



Suruhanjaya Komunikasi dan Multimedia Malaysia
Malaysian Communications and Multimedia Commission

Brief Industry Trends Report

2H 2008



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FOREWORD

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

This report shows the performance of the C&M companies affected by the global financial crisis in terms of market capitalisation for the year 2008. The next section features Google's positioning into the mobile realm apart from being the preferred search engine by users, including its developments in the mobile platforms.

In the Bits and Bites, there are also highlights in the form of snapshots featuring key C&M trends that are expected to shape the industry in 2009 and beyond. Among these developments is web 2.0, mobile enterprise or enterprise 2.0, mobile advertisements, open source and open access, green technologies and the next generation network. All these are taking an increasingly prominent role in the new communications ecosystem. There is also a feature on mobile advertising, discussing the incentives driving the mobile advertising market, and a section on the status and developments of digital TV worldwide.

This report could be obtained from the SKMM website at:

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

I trust the report will be useful to all our readers. To improve this publication in the future, we welcome any comments, enquiries, suggestions and feedback on the information presented in this report. Please send them to webmaster@cmc.gov.my

Thank you



Mohamed Sharil Tarmizi
COO/Acting Chairman
Malaysian Communications and Multimedia Commission (SKMM)

SUMMARY HIGHLIGHTS

C&M MARKET CAPITALISATION AND PERFORMANCE

Early in 2008, the KLCI achieved a high at 1,516.2. However, combined with sharp deceleration on international economic and financial conditions, the local market experienced trade that brought the KLCI to a low of 829.4 points on 29 October 2008. The local market capitalisation at end year 2008 was RM664 billion, a 40% decrease from RM1,106 billion at the end of 2007. Amidst this, the C&M companies performance in terms of market capitalisation totalled RM48.5 billion in 2008 or 7.3% of Bursa Malaysia market capitalisation. This contrasts with a market capitalisation of RM69.5 billion or 6.3% of Bursa Malaysia in 2007. Economy-wise, stimulus packages and moderated monetary stance are in place to counter economic slowdown.

GOOGLE'S POSITIONING IN THE MOBILE REALM

Google started out as a search engine provider in 1995, competing together with others such as Yahoo!, Alta Vista and MSN Search. Since then, it has evolved as the number one and preferred search engine by users worldwide holding a strong presence in most of Europe and Latin America, India, Australia and New Zealand. In Malaysia, it holds 51% of the search market share. It is also in the lead in Canada for the North American search market at 78% share. Google has since expanded its strategy to include software applications, advertisements and now going into the mobile realm. Overall, it has 60% share of mobile searches in all countries worldwide. Investing heavily in technologically related mobile platforms and working with other mobile industry leaders in the Open Handset Alliance, Google has launched the Android platform recently followed by an Android powered handphone, the T-Mobile G1. This is expected to assist Google in strengthening its position in the mobile space and realise its goals to provide information and services connectivity at all times and boost mobile web surfing.

BITS AND BITES:

KEY COMMUNICATIONS AND MULTIMEDIA MARKET TRENDS FOR 2009

Despite the economic challenges in 2008, global industry leaders and analysts worldwide have shown optimism that there are still opportunities for the communications and multimedia industry to move forward. As expected by these experts, some of the trends that are shaping the industry next year

are pointing towards web 2.0, mobile enterprise or enterprise 2.0, mobile advertisements, open source and open access, green technologies and next generation network.

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

The mobile medium is beginning to gain share from other media for advertising, which is benefiting many marketers and advertisers. The total value of the global data market in 2007 was worth USD157 billion, a 35% increase from 2006 (USD116 billion). The US is the number one country in the world with 40 million users now surfing through their mobiles. With the number of Internet users growing especially in the US, the market is ready to attract more advertisers. Globally, mobile advertising revenues is expected to reach USD12.09 billion in 2013, which is 2.2% of the total global advertising spend and 1.29% of global revenues. The mobile advertising ecosystem would have some inherent benefits and hence incentives to drive the market further. A wider acceptance among consumers would be seen if falling handset prices can generate a relatively rapid migration to 3G with carefully planned data prices. Meanwhile, Malaysia is considered nascent in mobile surfing but has 84.4% GPRS users and 16.5% 3G users in 2007.

DIGITAL TV – STATUS AND DEVELOPMENTS

DTV adoption is expected to illustrate rather strong growth over the next two to three years as consumers demand enhanced service functionality including on-demand entertainment and bundled communications offerings. By year 2009 until 2010, TV shipments in the digital terrestrial market are expected to increase to more than 60 million units, making it more than half of the TV shipments in the analogue market. When digital TV takes off, it is expected that more than 80 territories will be covered with a potential audience of 2.8 billion individuals and 2,000 channels worldwide. DVB-T is by far the most adopted and implemented standard in the world - by more than 100 countries around the world.

