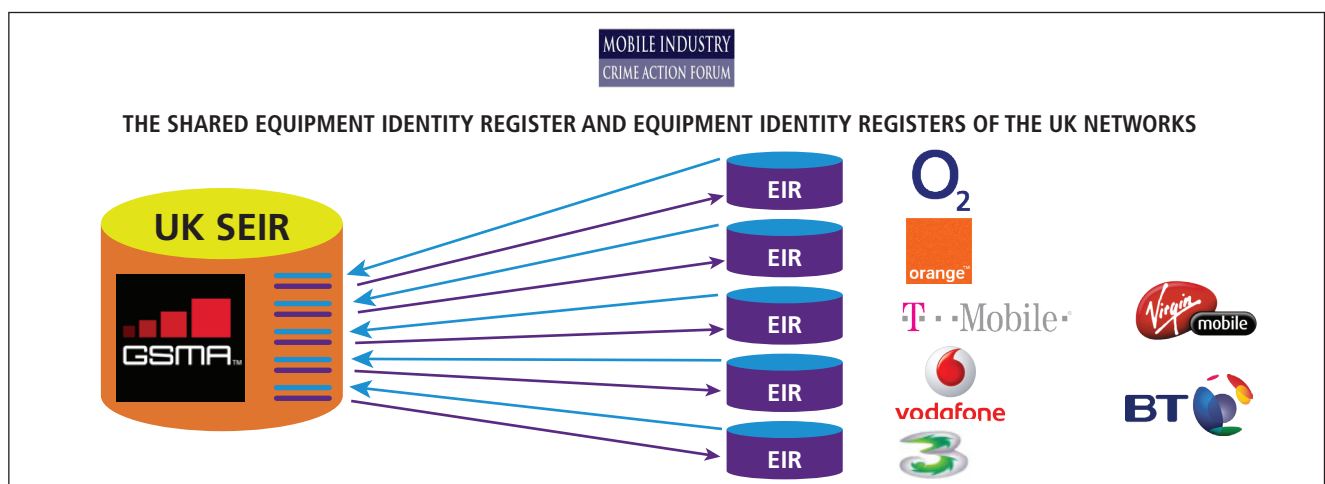
Source: www.micaf.co.uk

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[5] GSM World-Using GSM-IMEI Database website

MOBILE SECURITY – IMEI

Steps for Reporting Stolen Mobile Phone in the UK

Source: www.micaf.co.uk

MICAF is deemed successful due to its high on-going commitments in implementing various security mechanisms, for example, all reported handsets are blocked within 48 hours across all networks[6].

In praise of MICAF, The Chairman of the Mobile Industry Crime Action Forum said, "*I am encouraged by the work of the OMTP (Open Mobile Terminal Platform) and its support to ensure that customers using mobile devices can continue to do so in a secure and safe environment. MICAF has over the last five years worked closely with all parties to improve the security standards of mobile phones and in particular have put in place processes and procedures to ensure that when a phone is stolen and reported to a customer's home network it is blocked so that it is no longer of any use to a thief*".

He further added, "*These enhanced security standards will go a long way to ensure we stay a step ahead of the people out there who are consistently trying to circumvent the security processes and procedures in place and allow us to maintain the robustness and integrity of the mobile handset for some years to come*[7]".

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[6] *100 per cent of Stolen Mobiles Blocked by Networks., www.tuff.co.uk/news*
[7] *"New Specifications for Security Layers in Mobile Phones" published and posted to www.cellular-news.com on 22 May 2008*

MOBILE SECURITY – IMEI

Trend of Mobile Phone Offences

MPS Data – All Mobile Phone Offences

October 2007
Mobile phone offences:	6,874
Weighted:	6,874
Change on last month:	1.7%
Change on same month last year:	-19.8%

Legend:
- 2003-04
- 2004-05
- 2005-06
- 2006-07
- 2007-08

National Mobile Phone Crime Unit
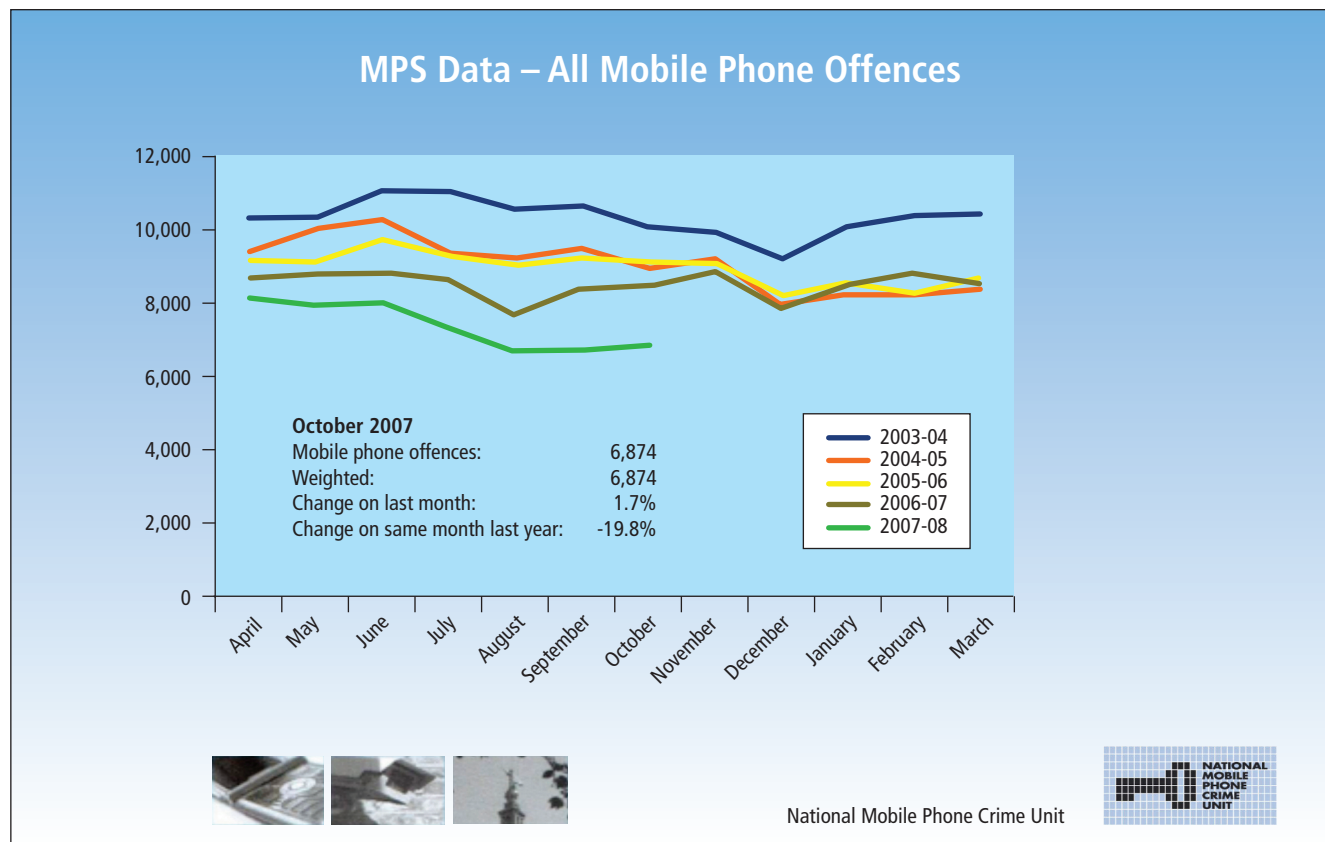
Source: NMPCU Newsletter

In reference to the function of NMPCU, it is to improve co-operation between the industry, the police and government. It not only promotes public awareness of mobile phone security features, but also educates through prevention step campaigns. One of the ways is to encourage the users of mobile phones to register at www.immobilise.com. This online service is able to provide a perception of deterrence, thus reducing the appeal to steal.

This online service assists NMPCU in their in-depth operation in tackling stolen handset sales in black market through global partnership and cooperation. The collaboration involves all UK national forces, mobile industry and the governments in the UK, EU and beyond. The adoption of and collaboration across neighbour countries on this initiative strengthen the fundamental objectives of setting up an IMEI database.

MOBILE SECURITY – IMEI

Immobilise Registration Website

www.immobilise.com
Website for registration
of Mobile phones by users

Source: www.micaf.co.uk

Information on Handset Sales in Black Market
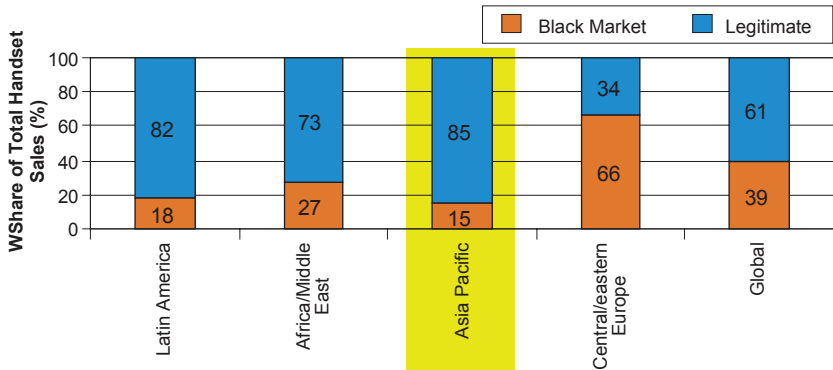
Industry Proposals on Way Forward

- 50 markets analysed in 4 regions
- 39% of all handsets sold in those markets in 2004 were via the black market
- Russia is highest with 90% black market sales
- Ukraine second with 85% of handsets sold in black market

Share of Black Market in Total Handset Sales

Region	Black Market	Legitimate
Latin America	18	82
Africa/Middle East	27	73
Asia Pacific	15	85
Central/eastern Europe	66	34
Global	39	61

Source: www.micaf.co.uk

In summary, through pro-active local and global partnership approach, national awareness campaigns, national focus versus global responsibility and MICAF crime reduction charter affirm the serious efforts by the UK authorities to combat this social phenomena of handset or device theft.

2. Malaysia's Preparations towards Curbing Handset Theft

The Government is working to establish a nationwide blocking service for lost or stolen mobile phones. In this respect, the Ministry of Information Communication and Culture (KPKK) and the Malaysian Communications and Multimedia Commission (SKMM) are looking at collaborative initiatives with mobile service providers, the Malaysian Royal Police, Federation of Malaysian Consumers Association (FOMCA) and Malaysian Crime Prevention Foundation.

The national database will maintain and operate the missing or stolen mobile phone IMEI in Malaysia. Clear objectives and processes need to be setup for registration, which could be in a number of different ways to not only facilitate registration, but also to enable other entities such as insurance companies to use this facility as reliable check.

General Functions of the System

Whilst the specific system for Malaysia and procedures are being worked out, the overall approach to an IMEI registration and subsequent action would likely require customers who have lost their mobile phone to lodge a complaint with their respective service provider. The service providers will then deactivate the mobile phone based on the IMEI code. This information will be passed to the Malaysian IMEI database simultaneously by the service provider for reference by the other providers. The Malaysian database would also likely have a facility that notifies telcos in neighbouring countries as well. This prevention system ensures that the stolen mobile is unusable regardless of whether it is the latest model of phone, one with high credit facility, or with SIM card change.

National Database and Blocking Services

The benefits of establishing a national database and blocking services include:
- To reduce snatch thefts and mobile phone related robberies;
- To generate a sense of personal security for mobile phone users especially among children and the elderly; and
- To reduce government revenue leakage due to illegal mobile phones market.

Conclusion

In view of the spiraling rate of mobile phone thefts, the authorities as prior mentioned in Malaysia are in the midst of implementing necessary systems and procedures towards curbing re-sell of stolen or lost mobile phones. The central storage system proposed would facilitate management of the usage of IMEI.