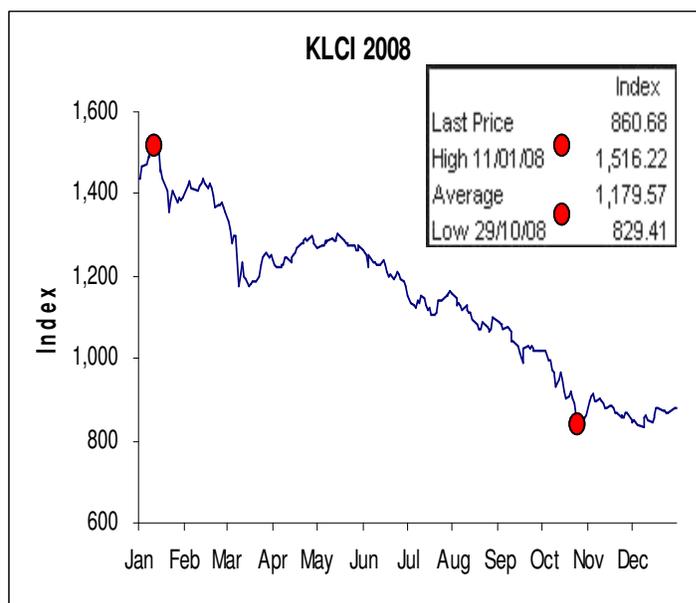
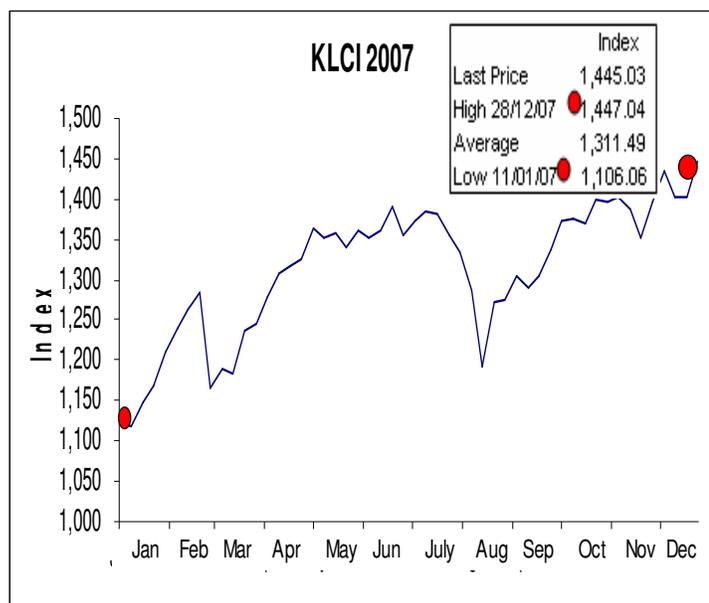
C&M MARKET CAPITALISATION AND PERFORMANCE

Feeling the Effects of Global Financial Crisis

The Kuala Lumpur Composite Index (KLCI) indicated a high in trade for the year in January 2008; recording a high at 1,516.2 on 11 January 2008. In 2007, the highest record of trading was at 1,447 on 28 December 2007. Along with poor performances overseas, the local market hit its lowest of 829.41 points on 29 October 2008 that is, slumped 45.3% or 686.8 points from the high reported in January 2008.

For the whole year 2008, the KLCI lost 558.9 points or 39% from opening trade at 1,435.7 points to closing at 876.8 points on 31 December 2008. The US suffering from its worst sub-prime mortgage market loans since the Great Depression has escalated to a global financial crisis. Global stock trading was invariably affected including Malaysian trade. Local traders remained cautious of the reverberating effects from the growing uncertainties in foreign and domestic markets reflecting economic changes faced.

Along with the challenges ahead, Malaysia is monitoring the situation and responding as appropriate. Fiscal policy measures totalling a RM7 billion stimulus plan were announced on 4 November 2008 while monetary stance was relaxed two times. The Overnight Policy Rate (OPR) was cut by 0.25% point to 3.25% on 24 November 2008. This was followed by another 0.75% cut to 2.5% in January 2009. On 10 March, the Government announced another stimulus plan of RM60 billion to pump prime the local economy.

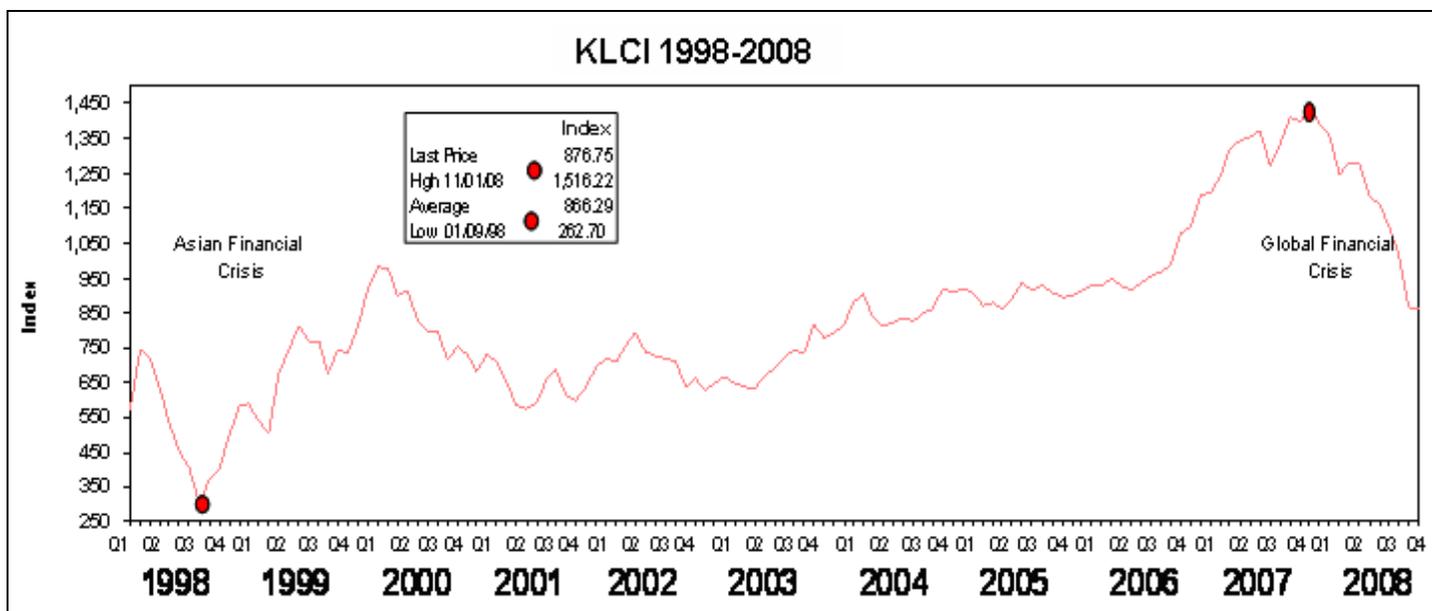


Source: Bloomberg, SKMM

Source: Bloomberg, SKMM

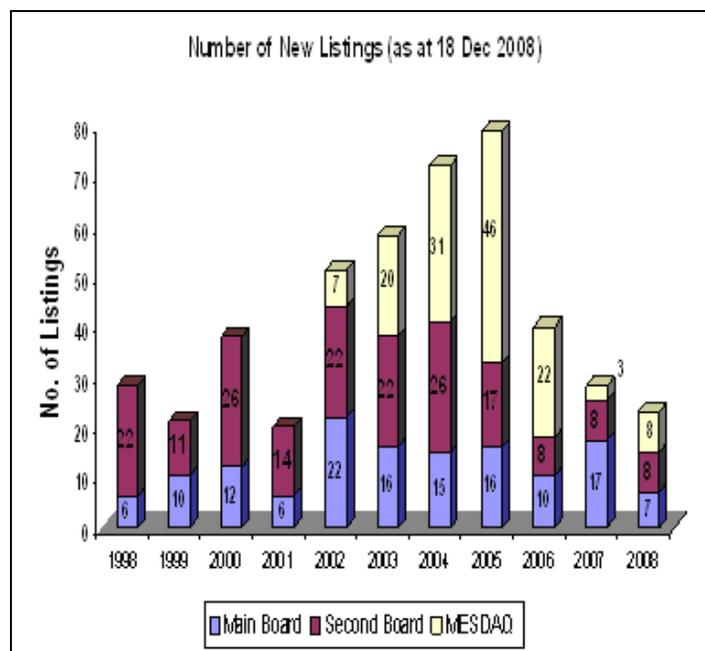
Looking back over ten years from 1998 to 2008, the momentum of growth of KLCI market trading shows an overall uptrend except during the Asian Financial Crisis in 1998 and Global Financial Crisis starting fourth quarter of 2007. This is shown in the KLCI chart below.

C&M MARKET CAPITALISATION AND PERFORMANCE



Source: Bloomberg, SKMM

Bursa Malaysia Market Indicators	2007	2008	% Change
KL Composite	1,096.2	876.8	-20.0
* Second Board	6,732.4	4,007.3	-40.5
* MESDAQ	6,109.2	3,333.6	-45.4
Average Daily Turnover			
Volume (million units)	1,505.6	575.8	-61.8
Value (RM million)	2,178.8	1,180.7	-45.8
Market Capitalisation (RM billion)			
	1,106.2	663.82	-40.0
	No. of Companies Listed		
Bursa Malaysia	2007	2008	
Main Board	636	634	
Second Board	227	221	
MESDAQ	124	122	
Total No. of Co. Listed	987*	977*	



Source: Bloomberg, SKMM

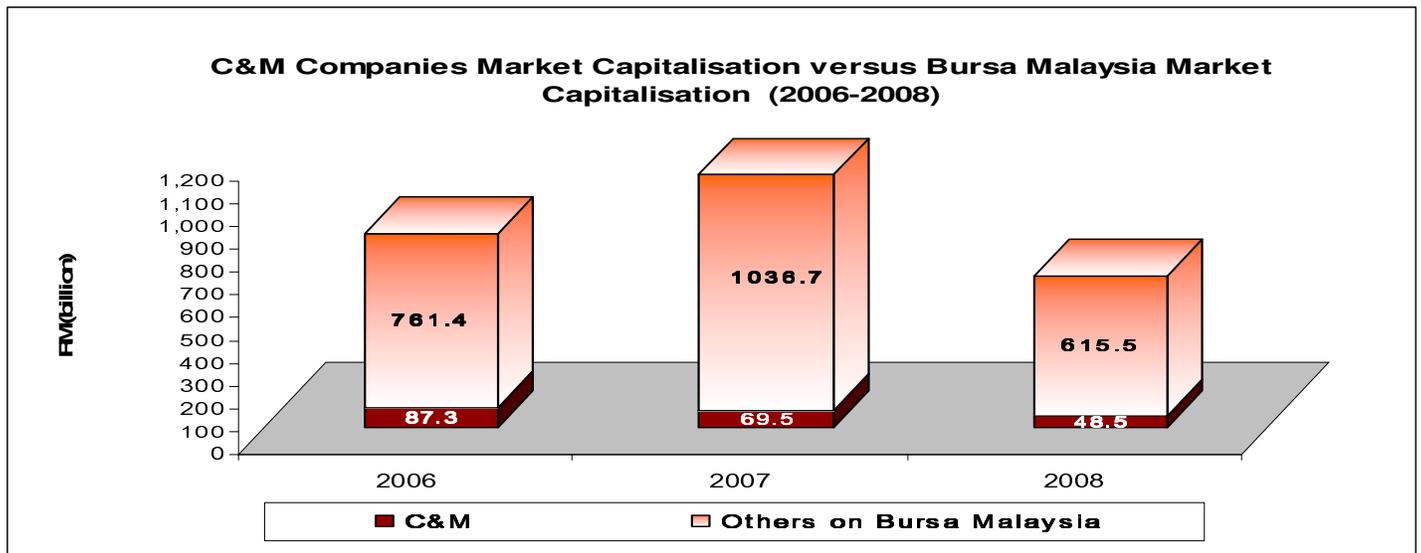
*The number of companies listed in 2008 is lower than that in 2007 may be due to combination of significant factors such as panic condition resulted from valuation concern among existing and potential investors by taking out funds from the market, concerned losses linked to US subprime mortgages spreading and dampening growth in the region's biggest export market and as well as local political uncertainty caused by the 12th General Election .