In contrast to UK development in this area, Malaysia is still at a preparatory stage of establishing the national database system and blocking services for IMEI. At this juncture, it is therefore extremely important for consumer awareness and co-operation in order to enable the service to be introduced or offered nationwide. The objective of such a system is to provide recognition of valid devices; and specifically to curb stolen or lost mobile phones from being used on the network.

DEPLOYMENT OF CONVERGENCE SERVICES AND FMC INITIATIVES

Introduction

Consumers today want to be able to communicate effectively whether they are at home, at work, or traveling. They want their communications experience to fit their lifestyle and follow them regardless of their network connection or location. Convergence promises that ubiquitous environment where customers can enjoy rich content, use of robust applications and excellent communications services – anytime, anywhere, and on any device, at affordable prices.

The industry landscape is changing towards this scenario, on progressive basis. Today we see the beginnings of the telecommunications industry going beyond traditional boundaries of products and services such as mobile TV; the broadcast industry "seeping" into telecommunications such as video streaming or mobile TV; and the Internet or data services support towards such ends. All these converging services are able to be delivered seamlessly to the end-users and exemplifies the ongoing unification of the technologies of fixed and mobile networks.

Cellular hardware vendors are aggressively shipping dual-mode handsets, and ABI Research predicts the market to reach 100 million handsets annually by 2009. This strong growth of portable connectivity applications resulted in high shipments for Wi-Fi chipsets. Market today is shipping Wi-Fi chipsets into dual-mode cellular/Wi-Fi handsets, estimating 20% of all chipset shipments by 2009 from 3% in 2006.

Fixed Mobile Convergence

The technology of Fixed-Mobile Convergence (FMC) is how wireless technology should integrate with wireline technology. In addition, it is also about convergence between the media, data communications, and telecommunications industries. FMC harnesses the power of converging all networks over an Internet Protocol (IP) platform, providing users with feature-rich communications from any broadband connection worldwide. This is another perspective of the progress towards converged services deployment.

A few countries implementing FMC expects to generate economic benefits in terms of migrating to a single IP network. Ovum[8] indicates that these developed countries implemented four stages for FMC development which is price bundling, service and device convergence and ultimately network convergence.

Four Stages – FMC Development		
Stage 1	Price bundling	Price bundling of fixed and mobile services. Bundles are delivered to customers at discounts, often via a single bill. The services and the networks which provide them remain separate.
Stage 2	Service convergence	Service convergence in which a few common services are offered over both fixed and mobile networks. For example, a single voice mailbox or linked email.
Stage 3	Device convergence	Device convergence in which a common device offers both fixed and mobile network access with seamless handover.
Stage 4	Network convergence	Network convergence in which fixed and mobile services run over a common IP transport network and use a common platform for service creation and control – the IMS.

Source: "Review of the Regulatory Framework for Fixed-Mobile Convergence in Hong Kong – The Consultancy Report" by Ovum Limited, 28 April 2006

The study concluded that stage four of FMC is part of a general move to next generation IP networks; expecting this form of FMC to develop at the same rate as the roll out of Next Generation Networks (NGNs). Implementing mobile as well as fixed network services over the NGN significantly strengthens the case for NGN investments and the benefits which these investments generate, since the common costs of the NGN are then shared over a much wider set of services than if the NGN offers fixed services alone.

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[8] Consultancy report by OVUM dated 28 April 2006

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Generally, Italy, Denmark, US and UK are taking the lead in moving along the path of convergence services development. However, even in the leading countries demand for FMC is still uncertain. For example, BT Fusion, which was launched in 2005, is revamping their services to work on a radical new mobile strategy to target consumers after it did not generate real revenue from new mobile and convergence services.

FMC Development				
Country	**Price Bundling**	**Common Services**	**Converged Devices**	**Network Integration**
Hong Kong	Yes	Limited	No	No
Australia	Yes	Limited	No	No
Denmark	Yes	Yes	Trials	No
Italy	Yes	Yes	Trials	No
UK	No	Yes	Yes	No
Singapore	No	No	No	No
US	Yes	Yes	Trials	No

Source: Ovum

Network providers can provide these services to users irrespective of their location, access technology and terminal. Suffice to say that FMC is driven by end-user needs as well as the operational efficiencies created by network modernisation; unification of core networks; and multiple access synergies. Convergence services should be seamless to the end-user and must involve personalisation.

Convergence in Communications and Multimedia Industry in Malaysia

Ten years ago, Malaysia adopted a convergence regulation model for the communications and multimedia industry. This regulatory framework, encompassed in the Communications and Multimedia Act (CMA) 1998 introduced a new licensing regime to better regulate the industry towards convergence and facilitated the changing needs of licensing and developmental aspects of the industry. The robustness of the CMA is continuously tested in a converging environment which is increasingly more evident today. New services expected to enter the market include mobile Voice over Internet Protocol (mVoIP), FMC and Next Generation Networks (NGN) in full IP environment.

Malaysia, similar with a few European Union countries, has developed the current regulatory framework using the underlying principle that network operators should be regulated on a technology neutral basis. In contrast, Hong Kong fixed and mobile operators are operating under a regulatory asymmetries treatment. Under this regulatory, the fixed mobile interconnection charging, is reported to limit the deployment of FMC in Hong Kong.

Today, Malaysian operators are looking at strategies to leverage on FMC development, similar to countries in the Asia/Pacific region. The shift to FMC is expected to trigger restructuring and changes in the business models as well as network infrastructure of operators. Nevertheless, these changes are also expected to create new opportunities for fixed and mobile operators to compete or collaborate.

Technologies and products relating to FMC have progressed to the stage where initial deployments, either on a trial or commercial basis, will likely be offered soon. Telekom Malaysia Berhad (TM) has embarked on NGN architecture; further driving the industry and end-users take-up of services from an all-IP network. TM has collaborated with Ericsson in developing IMS applications by supplying the equipment, solution and support required to develop a live NGN and to establish a pool of local experts with IMS competence in Malaysia.

DEPLOYMENT OF CONVERGENCE SERVICES AND FMC INITIATIVES

TM's NGN Network

End-customers

Residential customers
- Integrated services (dual-play: fixed-mobile convergence; triple-play: digital home; quadruple-play: seamless service handover (voice and data) between fixed and mobility)
- Higher-speed broadband services

Enterprise customers
- Integrated services (dual-play: fixed-mobile convergence)
- Higher-speed data services (up to 1Gbps)

Industry

Cost and network-effective infrastructure
- Connecting high-speed network infrastructure (3G or HSDPA, WiMAX)
- Easily scalable
- Better end-to-end QoS

Source: TM's Broadband Initiatives – The Drivers and Challenges, Telekom Malaysia, 35th Meeting of APEC Telecommunications & Information Working Group (APEC Tel35) 22–27 April 2007, Quezon City, Philippines

Simplifying Services for End-User

Service providers need to explore beyond traditional boundaries and ensure subscribers' service needs are met. They need to integrate into the value chain a simplified source relationship with a single bill for simplicity of end-users.

Facilitating Successful Convergence Service	
Consolidation	All multimedia services become available via a single subscription – device and client. The end-user experiences reduced complexity and hassle when managing communications.
Simplification	The overall service is simplified with a consistent look and feel, single address book and Web-based provisioning. The end-user finds the overall service more usable.
Enrichment	The entire service set enriched with presence, personalisation and network-based content.

Source: "Fixed-Mobile Convergence: Understanding the Marriage of Wireless and Wireline Technologies" by 3G Americas, July 2007

Network convergence facilitates an environment in which voice, data and media are harmonised and efficiently delivered across an all IP-based architecture; it aims to transform the service provider business model from one that is focused on delivering connectivity to one that focuses on delivering services that generate increased revenues, reduce churn, and increase savings through cost efficiencies.

Harmonising Service Providers in Converging Environment
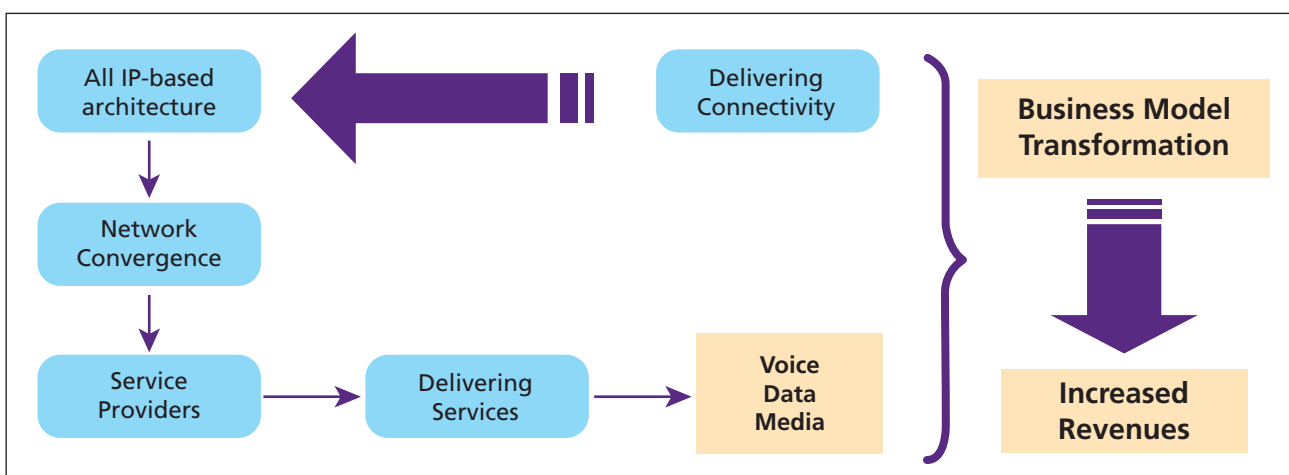
Source: "Fixed-Mobile Convergence: Understanding the Marriage of Wireless and Wireline Technologies" by 3G Americas, July 2007

Deployment of Convergence Services and FMC Initiatives

Operators Working towards Convergence

Convergence is required to enable the new personalised model, but it also brings into focus the need to minimise operating costs and to provide cost-effective migration to an all-IP network. From an operator's perspective, the network convergence goal is to migrate today's separate circuit and packet switch core networks to a unified core network that supports existing access technologies in both fixed and mobile domains.

This evolution will obviously take some time to complete, but will be key to an operator's ability to reduce OPEX in the long term and increase competitiveness and profitability. The solution must support the introduction of IP-centric multimedia services that can be delivered to a variety of terminals. Delivery must be cost-effective and employ complementary access technologies. It must also allow traditional services and applications to be retained.

One example of a service provider rationalising the IP network convergence is BT's 21CN. It delivers the newest communications services – from high-speed broadband to mobility solutions. Services based on the convergence of voice, mobility, video, data and content are now being developed and launched. These include, for example, BT Vision, the next generation television service. It puts the viewer in control by combining the appeal of TV with the interactivity of broadband. BT Fusion is the mobile phone service. It switches to a broadband landline when the user arrives home or, for business users, at the office. In the 21CN world, end-users will be able to access voice messages, data or video at any time on any device, sharing personal contact directory across home phone, PC, mobile and PDA. Bandwidth will no longer be a consideration for most end-users as additional bandwidth can be requested as and when required.

Steps for Migration to IP Network for Service Providers

Step 1 – Service providers may consider bundling and business integration before true technology convergence.

This all depends on the provider's ability to move, and desire to exploit the technology and work in partnership with its suppliers.

Step 2 – Optimise the circuit-switched core network in order to improve the delivery of regular voice services.

Step 3 – Operator's architecture – IP network convergence. This, in effect, is the unifying of service and network islands into an end-to-end IP network targeting cost efficiency and enabling new service delivery. Enhance the packet core network in order to enable the ability to rapidly deploy new value-added IP multimedia services in the most cost-effective manner.

A key feature of this strategy is the use of common components and service specific extensions that reduce the cost of service development and implementation. This is best achieved using IMS as the service delivery engine within the unified core network.

Step 4 – Once networks are unified by IP, true service convergence becomes realistic and convergence reaches its full financial potential for operators.

Source: "Fixed-Mobile Convergence – Understanding the Marriage of Wireless and Wireline Technologies" by 3G Americas, July 2007

Deployment of Convergence Services and FMC Initiatives

Key Technology Enablers

FMC will require the introduction and integration of a variety of key technology enablers, which include Session Initiation Protocol (SIP), Voice over Internet Protocol (VoIP), IP Multimedia Subsystem (IMS), Unlicensed Mobile Access (UMA), Fixed & Wireless Broadband, LTE and WiMAX and UMTS/HSPA. As these technology enablers are deployed, the full benefit of convergence can be leveraged. Many of the technologies rely on standards to create the common framework required for ubiquitous interoperable deployments.

Technology	Description
SIP based architecture	SIP is a critically important application layer protocol for communication networks and services. SIP was originally defined by IETF and then adopted for mobile networks by 3GPP and 3GPP2. SIP is a peer-to-peer signaling protocol; it initiates, terminates, and modifies sessions. A session can be a two-way voice communication, a multimedia (text, audio, or video) conference collaboration, instant messaging, application sharing, or one of many other contemplated services. SIP does not provide a full vertical solution, but relies on other protocols for transport, QoS or accounting. IMS supports SIP clients (3GPP and IETF) and can be connected to any compliant device: mobile terminals, wireline PCs or WLAN devices. SIP and IMS enable the creation of converged, unified communication domains using any fixed or mobile packet access network. SIP can also reside as a client on an access node such as a DSLAM or on a terminal device such as an IMS Residential Gateway (i.e., an adaptor between terminals and IMS).
VoIP	VoIP technology enables service providers to support voice services on an IP network as opposed to the traditional method of sending voice over a circuit-based network. This technology also enables a whole new set of features associated with the voice services that can be provided at very low cost such as call control portals, contact list management tools, and innovative conferencing tools to name a few. VoIP has recently seen significant adoption in wired enterprise applications. As enterprises realise the cost efficiencies inherent in VoIP and replace legacy infrastructure with IP-based infrastructure, they will inherently look to mobilise and converge that experience. Taking VoIP mobile in the enterprise with in-building Wi-Fi and embedded VoIP clients on mobile handsets (e.g. Avaya and Cisco VoIP clients) will create a disruption for operators – one parallel to, but less controlled than, UMA.
IMS	IMS is a key component of multi-service layered architecture. IMS is a subsystem supporting multimedia sessions, standardised by 3GPP and using the SIP from IETF. IMS is a common foundation for fixed, mobile, and enterprise services, delivering services over multiple accesses such as UMTS/HSPA, GSM, CDMA2000, fixed broadband and WLAN. Thus, IMS is a cornerstone in a converged solution. IMS plays a crucial role in convergence, and with the use of SIP, allows the introduction of IP services, including VoIP, video sharing and other multimedia services. It can also provide the same supplementary services for VoIP calls as we have today for circuit-switched calls, by connection to a telephony application server (TAS) or functionality from an IP PBX or IP Centrex. For fixed operators, the IMS solution compares very favorably against the replacement of fixed switches with a softswitch that may only replicate existing services. IMS is designed to provide a number of key functionalities required to enable new IP services via fixed or mobile networks. This new realm of IP services must take into account the complexity of multimedia, the constraints of the underlying network, managing mobility, and managing the multitude of emerging applications. Although 3GPP IMS was initially focusing on mobile networks, it has now become the common IMS development SDO for fixed networks as well (e.g., CableLab, TISPAN, ATIS, 3GPP2). As such, IMS can also be used to provide services for the fixed or mobile network at the same time, providing a unique mixture of services with transparency to the end-user.

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Technology	Description
UMA	UMA was initially developed by an industry group consisting mainly of operators searching for new ways to expand and improve mobile access consistent with the stated advantages of convergence service offerings in leveraging wired/WLAN access in-building to save cost and reduce churn.
	The initial activity was centered on North American wireless operators eager for a cost-effective solution for serving residential areas. There was a great desire in this early work to develop a solution that would be cost-effective and would not have to rely on waiting for a full QoS based VoIP solution to be widely available throughout the industry. The solution was to "tunnel" GSM voice over a broadband connection using either Bluetooth or Wi-Fi as the access interface.
	UMA is now part of the 3GPP standardisation efforts. The objective of UMA is to provide a solution to promote seamless service for a positive end-user experience. UMA is effective in enabling operators to take the first steps towards using IP connectivity in a mobile terminal.
Fixed and Wireless Broadband	These broadband access networks all leverage on IP technology. A wide variety of applications and services can be offered agnostic to the specifics of the access network, supporting Fixed-Mobile convergence. Wireline broadband networks typically utilise either DSL, PON or Cable based technologies.
	DSL is commonly deployed over existing copper loops in place to support wireline POTS service. DSL technologies such as ADSL2+ and VDSL can provide from 8Mbps to over 30Mbps for loop lengths less than 2.5Km (shorter loops are required to support the higher data rates within the range).
	PON technologies such as BPON and GPON extend fibre all the way out to the customer premise while using passive optical splitters to achieve cost-effective coverage to multiple subscribers in an area. Cable networks leverage a Hybrid Fiber Coax (HFC) access infrastructure that supports a high bandwidth analog or digital broadcast conduit to the premises.
LTE/WiMAX	In the wireless domain, standards work is proceeding to create a set of advanced OFDM-based wireless technologies such as LTE (3GPP), WiMAX (WiMAX Forum) and UMB (3GPP2). These new wireless access technologies are data-only consistent with the general industry movement to fixed and mobile converged services, and leverage OFDMA methods over the air to achieve improved performance and spectral efficiencies in both the downstream and upstream directions.
UMTS/HSPA	The traditional public wireless access network – with the deployment of GPRS and EDGE, followed by UMTS, HSPA and beyond, brings varying levels of capabilities and throughput. As the evolution proceeds, this allows new services to be delivered to mobile subscribers. Generally speaking, the higher the speeds and throughput, the better suited the network will be to deliver the real-time converged multimedia services that will drive new revenues in the network. Being able to combine voice, data, and video sessions simultaneously over the access network will also contribute to convergence of services.
	UMTS Release5 provides wireless operators and consumers with the improvements they need for offering higher speed wireless data services with vastly improved spectral efficiencies through the HSDPA (High Speed Downlink Packet Access) feature. In addition to HSDPA, UMTS Release5 introduces IMS architecture that promises to greatly enhance the end-user experience for integrated multimedia applications and offer mobile operators an efficient means for offering such services.

Source: "Fixed-Mobile Convergence: Understanding the Marriage of Wireless and Wireline Technologies" by 3G Americas, July 2007

DEPLOYMENT OF CONVERGENCE SERVICES AND FMC INITIATIVES

Standardisation

Amongst all the standard bodies responsible for Fixed-Mobile Convergence or Next Generation Networks (NGN), 3rd Generation Partnership Project (3GPP) is the one common theme adopted between various standard bodies, which defined IMS as a central part of the NGN architecture. There is no single standardisation body responsible for FMC and NGN. A large cross-section of the operator and vendor communities is active participants in many standardisation bodies including the main NGN standardisation bodies like ETSI/TISPAN, 3GPP, IETF, ITU, ATIS and OMA.

Today's industry FMC solutions are based mostly on the 3GPP IMS specifications and ETSI/TISPAN NGN specifications. Furthermore, 3GPP will develop the "common IMS specification". 3GPP is a collaboration agreement bringing together a number of telecommunications standards bodies (ARIB – Japan, CCSA – China, ETSI – Europe, ATIS – America, TTA – Korea, and TTC – Japan) to prepare specifications for a 3rd Generation Mobile System based on evolved GSM core networks and the radio access technologies that they support (i.e., Universal Terrestrial Radio Access (UTRA) both Frequency Division Duplex (FDD) and Time Division Duplex (TDD) modes, plus General Packet Radio Service (GPRS) and Enhanced Data rates for GSM Evolution (EDGE).

FMC Service Providers

Operator/Country	Service	Description	Benefits
Neuf Cegetal (France) – Has more than 1.4 million residential broadband customers – Launched in 2006 (Stage 3 under Ovum Consultancy Report)	TWIN	– Uses Nortel's industry-leading carrier VoIP and IMS-ready technology, which means that it can easily and cost-effectively add advanced multimedia services according to their business objectives. – Provides unified voice, messaging and multimedia communications services for use at home or for working remotely with high-speed broadband Internet connections. – Under Wi-Fi coverage the TWIN phone automatically connects to the Neuf box or Wi-Fi community access point and calls are made at the same price as calls from a landline phone. – launched TWIN TNT™ in March 2008, the first GSM/Wi-Fi mobile phone with a built-in DTT receiver.	– Enable subscribers to save between 10% and 30% on their mobile phone expenditure and also to benefit from a broadband Internet connection at up to 11Mbps. – Able to retain customers and reduce customer churn by allowing users to stay connected, regardless of device or location. It will also help increase enterprises productivity and customer service. – Users will also benefit from receiving one, convenient consolidated phone bill.
BT (UK) – Launched in 2005 – 45,000 customers (Stage 3 under Ovum Consultancy Report)	BT Fusion	– Convergence service that allows subscribers to make cheap or free calls via Wi-Fi into a BT broadband hub at home and then make calls via the Vodafone network or through BT's Wi-Fi hotspots when outside. – Three dual-mode phones, including the Motorola Razr, are Fusion-compatible. It was first marketed to home users and later to businesses.	– The Fusion service is available only to BT's broadband subscribers who have the Home Hub gateway. – The Fusion service costs between £19 (USD38) and £35 (USD69) per month, depending on how many low-rate voice minutes are included in the package. – Cost of the BT broadband connection is extra.

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Operator/Country	Service	Description	Benefits
TeliaSonera (Sweden, Denmark) – Launched in 2007 (Stage 2 under Ovum Consultancy Report)	HomeFree	– Border between fixed and mobile is erased – one telephone number wherever you are. – In the Telia Home Free service, the telephone functions as an ordinary wired phone in the home and subscribers can keep their current fixed line number. When a person leaves home, an ongoing call is switched automatically to the mobile network. – Customers can call at a lower rate at home and also use their phone as an ordinary mobile handset when they leave home.	– The more household members connected to Telia Home Free (up to five people), the greater the benefits – everyone in the family can answer their home phone number on their mobile, call each other at zero cost and also make simultaneous calls from home. – Calls to all fixed line numbers and Telia mobiles in Sweden cost SEK 0/minute when made from home. Calls to all Telia mobiles in Sweden, including the household's IP mobiles, cost SEK 0/minute with the Telia Mobile to Friends subscription. Calls answered on the fixed line number, outside the home, cost SEK 0/minute.
Singtel (Singapore) – Launched in 2007 (Stage 2 under Ovum Consultancy Report)	mio	– Integrating fixed line, mobile and broadband services, with unlimited local fixed line and mobile calls. – Also offers Wireless Internet Surf and Digital Home Connectivity for future services with an option to watch what you want, with own schedule, own mix of programmes and own true HD box for free.	– Bundles all 3 services at 1 great price, S$15.29 per month to enjoy more talktime or faster broadband speed. – Free VoiceMail (for first 3 months, S$2.14/month applies thereafter), Free Basic VAS Pack for first 3 months S$4.28/month applies thereafter) on mio Voice and FREE SingTel Mobile Value-Added Services: FREE Incoming Calls, FREE Caller-ID and/or FREE AutoRoam (Applicable for selected mio Plan)
Orange (France) – More than 140 subscriptions – Launched in 2006 (Stage 3 under Ovum Consultancy Report)	Unik	– Sold more than 250,000 dual-mode Unik Wi-Fi mobile phones. – The Orange home gateway, called Livebox, is hooked up to the carrier's DSL service. – Livebox provides Wi-Fi broadband connectivity in the home and routes mobile calls from dual mode GSM/Wi-Fi handsets over the fixed broadband connection. – Orange's Unik phones latch themselves automatically onto a wireless Wi-Fi network when in the vicinity of an emitting set-top box and fall back on the mobile network when outside the hotspot.	– Costs €10 per month (USD13.34) for unlimited calls from a dualmode mobile phone via the Livebox to French fixed-line numbers, or €22 per month (USD29.36) for unlimited calls to fixed lines and other Orange mobile subscribers.