Source: Bloomberg, SKMM

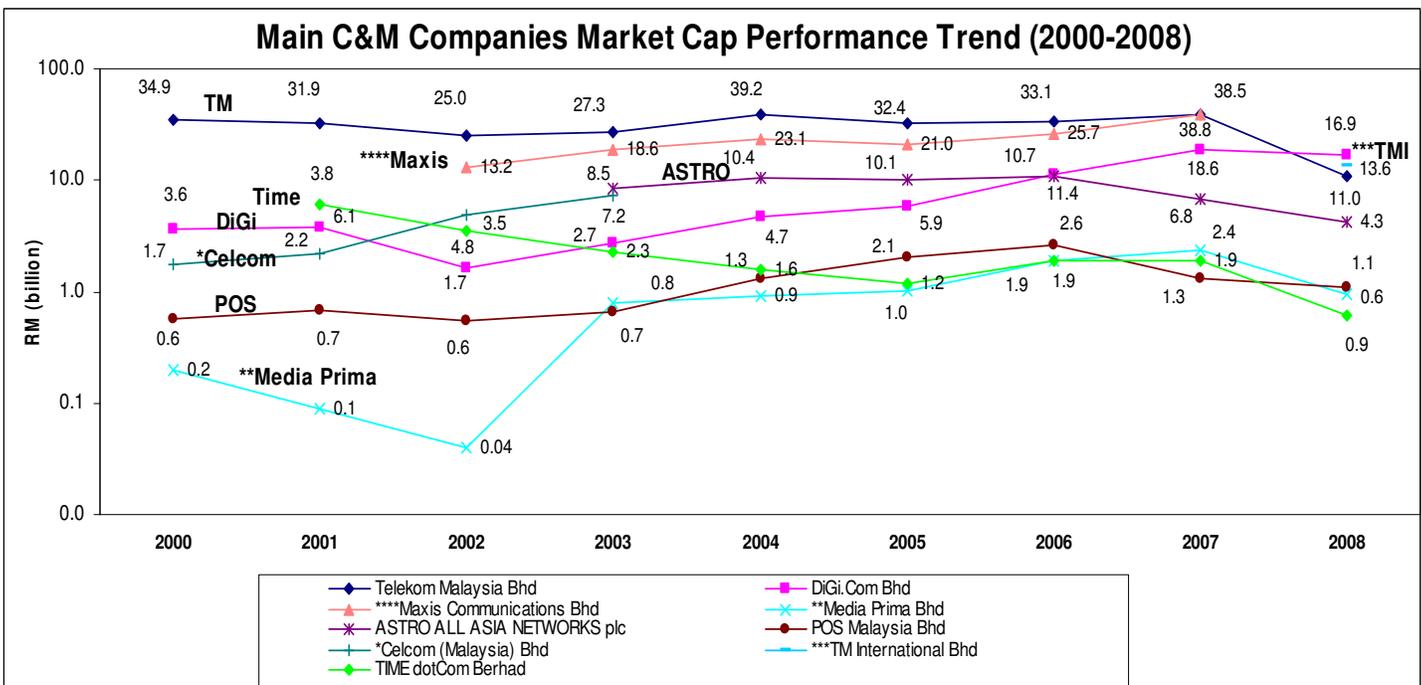
C&M MARKET CAPITALISATION AND PERFORMANCE

C&M Market Capitalisation Plummeted Significantly

For the year ended December 2008, the total Bursa Malaysia market capitalisation was RM664 billion. This represents a decline of 40% from the RM1,106 billion posted at end of the year 2007. In 2008, the communications and multimedia companies consisting of the major public-listed telecommunications companies, the broadcasting industry and post, altogether captured RM48.5 billion in market capitalisation or 7.3% of the Bursa Malaysia market capitalisation. This contrasts with a market capitalisation of RM69.5 billion or 6.3% of Bursa Malaysia in 2007.



Source: Bloomberg, SKMM



*Celcom listed from October 2002 to August 2003

** Media Prima Berhad was listing in place of Sistem Televisyen Malaysia Berhad in October 2003

***Demerger exercise of Telekom Malaysia Berhad (TM) resulting in the separate listing of its mobile arm, Telekom International Berhad (TMI) on April 2008. TMI effective 1 April 2009 is known as Axiata Group Berhad

***Maxis opted to go private in June 2007

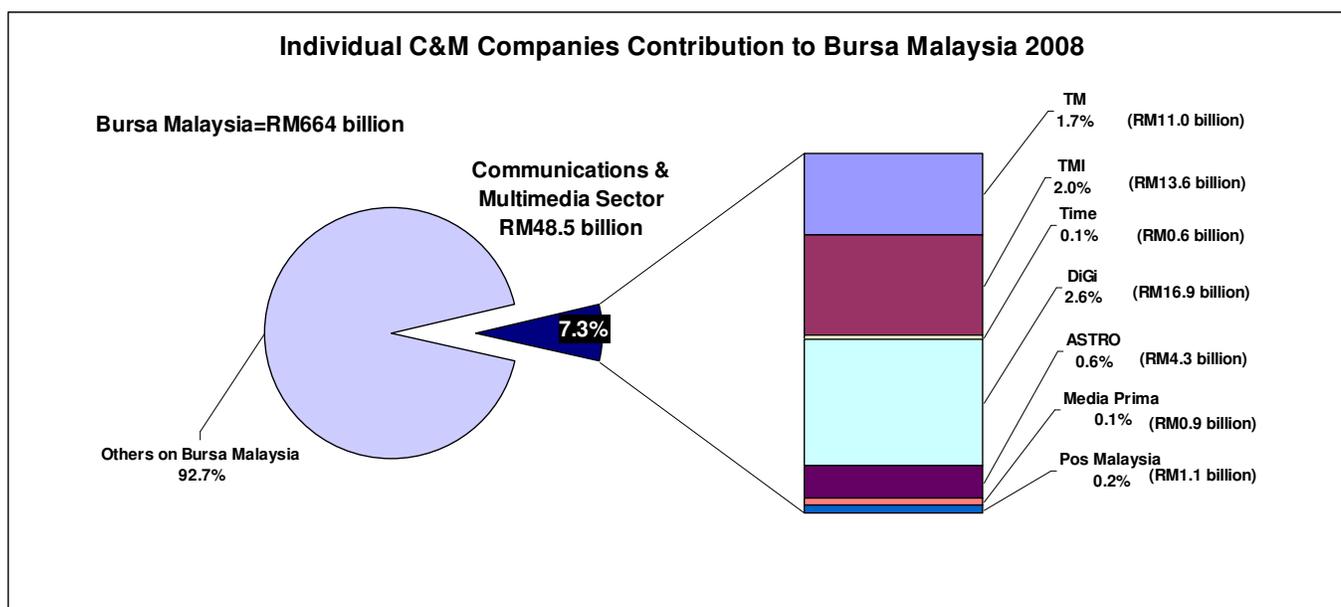
Source: Bloomberg, SKMM

C&M MARKET CAPITALISATION AND PERFORMANCE

Individual C&M Companies Contribution to Bursa Malaysia

As at December 2008, DiGi posted the highest in terms of market capitalisation at 2.6% or RM16.9 billion out of the total market capitalisation of the public-listed communications and multimedia companies. This is followed by Telekom International Bhd or TMI with RM13.6 billion (2%); TM and ASTRO which captured RM11 billion (1.7%) and RM4.3 billion (0.6%) respectively in the market capitalisation for 2008.