Deployment of Convergence Services and FMC Initiatives

Operator/Country	Service	Description	Benefits
Telecom Italia (Italy) – Launched in 2007 (Stage 3 under Ovum Consultancy Report)	Unica	– Takes advantage of the carrier's synergies (i.e., owning both fixed-line and mobile operations). – Convenience of a single handset for use both in the home (Wi-Fi access) and while out and about (UMTS). – a single supplier for four services under one roof, namely fixed and mobile telephony, IPTV and Internet access.	– The service will be available to pre-paid only (a small minority in Italy) Telecom Italia Mobile customers that also subscribe to Telecom Italia fixed VoIP offer and Wi-Fi option, branded "Alice Mia Wi-Fi". – For an extra fee of €15 per month (plus €5/month for each additional handset), Unica's subscribers can use a dual-mode Wi-Fi/GSM UMA-based handset to call at discounted rates both indoor and outdoor. – A starter pack is available at €369, which include a Samsung SGH P200 UMA-handset and an ADSL2+ Wi-Fi router.

Note: FMC stage classification is based on the consultancy report by Ovum – Review of the Regulatory Framework for Fixed-Mobile Convergence in Hong Kong, as in page 17 of this report.

Source: Various websites
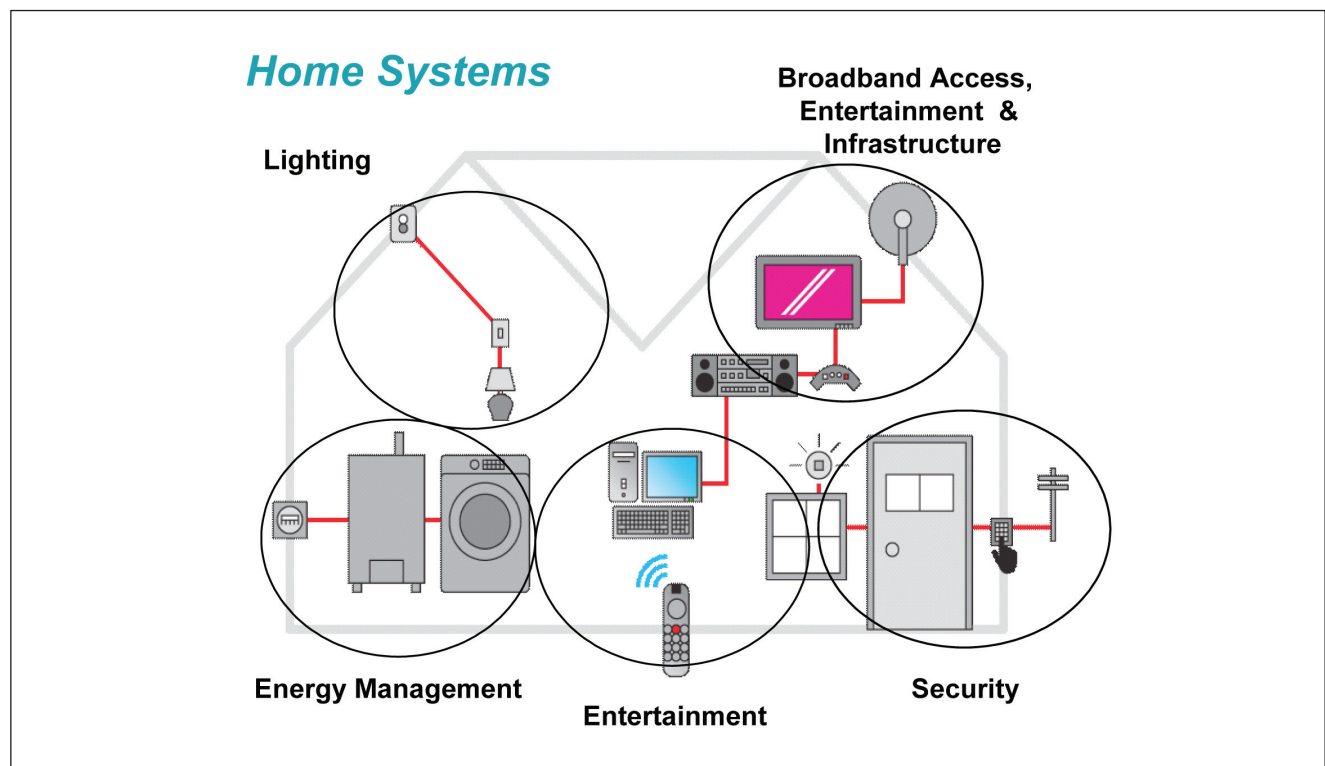
DIGITAL LIFESTYLE IN THE HOME

Introduction

Digital home, digital smarthome, home automation, intelligent home, whichever it may be or at what stage of development, one thing assured is that technology breakthrough and advancing capabilities are allowing homeowners to personalise their home in various ways via a home network. Drivers for this include digitisation and more pervasive broadband connections to the home.

Digital Lifestyle Applications			
DATA/VOICE		**MULTIMEDIA/ENTERTAINMENT**	
Broadband and Resource Sharing	Fixed to Mobile	User generated or personalised content	Gaming
PC LAN	Voice-over-LAN	Stored or streamed audio visual	On-demand contest
HOME/LIFESTYLE		**VALUE-ADDED SERVICES**	
Home controls	Energy management	Converged communications	Communities
Safety and Security	Remote applications	Installs and upgrade	Protection
Health and wellness		Break and fix	

Source: "Digital Lifestyles: 2007 Outlook" by Park Associates, 2007

The applications broadband access can support range widely today, though more commonly overseas than locally, to a home entertainment hub, provision of telephony such as seamless fixed to mobile communications through dual mode handsets; central control for lighting, air-conditioning, including energy management; and security measures such as close circuit TV for home monitoring and surveillance. All these are realistic possibilities and new business prospects in for home systems as they become further simplified by the increasing digitisation of content and applications through eventually Internet Protocol (IP)-based delivery systems.

Various Controls of the Residence Systems

*Source: "Home Controls: Trends and Opportunities" by Parks Associates*

DIGITAL LIFESTYLE IN THE HOME

Broadband Drives Digital Home Setup

With the increased of broadband connections worldwide, especially in the high broadband penetration rates areas in developed countries such as South Korea, Australia, Japan and the US facilitates the availability of higher bandwidth applications and a wider range of digital media content for entertainment, telephony, and online services through both fixed and wireless modes. For example, broadband access is facilitating a range of video service providers who are traditional broadcasters going into building presence in the broadband market through a hybrid TV and broadband operator mixed business model such as BSkyB in UK acquiring a broadband operator to add Video-on-Demand (VoD) to its UK satellite TV service.

Yet others such as BT Vision use UK's FTA Freeview digital terrestrial TV system for broadcast and digital subscriber line for VoD. Tiscali TV in the UK uses broadband to provide both broadcast TV and VoD. Consumer electronics (CE) providers allow consumers to take control of their TV viewing, including video download over broadband. For example, TiVo is sold independently of broadband operators and Sling Media's Sling Catcher which allows users to watch video content stored on their PCs on a TV.

Likewise, in Malaysia, RTM introduced its website to enable viewers or listeners to tune to its TV and Radio stations via the Internet. Also, RTM Digital Terrestrial Television Broadcasting (DTTB) trial includes a pilot coverage to eventually offer viewers new experiences in interactive programming with multi-channel broadcasts in fully digitalised transmission, with improved picture and sound quality. Value-added services such as Electronic Programme Guides (EPG) and data casting are expected to enhance viewing experience. The commercial free-to-air broadcaster, Media Prima, introduced gua.com.my – an online entertainment portal.
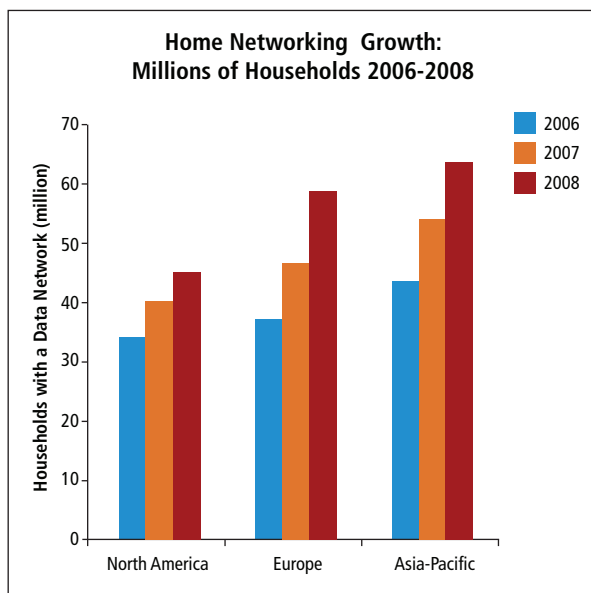
Source: "Europe: Home Network Update" by Parks Associates, 2008
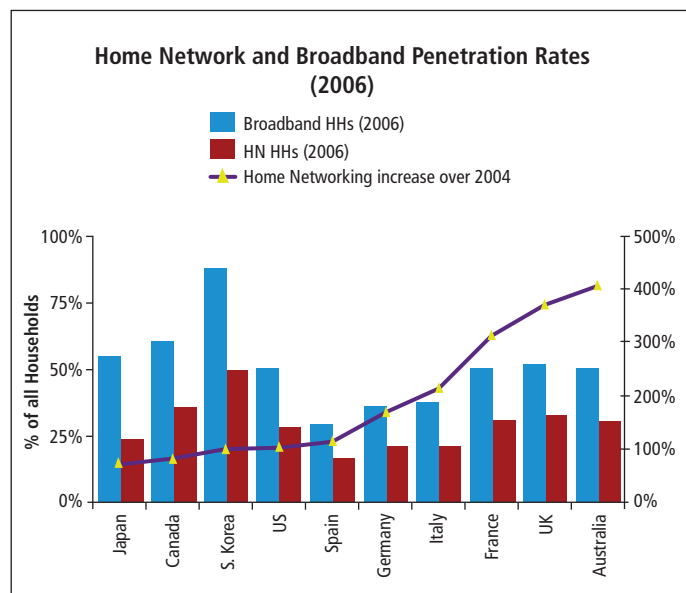
Source: "Global Digital Living I & II" by Parks Associates, 2007

Parks Associates Report in 2008 shows a worldwide uptrend of households with data networking solutions, or home networks; totaling 114 million homes at end 2006 and growing to more than 160 million in 2012. Europe's share is the fastest growing compared to North America's and Asia-Pacific's due to home networks provided or deployed by broadband and triple-play service providers. Home network and broadband connections are becoming common pair in South Korea as well.

DIGITAL LIFESTYLE IN THE HOME

Progressive collaboration of key industry players to achieve cross industry standards and specifications is allowing disparate devices such as PC and CE, to interoperate. All this to cater to consumer desires, demand for broadband access and broadband content and applications, including a home network while generating new revenue sources or enhancing existing ones for operators. High-speed Internet access to the home is available mostly via DSL (Digital Subscriber Line). There is also cable option though not in Malaysia, and fibre, including emerging cellular modes such as 3G/HSDPA.

Major Broadband Access Types (by subscribers) – Q4 2007			
Access Type	**Asia Subscribers (million)**	**World Subscribers (million)**	**Broadband Access Type Market Share for Asia (%)**
DSL	86.3	228.0	37.9
Cable modem	11.7	76.8	15.2
FTTx	31.6	37.8	83.6
Total	129.6	342.6	37.8

Source: Point Topic, 2008

Digital Home Architecture and Supplier Ecosystem

To put it simply, the digital home architecture provides seamless connections for selected applications on devices such as several PC, PDA, and remote control to talk to each other. For this purpose, there are wireless standards such as 802.11 b/g Wi-Fi connections facilitating such home wireless setup. A digital home can be connected or networked using wired option, wireless or a combination of both wired and wireless, for example, Insteon in US on mesh network. Each Insteon device acts as a repeater to strengthen signal. It also contains error detection, for example, lights switched on accidentally will virtually not happen.

Wired	Wireless		Both Wired and Wireless
	Radio frequency	**Infrared**	
Optical fibre	Wi-Fi	Consumer_IR	Eg, Insteon – use of new technology standard for home automation networking: a cost-effective dual-band mesh topology uses ac-power lines & radio-frequency (RF) for control and sensing home applications.
xDSL	GPRS and UMTS		
Cable (coaxial and twisted pair)	Bluetooth		
powerline	DECT		
Cresnet	ZigBee		
	Z-Wave		

Source: Wikipedia website

DIGITAL LIFESTYLE IN THE HOME

System Architecture of Home Control/ Monitor Service
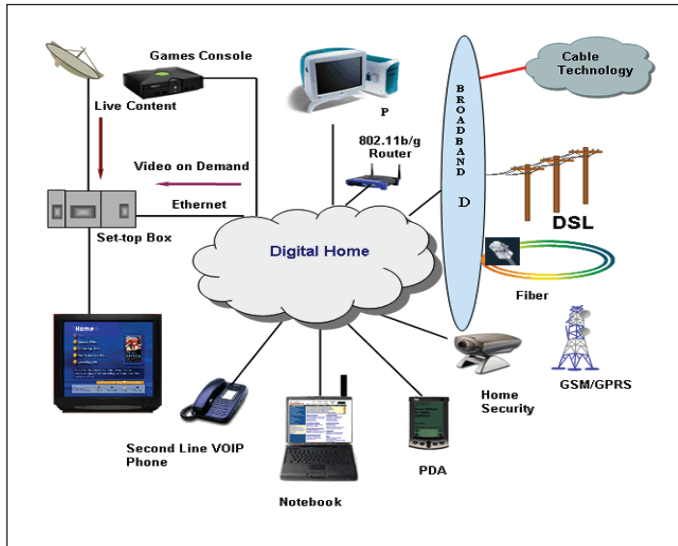
Source: Home Toys eMagazine Website

Ecosystem Facilitating Digital Home
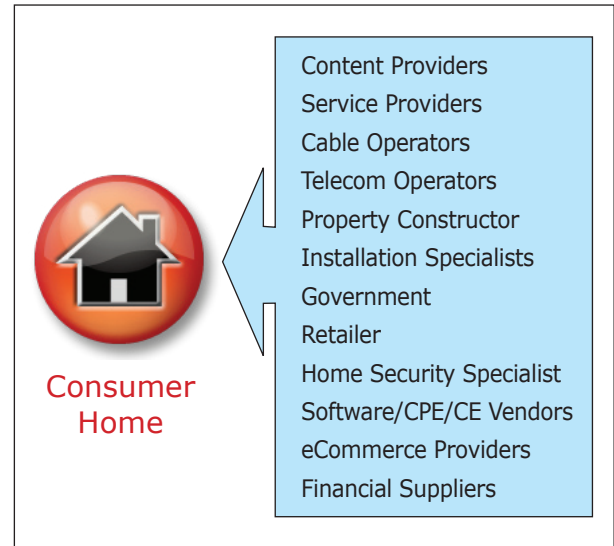
Source: Ovum

Types of Architecture for Digital Home

Essentially, home networks should allow for upgrade as technology advances. Industry observers cite three types of architecture for a digital home as follows:

1. Centralised architecture which has central control receiving information from multiple sensors and, once processed, generates the timely order for actuators such as lights for example, to switch on or off.

2. Distributed architecture which has the intelligence of the system distributed by all the modules that are sensors or actuators. Usually it is typical of the systems of wiring in bus.

3. Mixed architecture is a system with decentralised architecture where several small devices are able to receive and process information from multiple sensors and transmit them to the rest of devices distributed in the house.

Elements of Home Automation Systems			
Sensors	**Actuators**		**Controllers**
• Room occupancy	• Lights	• Door locks	
• Thermostat	• Heating	• Ventilation	• Central server
• Door state sensors	• Water pumps		

Source: Wikipedia website

Fundamental Components of Digital Home

Different countries are at different stages of development in home networking systems, but several common components and approaches are evident. For example, the US perspective[9] has three key requirements for creating smart home for mass market such as:

1. Support for multiple communications channels;
2. Simplicity – in installations, use, scalability and replacement; and
3. Open architecture for both products and services.

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[9] *"Digital Home 2008" by Park Associates website*

DIGITAL LIFESTYLE IN THE HOME

Australia reports view[10] the fundamental components of a well-designed digital home as:
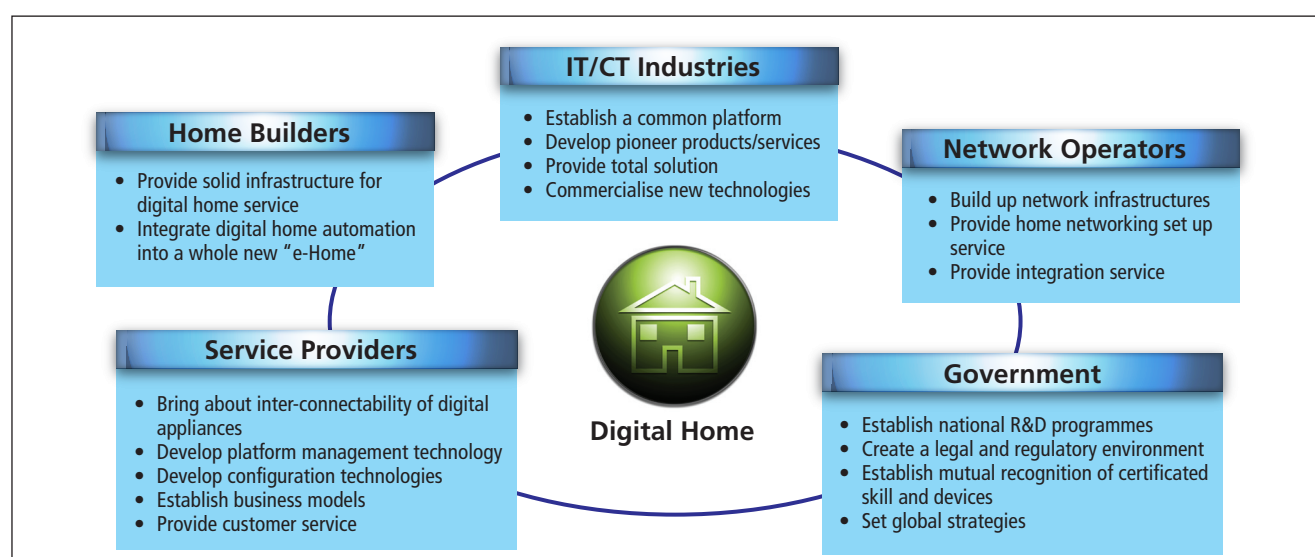
- Control system hardware
- Programming
- Interfaces (multi-function switch plates or touch screens)
- Devices and systems to be controlled
- Cabling infrastructure (inter-connecting cables or wireless links)
- High-speed Internet connection
- Emergency backup power source for the control system
- Essential home electrical systems

Others in industry working groups look to an ideal framework for digital home ecosystem through discussion and collaboration among all stakeholders concerned, including the government.

Ideal Framework for Digital Home Ecosystem

IT/CT Industries
- Establish a common platform
- Develop pioneer products/services
- Provide total solution
- Commercialise new technologies

Home Builders
- Provide solid infrastructure for digital home service
- Integrate digital home automation into a whole new "e-Home"

Network Operators
- Build up network infrastructures
- Provide home networking set up service
- Provide integration service

Service Providers
- Bring about inter-connectability of digital appliances
- Develop platform management technology
- Develop configuration technologies
- Establish business models
- Provide customer service

Digital Home

Government
- Establish national R&D programmes
- Create a legal and regulatory environment
- Establish mutual recognition of certificated skill and devices
- Set global strategies

Source: Adapted from "Digital Home Issue Group Activity Report", published to www.gbd-e.org

The Challenges at Hand

To date, issues at hand in regard to home networks are related to service, device, user, network and regulation.

Issues Involved in Digital Home

Service	Device	User	Network	Regulation
– User Requirement	– Interoperability	– Pricing	– Security	– Privacy
– Business model	– Extendibility	– Security	– IP Addressing	– Security
– Storage and Backup	– Inter-Connectability	– Service Quality	– Quality-of-Service	– Technician Licensure
– Service Scenario	– Installation	– Ease-of-Use	– Home networking	– Operation Licensure
– Customer Service	– Ease-of-Use	– Customer Care	– Network Convergence	
– Configuration	– Maintenance		– Control Software	
– Installation			– Bandwidth Requirement	
– Maintenance				
– Security				
– Payment				

Source: Digital Home Issue Group Activity, GBDe website

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[10] *Report by AVD Australia Pty Ltd & Project Connection Australia Pty Ltd*

DIGITAL LIFESTYLE IN THE HOME

With the availability of Consumer Electronics (CE) and technology in today's environment, it is up to the key industry players to adopt a stance for interoperable solutions for digital devices with the ability to interact with the user and the environment in order to embrace consumer demand. Industry analysts see digital lifestyle markets are mostly influenced by business, consumer trends and advancing technology[11]. Today, there are calls for solutions that recommend multiple energy management, additional security, and that can upgrade the way we live, work and play. This impact implies our desire for improvement in terms of convenience, safety, and quality of life. Considering this, the digital home evolution is likely to go beyond what we already have today and eventually into an intelligent network orientation.

In efforts to tackle issues and ease the change towards intelligent networks of the future in the home, the US has gone as far as recognising the need and demand in building the workforce to service the various aspects of digital lifestyle applications or the digital home effectively.

Besides the traditional training approaches such as live presentations and road shows, alternatively, they have online training and live workshops and the introduction of technical school, which certify residential technology installation. There is also training in a classroom setting with lectures and hands-on labs[12], which facilitates to provide skilled and competent technicians for this emerging market. Such certification serves well in a highly competitive industry, endorsing a common one-stop reference on competency for key leaders in this market namely contractors, home technologies and home owners as well.

Key Initiatives for Certification in Residential Technology Installation Industry, US

Certification	Functions
Cedia	Focuses on planning and installation of residential electronic systems
Comptia	Promotes industry standards, professional expertise, skills education, and relevant business solutions to IT industry
ESPA	Delivers high-quality education and credible certification products

Source: The Workforce to Service the Digital Home, Park Associates website

Case Studies in Overseas Benchmarks

1. Australia

The digital home market in Australia as stated in The Connected Home 2007 website indicates 2% of Australian homes have fully-integrated home automation system. Its main features are smart lighting and central control of doors and curtains, accelerated through brand awareness. The emerging technology of digital home, however, is still at an early stage. In Australia as well, such take up is driven by the adoption of broadband Internet as a one-stop reference source.