TMI is newly listed in April 2008 after the Telekom Malaysia Group underwent a demerger exercise to separate its mobile operations including its domestic mobile arm Celcom (Malaysia) Berhad and the other mobile operations overseas under TMI. Specifically, TMI was listed on Bursa Malaysia on 25 April 2008. TM is now the entity for fixed line operations.



Source: Bloomberg, SKMM

C&M Companies Share Price Movements

Companies	Share Price					
	31-Dec-07	31-Dec-08	% Change (Dec-07 to Dec-08)	High (RM)	Low (RM)	Average Volume Traded ('000)
TM*	n.a.	3.08	n.a.	3.68	2.77	8,602
DiGi	24.80	21.80	-12.1	26.50	18.40	1,184
Pos Malaysia	2.44	2.02	-17.2	2.52	1.66	540
ASTRO	3.50	2.21	-36.9	4.24	2.08	1,244
Media Prima	2.81	1.11	-60.5	2.80	0.85	1,073
Time	0.76	0.25	-66.9	0.86	0.22	6,930
TMI	n.a.	3.62	n.a.	7.85	3.12	4,694

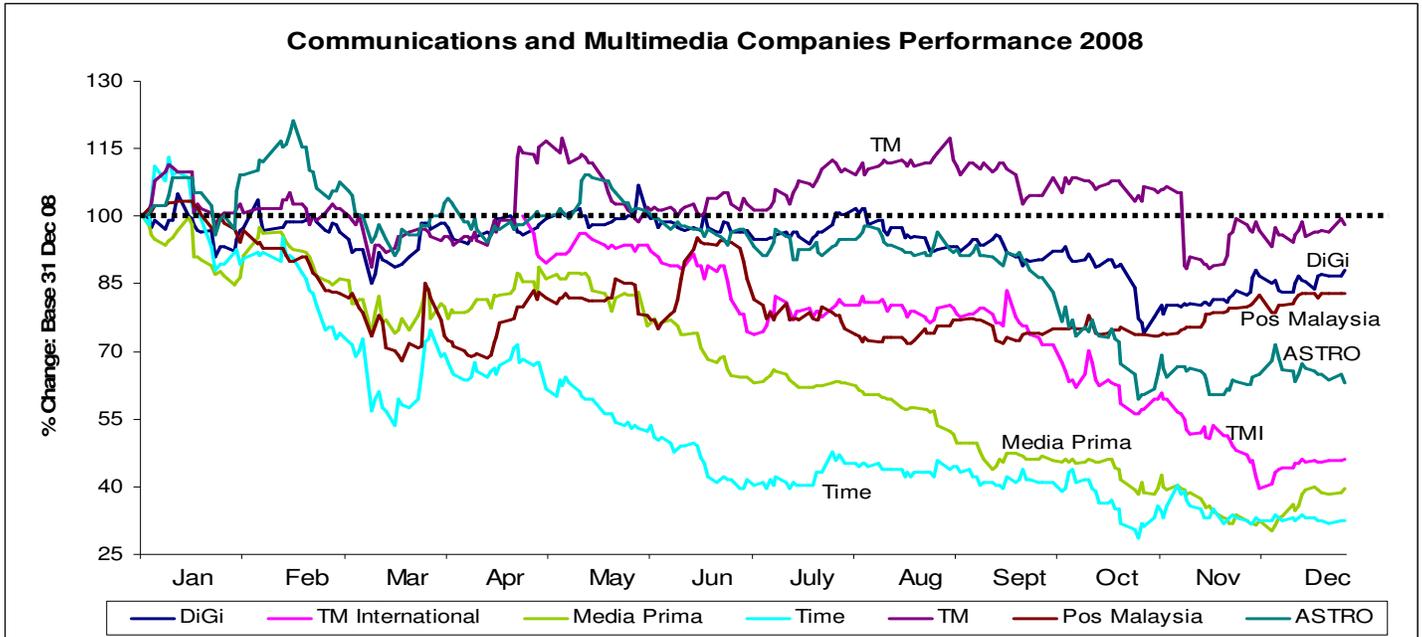
*Due to demerger exercise, the basis for TM market capitalisation is no longer comparable to that in 2007

n.a. = Not applicable

Source: Bloomberg, SKMM

C&M MARKET CAPITALISATION AND PERFORMANCE

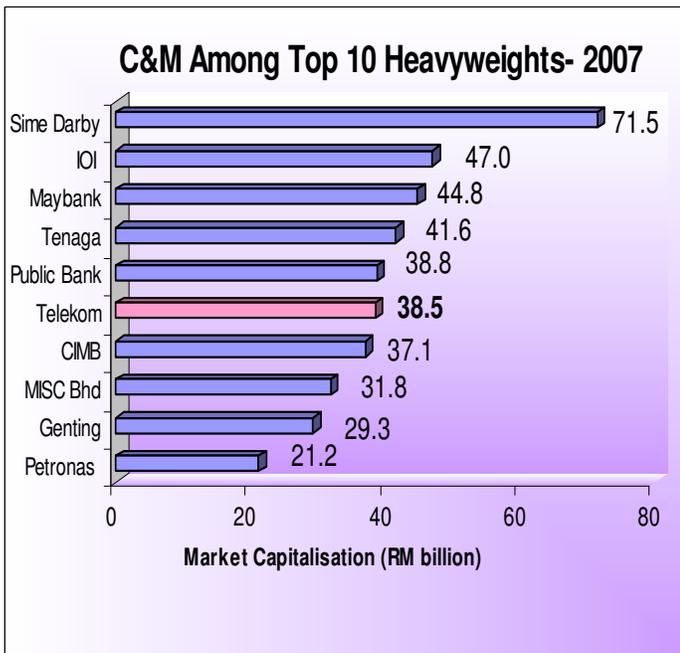
As at end2008, all the listed C&M companies posted losses in share price performance in varying degrees.