- **1/4** of Australian homes now have a plasma, LCD or projector TV. More than a third of homes has three TVs or more – low end CRT TVs cost less than AUS$100, and as the new big screens go in the old set is put in a bedroom or other rooms.

- Nearly **90%** of homes has at least one PC, and over **1/3** have a laptop as well. Fully **99%** of homes has a mobile phone, and **85%** has at least one digital camera. **1/4** has a DVD recorder. But home automation is yet to take off.

Source: Connected Home Australia 2007 website

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[11] "Digital Home 2008" by Park Associates website
[12] "The Workforce to Service the Digital Home" from Park Associates website

2. Japan

In Japan, fast-paced digital innovation of ubiquitous broadband Internet access is driving and shaping digital home enthusiasts. Accenture's recent survey on Digital Home Global Consumer in Japan shows the following responses:

- Majority of Japanese consumers believe that technology has made their lives much easier **(64%)** and more fun **(71%)**
- Majority of respondents are interested to pay for value-added services; product installation, technology support, back up data services, service to monitor PCs. **72%** of the respondents has interest to have the service to monitor home PCs on regular basis.

Source: Accenture Global Research website

Home Amenity Solutions in Japan

Field	Examples of Services
Housing	**Digital Apartments** – Control digital appliances such as washing machine, air conditioning and refrigerator **Life Net** – Control digital appliances with mobile phones
	Internet Stove – Users can prepare certain cuisine by downloading recipe onto digital devices **Cleaning Robots** – Equipped with infrared and Jairo sensors, cleaning robots are able to avoid obstacles and furniture
Security	**Mobile TV Intercom** – Enables users to answer the door and verify the identity of visitors with mobile phones
Medicare	**Medicare Hot Line** – Family members living apart can instantly check how elders are using stoves (with built-in wireless connection) from PC or mobile phones **Medicare Net** – Detects the elders' movements with built-in infrared sensors and sends quick messages to registered mobile phones
Health	**Net Pedometer** – Health management system can analyse data collected from pedometer and look for professional advice **Medi-Restroom** – Detects and collects biometric data, such as weight, body fat and protein while users are in restroom. The system can send the data to medical institutions and look for professional advice

Source: Digital Home Issue Group Activity Report

3. Taiwan

Overall, the awareness of digital home in Taiwan is high especially in Taipei and Kaohsiung. The demand of the digital home concept is popular among the younger generation with higher income who mostly resides in apartments. The simplicity of remote control and monitor, and easy management suits the owner of digital home in Taiwan market[13].

- Taiwan **(76.8%)** is among top five in Asia-Pacific countries with highest household penetration rates in 2007.

Source: Healthy demand for broadband, The Star online

The high broadband penetration drives the adoption of various services such as VoD, multiplayer online games, video-content sharing and social networking services such as Facebook and YouTube.
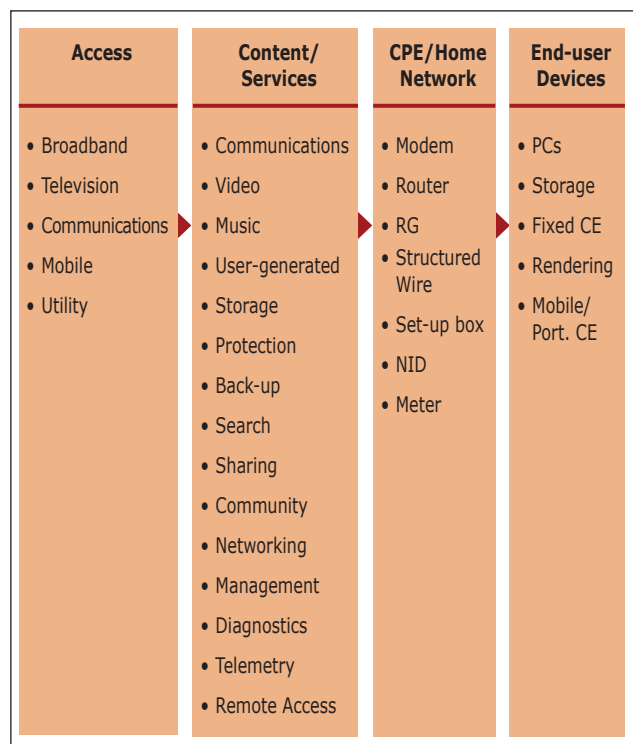

[13] *"Digital Home Issue Group Activity Report" by www.gbd-e.org*

4. US

PwC's Convergence Monitor 2007 anticipates that the US high-speed broadband penetration rate at 90% is an environment stimulating the users to getting more familiar with converging services and technologies offering rich content and applications. In the US, many digital home offerings come with service support providers that really assist to fine tune any problems encountered by customers.

The Digital Lifestyles Ecosystem: Critical Links in the Chain in the US

Access	Content/ Services	CPE/Home Network	End-user Devices
• Broadband	• Communications	• Modem	• PCs
• Television	• Video	• Router	• Storage
• Communications	• Music	• RG	• Fixed CE
• Mobile	• User-generated	• Structured Wire	• Rendering
• Utility	• Storage	• Set-up box	• Mobile/ Port. CE
	• Protection	• NID	
	• Back-up	• Meter	
	• Search		
	• Sharing		
	• Community		
	• Networking		
	• Management		
	• Diagnostics		
	• Telemetry		
	• Remote Access		

Source: "Trends in Consumer Technology: Defining and Sizing" by Park Associates, 2006

Residential Broadband Subscribers and Households with Data Networks (Millions of US Households/Residential Subscribers – 2006)
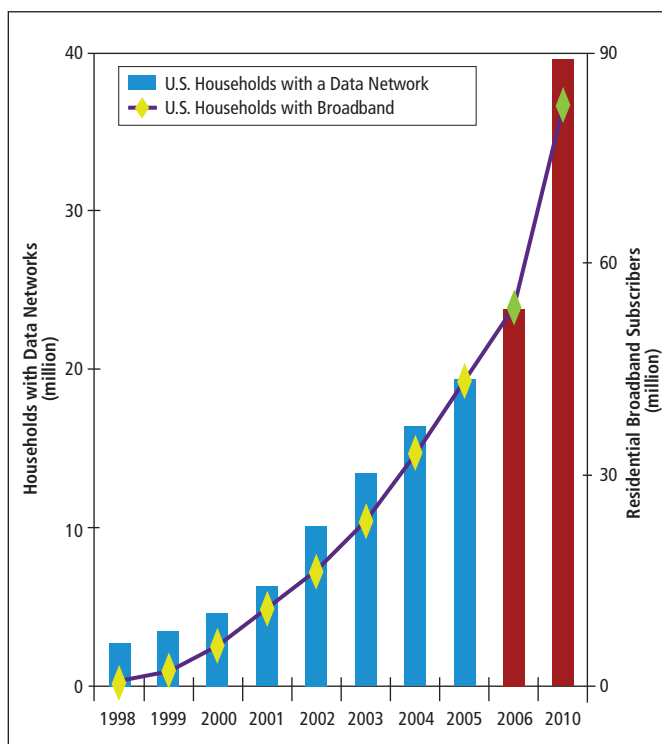
Source: "Trends in Consumer Technology: Defining and Sizing" by Park Associates, 2006

5. Malaysia

The digital home in its whole range of technological advancement is considered rather new in Malaysia. The simplest form may be in terms of wired broadband Internet connection, a home gateway and a router offering home wireless connections to various PCs and other devices is known in existence in the country. While many would think this is a novelty in Malaysia, there are still more who think such home connections are easy to set up – this mostly the early adopters or the avid engineer or IT student or households comprising a technology enthusiast, would have switched to such a digital home lifestyle.

However for the majority, there is still more awareness to gain. The digital home connection is seen as one of the uses for broadband connection take up. Over the last few years since broadband connections were introduced in Malaysia, there is a declining price trend for both broadband access itself and also devices connected to it, for example, the wireless broadband router available in Malaysia used to cost a notch higher then. More expensive ones now come with more functions and higher bandwidth offerings.

DIGITAL LIFESTYLE IN THE HOME

Examples – Types of Local Wireless Broadband Router Available in Malaysia

Product	Description	Price (RM)
D-LINK DGL-4300 108/54Mbps Gaming Router (4x Gigabit Ports)	• Optimised gaming experience with GameFuel Technology • 4x Gigabit Ethernet Ports • Wi-Fi Protected Access (WPA) and 128-bit Wired Equivalent Privacy (WEP) • Integrated Stateful Packet Inspection (SPI) firewall and Network Address Translation (NAT) firewall	655
LINKSYS WRT54GS Wireless-G Broadband Router with SpeedBooster	• Built-in 4-port full-duplex 10/100 Switch • Increases "real-world" wireless network performance up to 35% via SpeedBooster	230
NETGEAR WGR101 54Mbps Wireless Travel Router	• Switch to select between single and multi-user mode • Interoperable with both 802.11b and 802.11g devices • Speeds of up to 54 Mbps - Highest-level Wired Equivalent Privacy (WEP) encryption • Wi-Fi Protected Access Pre-Shared Key (WPA-PSK) upgradeable	320
3COM OfficeConnect 54Mbps Wireless Broadband Router+4port Switch	• 3CRWE554G72T • Up to 253 total user (128 wireless) • WDS Repeater / DDNS & URL Filtering • 256-bit WPA Encryption • UP Routing (RIP 1 & 2) / Static Routing	195

Note: The price shown is the lowest as quoted by retailers at end of July 2008
Source: http://www.hardwarezone.com.my

TMNet Streamyx packages			
Package	**Speed**	**Features**	**Monthly Charges**
Basic 44	512k/256k	*Dynamic IP *1 email	RM44 for 60 hours – additional usage 1sen/min *without modem
Basic 66			RM66 *without modem
Basic 77			RM77 *with modem
Basic 88	1.0M/384k		RM88 *without modem
Basic 99			RM99 *with modem

Combo package	Special Offerings	Other Features	Option on Voice Offerings
ADSL 384Kbps	Monthly subscription fee @ RM60 – Inclusive of fixed line rental	With Modem – Dynamic IP – 1 email account	Monthly subscription fee at RM28 – Unlimited local & STD call nationwide (F2F) – Call to any mobile number and other operators at RM0.25/min
ADSL 512kbps	Monthly subscription fee @ RM90 – Inclusive of fixed line rental		
ADSL 1Mbps	Monthly subscription fee @ RM110 – Inclusive of fixed line rental		
ADSL 2Mbps	Monthly subscription fee @ RM140 – Inclusive of fixed line rental		
ADSL 4Mbps	Monthly subscription fee @ RM160 – Inclusive of fixed line rental		

Source: TMNet Streamyx website

DIGITAL LIFESTYLE IN THE HOME

In respect of preparing Malaysians to experience digital living, there is an initiative involving the establishment of a Model Digital Home and Centre of Excellence for Digital Home at the Malaysian Multimedia University (MMU). Another objective of this is to encourage local research and development on digital home related products and technology.

Along with this effort, there was an Experiencing Convergence.MyBroadband Conference and Exhibition 2008 held from 28 to 30 October 2008 at Kuala Lumpur Convention Centre. This is jointly organised by the Ministry of Energy, Water and Communications (KTAK) and SKMM. The three-day exhibition is mainly to showcase participating companies' products and services to local and international audiences to enable them experiencing the latest communication and multimedia technology that can be available in Malaysia. Much effort has been made to increase broadband connections in Malaysia, especially as this is seen as one of the ICT enablers to socio-economic growth of the country to another level of achievement and also to ensure international competitiveness of the nation into the future.

Standards in Home Networks

In view of the inter-operability and integration required that provides mutual benefits for all stakeholders, including the consumer, there is extensive work done towards identifying issues and chart new ground in standards in home networks. Examples of such cross industry work are the working groups under the DLNA and Home Gateway Initiative.

DLNA (Digital Living Network Alliance)				
Objective	• International and cross-industry collaboration comprises consumer electronics (CE), computing industry and mobile device companies			
Purpose	• To establish a common set of industry design standard and interoperability guidelines among the industry players. Focuses on three key elements: – Industry collaboration (to develop entire ecosystem for digital interoperability) – Standards-based interoperability (to develop workable guidelines to substantiate platform between CE, PC and mobile devices) – Compelling products (to certify entity in DLNA, the product must comply DLNA Networked Device Interoperability Guidelines)			
Achievements	• June 2004: Establishment of the Home Networked device Interoperability • Guidelines • January 2005: Optional Media Format Addendum Guidelines released • March 2006: DLNA Networked Device Interoperability Guidelines expanded; • Adding significant functionality to DLNA network and allowing sharing of current DLNA products with mobile devices and printers • October 2006: Addressed Vital link protection issues, establishing secure streams for transmission of commercial copyright-protected content			
Members	• Access • Broadcom • DigiOn • IBM • Lenovo • Panasonic	• Nokia • Pioneer • Sony • AMDA • Cisco • HP	• Intel • LG Electronics • Microsoft • NXP • Samsung • Toshiba	• WOX • Comcast • Huawei • Kenwood • Macrovision • Motorola	• Philips • Sharp

Source: DLNA website

DIGITAL LIFESTYLE IN THE HOME

Home Gateway Initiative			
Objective	• Open international forum with the aim to release specifications of the home gateway among telcos		
Purpose	• To produce and downstream requirements for a residential gateway enabling end to end delivery of services • To work with manufacturers in order to leverage volume, to validate against uses cases and requirements and to ensure interoperability • To analyse gaps with respects to its requirements among existing bodies – DSL forum, OSGi Alliance, ITU H610		
Members	• 2 Wire, Inc • Alcatel-Lucent • Atheros Communication Inc • AVM • Belgacom • BeWAN • Broadcom • BT • Deutsche Telekom • DS2 • DSP Group • Echelon EMEA • Entropic Communications • Ericsson AB • Fastweb SpA • France Telecom	• Freescale • Gigle • Marvell Semiconductors • Huawei • In Access Networks • Infineon Technologies AG • Intel • Intellon • JDSU • Jungo Software • Technologies • KDDI R&D Laboratories • KPN • LG-Nortel Co Ltd • Linksys/Cisco • Microsoft	• Motorola • Netgear • NTT • Philips • Pirelli • Portugal Telecom Invocao • Sagem • Siemens • Sphairon Access System GmbH • Spidcom • Swisscom AG • Telecom Italia • Telefonia • Telekom Slovenije d.d • Teleckomunikacja ploska	• Telenor • TeliaSonera • Telkom ZA • Telstra • Texas Intrument • Thomson • Tilgin AB • TNO ICT • U4EA Technologies Ltd • Ubicom Inc • VTECH Telecommunication • Zarlink Semiconductor • ZTE • ZyXEL

Source: DLNA website

Conclusion

On average, the rapidly developing communications applications and services are expected to surely spark interest and take up not only amongst the technology-savvy but also among those in search of more convenient ways in everyday things. This is especially so as applicable devices becomes more affordable. Advancement in technology itself offers simpler and more user-friendly devices and systems that provide many benefits such as cost savings, convenience in speed, enhanced entertainment, and myriad communications applications and services offering new approaches to traditional ways of home living.

The forecast progressive uptake for digital lifestyle in Malaysia, indeed, is based on expected increase take up in broadband access, services and applications including higher penetration of wireless services among Malaysians, especially the younger generation.

Apart from preparations to take up the opportunities being offered in a digital lifestyle which Malaysians are expected to increasingly embrace, and the challenges at hand, key industry players need to work ahead strategically and focus on the notion of solutions metrics to turn problems into opportunities. Much innovation can be sought in eventually making the digital lifestyles market's offerings more compelling to attract more users. Albeit the digital living is nothing new in the overseas developed country market, Malaysia is still considered an infant compared to other Asia-Pacific countries. However, through strategic partnership among all stakeholders in the industry, the earnest movement will be in the right direction for this fast-growing market in spite of the expected twist and turns of the consumer market.

MOBILE LOCATION BASED SERVICES

Mobile Location Based Services (LBS) in Malaysia

Introduction

Location based service (LBS) is an application to provide information services about surrounding location of an individual. Since mobile phone and Internet have revolutionised communication and lifestyle of people, an increasing number of users is using mobile phones and personal digital assistants (PDA) to access Internet wherever and whenever they want to. With LBS embedded in their mobile phones and PDAs, better convenience would therefore be offered to end user.

Users can get information about the services and applications built around the user location. This means that any user subscribed to the location based service would be able to see information or advertisement specific to user location through their mobile network. The information and advertisements could be about the nearest Automated Teller Machine (ATM), sundry shops, malls, nearby restaurants and so on. For example, I may be at a shopping mall and I can use LBS to request for the types of public transport available around. Another example, may be that I am at a shopping mall and able to receive advertisement pop-ups on my mobile regarding the discount stores or sale items at that particular shopping mall.

Acquiring User Location through Different Technology

LBS uses different technologies to exploit or identify the location of a particular mobile user requesting for information.

Examples of Technologies on Identifying User Location	
Cell ID	Mapping is done through coordinates for a user estimated location through the GSM networks.
Global Positioning System (GPS)	This is intergrated in the mobile device. GPS uses network of 24 satellites to triangulate a receiver's position and provide latitude and longitude coordinates.
Assisted GPS (A-GPS)	A-GPS helps locate user location in areas for example heavy forest or urban canyons.

Source: Capitalising On The Location-Based Services Opportunity, Forum.Nokia.com

Mobile LBS

GPS is the most common technology used followed by A-GPS. These technologies are utilised in our mobile hand phones with LBS embedded in it as a service. The combination of both the services and technology makes it possible to point us to our exact location.

However, LBS alone is not enough as it could only point us to our nearest location via the nearby base station. Integration with Global Positioning System (GPS) technology for example, it would be able to point us to our exact location. This is through a chip which is embedded in advanced phones that communicate with a satellite.

MOBILE LOCATION BASED SERVICES

GPS Chipset Developers and Shipments

Among GPS chipset developers, the leading ones for handsets are Qualcomm, SiRF and Texas Instruments.

GPS Chipset Developers	
Broadcom	Qualcomm
CellGuide	SiRF
CSR	SkyTraq
eRide	STMicroelectronics
GloNav /NXP	Texas Instruments (TI)
MediaTek	u-blox
NemeriX	u-Nav/Atheros

Source :Berg Insight, GPS and Mobile Handsets, LBS Research Series 2008

Wireless Chipset Revenues by Company (2007)
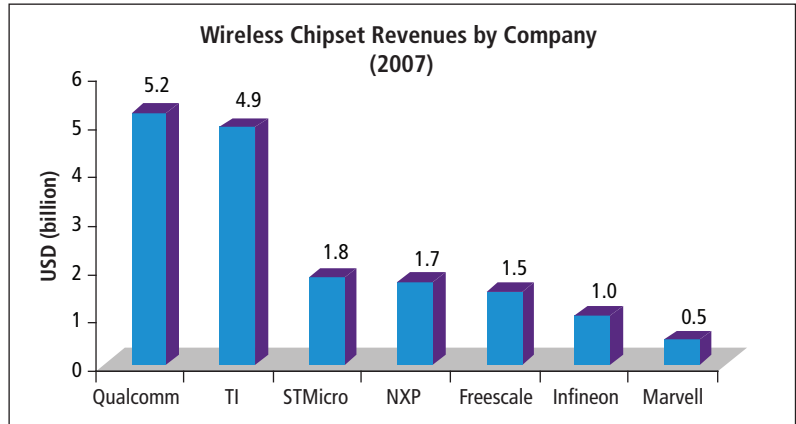
*Source: Berg Insight, GPS and Mobile Handsets, LBS Research Series 2008*

Global Handset Shipment by Leading Handset GPS Technology Developers as at January 2008
Qualcomm shipped over 300 million wireless chipset since 2001
SiRF shipped about 50 million SiRF GPS-based handsets
Texas Instruments shipped more than 30 million handsets with GPS receivers by end 2007

Source: Berg Insight, GPS and Mobile Handsets, LBS Research Series 2008

Mobile Location Based Services in North America, Europe and Asia
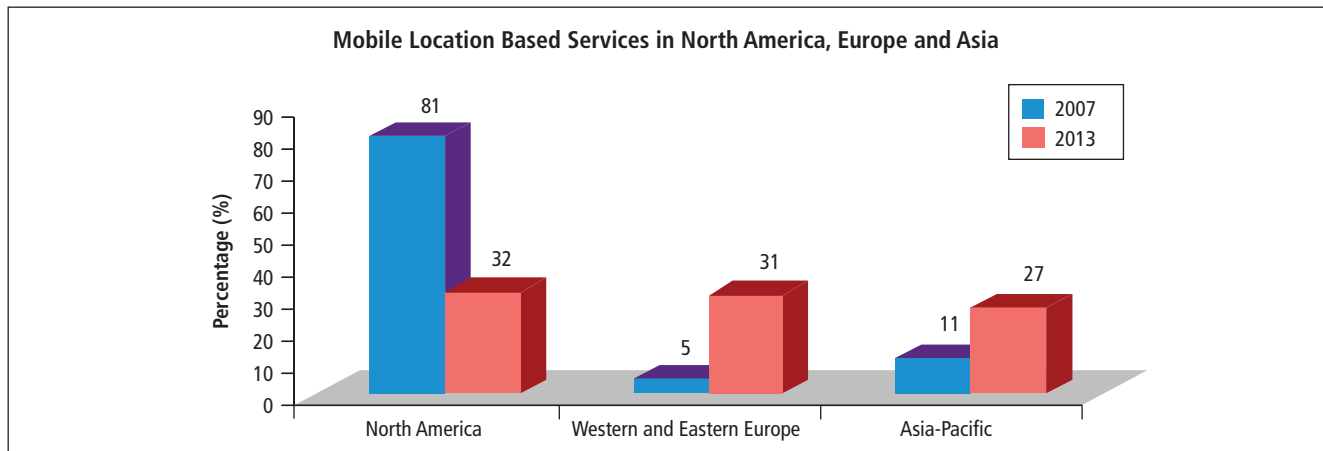
Source: ABI Research 2 July 2008

With more phones GPS enabled, the industry predicts more LBS arise in the future. ABI Research expects LBS growth in Asia Pacific to increase from a share of 11% in 2007 to 27% in 2013. This may be due to introduction of 3G services; and proliferation of GPS-enabled GSM handsets in Asia Pacific.

MOBILE LOCATION BASED SERVICES

Location Based Services in Malaysia

Both Geographic Information System (GIS) and Malaysian Geospatial Data Infrastructure (MyGDI) have been around in Malaysia for quite some time since December 2002. A few GIS are open for public access such as the Projek Lebuhraya Utara Selatan or PLUS GIS. PLUS GIS provides user with information about highway routes and others. MyGDI on the other hand has played a major role in spatial data distribution and sharing in Malaysia for years, but is currently not available for public access due to lack of customisation.

Types of Location Based Services in Malaysia
GIS is often associated with a map. It is capable of integrating, storing, editing, analysing, sharing, and displaying geographically referenced information. PLUS GIS provides user with information about highway routes and others. It is easy for PLUS to locate problem on the highway.

MyGDI is an initiative by the Government to develop a Geospatial Data Infrastructure to enhance the awareness about data availability and improve access to geospatial information by facilitating data sharing among participating agencies. Its major role is to bring national data provider agencies onto a single platform and by providing intelligent access to geospatial information through technology.