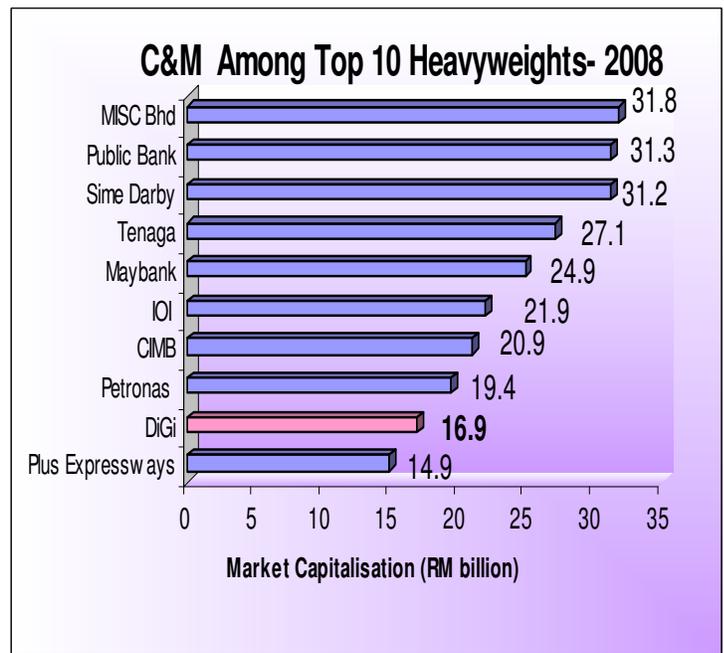
Source: Bloomberg, SKMM

C&M Amongst Other Heavyweights

As at the end of the year 2008, only DiGi features among the Top 10 Heavyweights, garnering a ranking of number nine based on its market capitalisation.



Source: Bloomberg, SKMM



Source: Bloomberg, SKMM

C&M MARKET CAPITALISATION AND PERFORMANCE

Local C&M versus Overseas by Market Capitalisation in US Dollar

Companies	Country	Market Capitalisation (USD billion)					
		Main Business	Dec-06	Dec-07	Dec-08	% Change ('06~'07)	% Change ('07~'08)
China Mobile	Hong Kong	Wireless	172.233	354.025	201.300	105.6	-43.1
NTT DoCoMo	Japan	Wireless	73.900	75.700	87.600	2.4	15.7
Telstra	Australia	Diversified Wireline	40.600	51.460	33.600	26.7	-34.7
KDDI	Japan	Diversified Wireline	30.004	33.080	31.500	10.3	-4.8
China Telecom	China	Wireline	44.300	64.300	30.200	45.1	-53.0
China Unicom	Hong Kong	Diversified Wireline	18.539	31.280	28.500	68.7	-8.9
Sing Tel	Singapore	Diversified Wireline	33.960	44.270	28.300	30.4	-36.1
Chunghwa	Taiwan	Diversified Wireline	17.976	21.280	18.900	18.4	-11.2
China United	China	Wireline	12.680	35.056	15.600	176.5	-55.5
BT	Britain	Diversified Wireline	48.900	43.200	15.300	-11.7	-64.6
SK Telecom	Korea	Wireless	19.430	21.609	13.100	11.2	-39.4
Telekom TBK	Indonesia	Diversified Wireline	22.530	21.745	12.700	-3.5	-41.6
PLDT	Philippines	Wireline	9.805	14.519	8.300	48.1	-42.8
KT Corp	Korea	Diversified Wireline	13.987	14.507	7.918	3.7	-45.4
Taiwan Mobile	Taiwan	Wireless	5.146	6.708	5.600	30.4	-16.5
DiGi	Malaysia	Wireless	3.231	5.625	4.899	74.1	-12.9
KT Freetel	Korea	Wireless	6.439	6.252	4.563	-2.9	-27.0
Far Eastone	Taiwan	Wireless	4.390	4.896	3.700	11.5	-24.4
PCCW	Hong Kong	Diversified Wireline	4.104	4.024	3.233	-2.0	-19.7
Telekom	Malaysia	Diversified Wireline	9.388	11.651	3.185	24.1	-72.7
TATA Com	India	Wireline	2.738	5.528	2.938	101.9	-46.9
Indosat	Indonesia	Diversified Wireline	4.059	4.995	2.853	23.1	-42.9
Telecom Corp	New Zealand	Diversified Wireline	6.821	6.081	2.470	-10.9	-59.4
LG Telecom	Korea	Wireless	2.869	2.916	2.125	1.6	-27.1
Globe	Philippines	Wireless	3.328	5.033	2.115	51.2	-58.0
Dacom	Korea	Wireline	1.710	1.896	1.279	10.9	-32.5
MTNL	India	Diversified Wireline	2.035	3.075	1.279	51.1	-58.4
ASTRO	Malaysia	Satellite Pay-TV	3.038	2.047	1.235	-32.6	-39.7
MobileOne	Singapore	Wireless	1.387	1.181	0.922	-14.9	-21.9
Excelcomindo	Indonesia	Wireless	1.824	1.638	0.615	-10.2	-62.5
Smartone	Hong Kong	Wireless	0.604	0.541	0.410	-10.4	-24.2
Pos Malaysia	Malaysia	Postal Services	0.734	0.396	0.314	-46.0	-20.8
Media Prima	Malaysia	Commercial Free-To-Air TV	0.539	0.716	0.274	32.8	-61.7
True Corp	Thailand	Diversified Wireline	0.643	0.734	0.196	14.2	-73.3
Time	Malaysia	Wireless	0.530	0.578	0.179	9.0	-69.0
GD Express	Malaysia	Courier	0.047	0.059	0.059	26.7	0.6
Hutchison	Australia	Wireless	0.126	0.126	0.043	-0.1	-65.8
TT&T	Thailand	Diversified Wireline	0.090	0.098	0.035	9.3	-64.9
REDtone	Malaysia	Discounted Call Services	0.041	0.055	0.020	35.8	-63.6
Nationwide	Malaysia	Courier	0.020	0.017	0.009	-15.7	-46.1
M3T MK Equity	Malaysia	Internet Content/ Entertainment	0.011	0.008	0.006	-20.1	-33.4
Maxis	Malaysia	Wireless	7.279	**Delisted		n.a	
CSA	Malaysia	Diversified C&M	0.060	0.118	n.a	96.1	n.a
NasionCom	Malaysia	Web Portals / ISP	0.040	0.012	n.a	-69.8	n.a
MoBif	Malaysia	Internet Telephony	0.034	0.019	n.a	-43.5	n.a
asiaEP	Malaysia	Internet Application Software	0.013	0.017	n.a	30.8	n.a
MNC Wireless	Malaysia	Diversified C&M	0.006	0.006	n.a	7.0	n.a
Palette Multimedia	Malaysia	Diversified C&M	0.006	0.007	n.a	28.1	n.a
EB Capital	Malaysia	Internet Connectivity Services	0.005	0.008	n.a	57.6	n.a
Airocom Tech	Malaysia	Wireless	0.006	0.004	n.a	-33.0	n.a
Intelligent Edge	Malaysia	Enterprise Software Services	0.004	0.006	n.a	69.5	n.a

**Delisted on 25 June 2007

n.a: not available

Source: Bloomberg, SKMM

GOOGLE'S POSITIONING IN THE MOBILE REALM

Google has become for many, the search engine that they cannot live without. Since its launch, the search company has become the most visited, profitable and arguably one of the most influential companies on the Internet as compared to other longer established companies.

Google: A Reality Check on Size

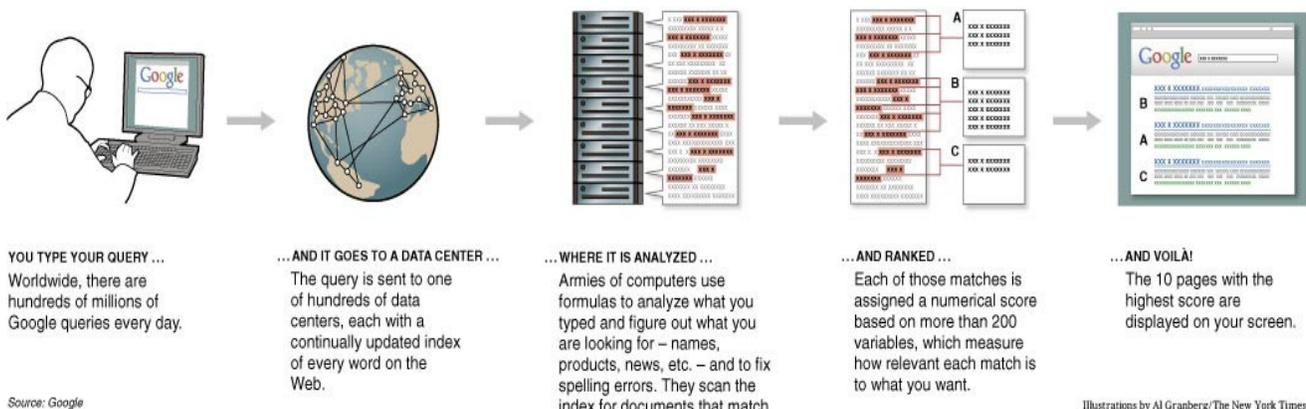
	Microsoft	AT&T	Verizon	IBM	Google
Revenues	USD60 billion	USD118 billion	USD93 billion	USD98 billion	USD21 billion
Gross Profits	USD48 billion	USD61 billion	USD55 billion	USD41 billion	USD13 billion
Operating Expenses	USD38.3 billion	USD98 billion	USD77 billion	USD85 billion	USD16 billion
Market Cap	USD184 billion	USD148 billion	USD90 billion	USD113 billion	USD99 billion
Employees	91,000	309,050	228,315	386,000	20,123
PAC Donations	USD1.7 million	USD4.9 million	USD1.7 million	N/A	USD287,000
Lobbying Budget	USD6.8 million	USD11.7 million	USD13 million	USD5.3 million	USD2 million

Source: Reuters, 2008 annual earnings report, OpenSecrets.org

In a short period of time, Google has climbed to be the number one search engine over the Internet and across the world due to its simple strategy of providing users exactly what they want in a fraction of a second.

From Query to Results in 0.2 Seconds

How does Google find exactly what you want in a fraction of a second?



Source: New York Times

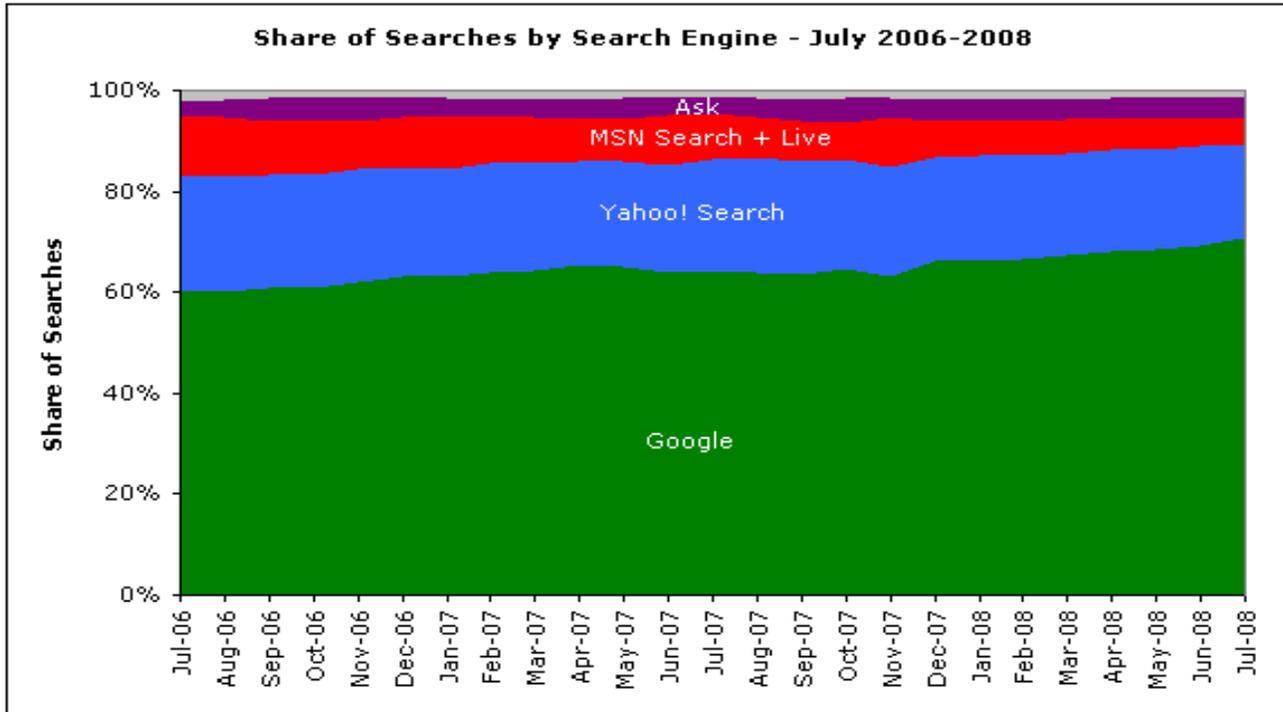
Today, Google has added on other services such as software applications, advertisements and now mobile to spur its growth.