Source: Malaysian Centre for Geospatial Data Infrastructure

MyGDI Services
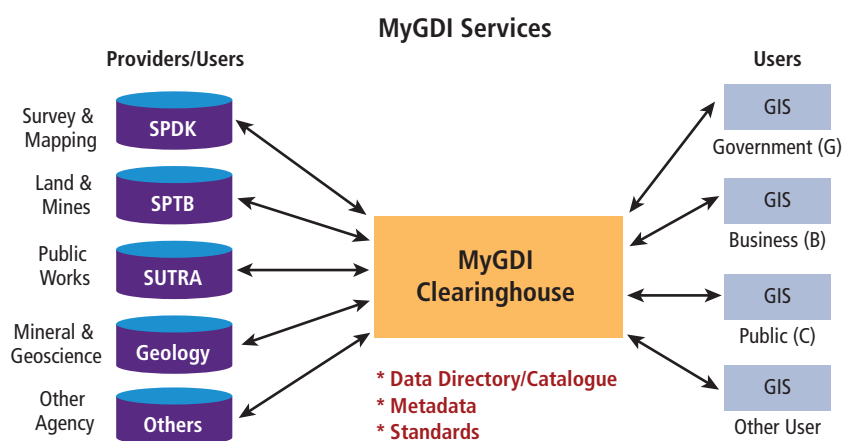
Telekom Malaysia launched the Automatic Vehicle Location service (TM AVL) in 2001, allowing users to monitor the location and status information of vehicles from remote locations through the Internet. TMAVL is a technology that allows the current position of moving vehicles or any mobile assets to be tracked using a combination of Global Positioning System (GPS), network communications and geo-spatial systems technology.

Source : Telekom Malaysia Annual Report

Friend Finder was introduced by DiGi to the public in 2004. DiGi categorised friend finder service into travel finder and travel buddy service which was targeted to travelers. With Location based friend finder service, subscribers can locate their friends and family members.

Source:http://www.location.net.in/magazine/2008/july-august/28_1.htm

Maxis Communications Berhad (Maxis) offered Friend Finder service in 2004. This allows users to locate friends, family, and colleagues and so on via short messaging system (SMS). Maxis has Traffic Check service that enables city motorists to check real time traffic conditions at selected locations via MMS.

In 2005, Cambridge Positioning System (CPS) in partnership with Maxis and JAS Mobile solutions, a mobile data provider, launched LBS on locating vehicle precision, workforce and asset tracking in Malaysia. In 2007, Yahoo in partnership with Maxis offered a suite of mobile programmes packaged in its Yahoo Go for Mobile software. The services offered in the package is oneSearch, which includes access to news, web images, financial information, weather conditions, Flickr, and web and mobile web sites as well as navigation services.

Source:http://www.location.net.in/magazine/2008/july-august/28_1.htm

A recent Government initiative is to install GPS system in express buses by end 2008. This enables respective bus companies to monitor the location of the buses from the office. This also enables the bus companies to record data about bus journeys. If the bus was involved in an accident, then it acts as a proof of incident.

Source: http://www.nst.com.my/Current_News/NST/Tuesday/National/2281848/Article/index_html

MOBILE LOCATION BASED SERVICES

Issues on LBS in Malaysia

The implementation of LBS is still at infancy stage in Malaysia. This is due to difficulty in data integration by a centralised system. For example, up until now, information on current traffic status and weather reports is available on the radio and television for the public. These are from two different sources. Further, the data is based on earlier summarised reports. City Hall of Kuala Lumpur (DBKL) has however taken initiatives to obtain real time data through its Integrated Transportation Information System (ITIS). Nevertheless, this is centred on traffic information only. Thus, there is also lack of more content and applications for LBS services.

The advent of the mobile phone, Internet technology and existence of advanced web technologies may provide a total solution whereby data from different systems can be integrated using web services over the Internet. This will allow users more convenience to gain access to a system that is integrated from different data sources at any point in time through their mobile phones.

Worldwide Location Based Services

Gartner forecasts worldwide LBS to grow by 170% based on subscribers and by 169% based on revenue due to several factors such as:

a. GPS enabled hand phones that add on to the current capabilities to get precise locations;
b. New service providers like Google and Nokia exploring geographic and positioning technologies; and
c. Different forces driving the technical developments and patterns of adoption.
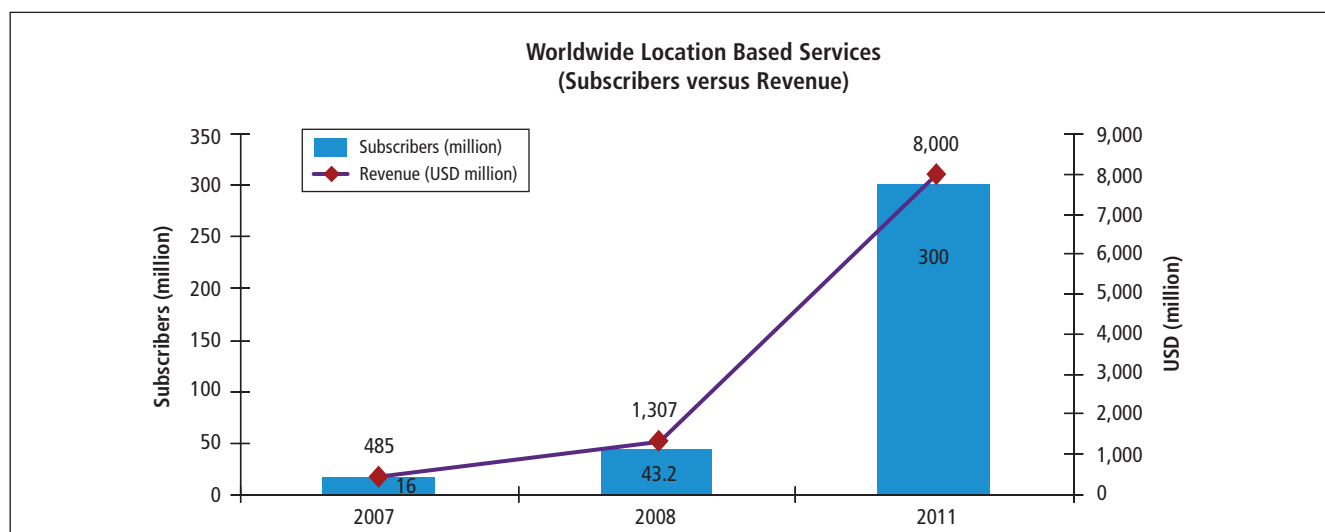
Source: "Location-Based Services Subscriber and Revenue Forecast" by Gartner, 2006-2011

The US Government imposes rule for mobile phones to be able to call an emergency number – enhanced 911 or E911 and this has stimulated the growth of accurate positioning facilities. Another example is in Europe whereby consumer driven demand and efforts by handset manufacturers and service operators have driven LBS growth in the country. The potential of this market is said to drive handset vendors, carriers and other service providers to compete with each other, including new entrants; and competitive pricing may increase uptake.

Conclusion

Increasing LBS take-up may be due to mass usage of mobile in Malaysia and the availability of LBS and GPS receiver in the mobile devices. The barriers of initial deployment of LBS on the move are being replaced by changing markets, technologies, government regulations and mostly growing consumer awareness.

GLOSSARY

ICT	Information and Communications Technology
3GPP	3rd Generation Partnership Project
3GPP2	3rd Generation Partnership Project 2
ADSL2+	Asymmetric Digital Subscriber Line
ATIS	Automatic Terminal Information Service
BPON	Broadband Passive Optical Network
CAGR	Compound Annual Growth Rate
CDMA	Code Division Multiple Access
DLNA	Digital Living Network Alliance
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DVD	Digital Versatile Disc
EDGE	Enhanced Data rates for GSM Evolution
EIR	Equipment Identity Register
ETSI	European Telecommunications Standards Institute
FMC	Fixed-Mobile Convergence
GPON	Gigabit Passive Optical Network
GPRS	General Packet Radio Service
GSM	Global System for Mobile
GSMA	Global System for Mobile Association
HFC	Hybrid Fiber Coax
HSDPA	High-Speed Downlink Packet Access
HSPA	High Speed Packet Access
IETF	Internet Engineering Task Force
IMEI	International Mobile Equipment Identity
IMS	IP Multimedia Subsystem
IP	Internet Protocol

IPTV	Internet Protocol Television
ITU	International Telecommunication Union
LBS	Location Based Services
LCD	Liquid-Crystal Display
Mbps	Megabit per second
MICAF	Mobile Industry Crime Action Forum
mVoIP	Mobile Voice over Internet Protocol
NFC	Near Field Communication
NGN	Next Generation Networking
NMPCU	National Mobile Phone Crime Unit
OFDM	Orthogonal Frequency-Division Multiplexing
OMA	Open Mobile Alliance
PBX	Private Branch Exchange
PON	Passive Optical Network
RTM	Radio Television Malaysia
SDO	Service Data Objects
SEIR	Shared Equipment Identity Register
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
TAS	Telephony Application Server
UGC	User Generated Content
UMA	Unlicensed Mobile Access
UMTS	Universal Mobile Telecommunications System
VDSL	Very High Speed DSL
VoD	Video-on-Demand
VoIP	Voice-over-Internet Protocol
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network

CONTACT US

HEAD OFFICE

Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission
Off Persiaran Multimedia
63000 Cyberjaya
Selangor, Malaysia
T: +60 3 86 88 80 00
F: +60 3 86 88 10 00
E: ccd@skmm.gov.my
W: www.skmm.gov.my
Freephone number: 1-800-888-030

REGIONAL OFFICES

NORTHERN REGIONAL OFFICE
Tingkat 1, Bangunan Tabung Haji
Jalan Bagan Luar
12000 Butterworth
Pulau Pinang
T: +60 4 32 382 28
F: +60 4 32 394 48

EASTERN REGIONAL OFFICE
B8004 Tingkat 1
Sri Kuantan Square
Jalan Telok Sisek
25200 Kuantan
Pahang
T: +60 9 51 21 100
F: +60 9 51 57 566

SOUTHERN REGIONAL OFFICE
Suite 7A, Level 7
Menara Ansar
Jalan Trus
80000 Johor Bahru
Johor
T: +60 7 22 66 700
F: +60 7 22 78 700

SABAH REGIONAL OFFICE
6-10-10, 10th Floor
No. 6, Menara MAA
Lorong Api-Api 1
Api Api Centre
88000 Kota Kinabalu
Sabah
T: +60 88 27 05 50
F: +60 88 25 32 05

SANDAKAN BRANCH OFFICE
Lot No. 7, Block 30
Bandar Indah Phase 6
Batu 4, Jalan Utara
90000 Sandakan
Sabah
T: +60 89 22 73 50
F: +60 89 22 73 52

SARAWAK REGIONAL OFFICE
Level 5 (North), Wisma STA
26, Jalan Datuk Abang Abdul Rahim
93450 Kuching
Sarawak
T: +60 82 33 19 00
F: +60 82 33 19 01

MIRI BRANCH OFFICE
Lot 1385, (1st Floor) Block 10
Centre Point Commercial Centre
Phase II
98000 Miri
Sarawak
T: +60 85 417 900/600
F: +60 85 417 400

CENTRAL REGIONAL OFFICE
Level 17, Wisma SunwayMas
1, Jalan Tengku Ampuan Zabedah C9/C
Section 9
40100 Shah Alam
Selangor
T: +60 3 55 18 77 01
F: +60 3 55 18 77 10

ENQUIRIES

For any details and enquiries please contact the Market Research team:

Yee Sye Chung (Head)
Fiona Lim Ai Suan
Sharmila Manoharan
Azrita Abdul Kadir
Nadzrah Mazuriah Mohamed
Siti Na'ilah Kamarudin
Nurul Izza Saaman
Ramziyah Mohamad
Nor Hayati Muhd Nor

E: mrd@skmm.gov.my