Growing Google Inc.

Google came into the World Wide Web scene more than a decade ago, in 1995, as a simple search engine provider. Since then search is at the epicentre of everything that Google does. Traffic to Google has continued to increase over time making it a preferred search engine by most users as compared to the rest of its competitors like Yahoo! Search, Altavista, AskJeeves and MSN Search.

GOOGLE'S POSITIONING IN THE MOBILE REALM

In July 2008, researchers at Hitwise reported that Google has reached a new milestone search share that exceeds 70%, that is, accounting for 70.8% of all US searches followed by Yahoo! Search, MSN Search and Ask with 18.7%, 5.4%, and 3.5% share of searches, respectively.



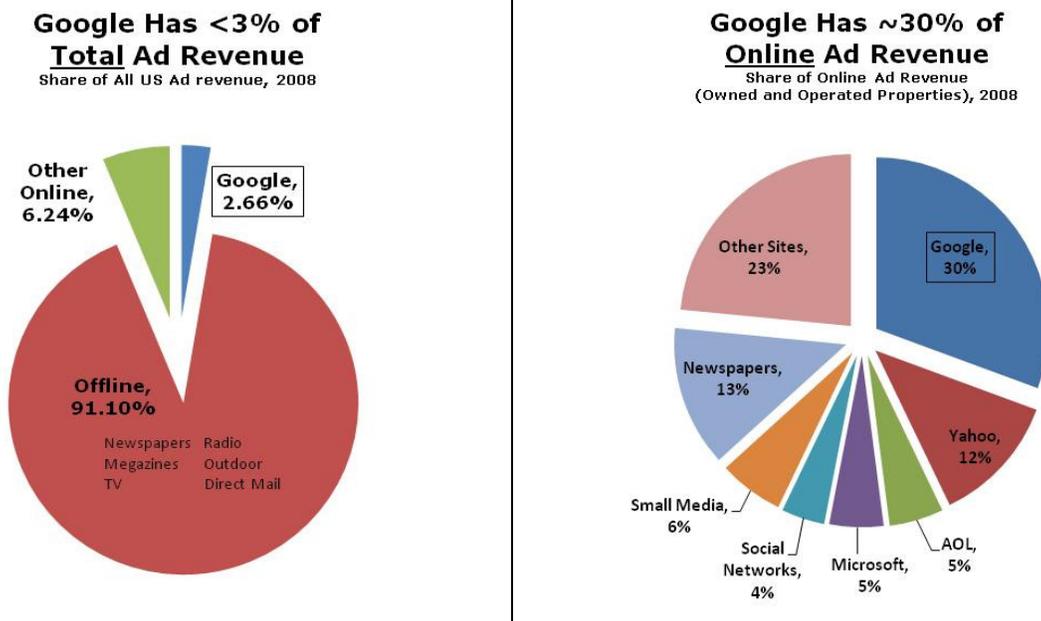
Source: Hitwise

GOOGLE'S POSITIONING IN THE MOBILE REALM

advertisement on a cost per click (CPC) basis. Advertisers will only be charged when users click on their advertisements. Maximising revenue through advertisements, Google derives 99% of revenue from advertising. This comprises 66% from advertising on Google's own sites, which includes advertisements placed next to Google search results.¹

The company has also taken its advertising system offline, as it tries to capture portions of large traditional advertisement markets in television, radio and newspapers² and even outdoor billboards. In 2006, Google acquired dMarc, a radio advertising company involved in automated sale, scheduling, delivery and measurement of radio advertisements. In May 2007, it reached a deal with EchoStar Communications (DISH) to automate the process of buying and selling ads for EchoStar's Dish satellite television network and in early 2007 also filed patents related to outdoor kiosks and billboards.³ Google's new approach is indicated to be still in an early stage and how much it will ultimately involve traditional advertising remains unclear.

Google's Share of All Ads and Online Ads



Source: Cowen and Co. Report, 1 January 2009 and Google: Competition and Openness

According to research firm TNS Media Intelligence, despite its size and rapid growth, Google's advertisement expenditure has remained steady at about USD20 million annually in recent years.⁴ Google's offline advertising offer works innovatively by leveraging its Google Adwords interface and it is offer-based which means advertisers would have to bid for audio spots, print advertisements, TV spots, and keyword positions through an auction-based technology, making it easy to book and scale advertisement bids.

¹ Google's 20% ad click increase eases fears about health of e-commerce, *Ecommerce Journal*, 21 April 2008, http://www.ecommerce-journal.com/hotties/google_s_20_ad_click_increase_eases_fears_about_health_of_e_commerce_0

² Google Inc., *New York Times*, 14 September 2007.

³ Wikinvest, [http://www.wikinvest.com/stock/Google_\(GOOG\)](http://www.wikinvest.com/stock/Google_(GOOG))

⁴ Google Reconsidering its Aversion to Advertising by Jessica E. Vascellaro and Suzanne Vranica, *The Wall Street Journal*, 3 October 2008

GOOGLE'S POSITIONING IN THE MOBILE REALM

Google's offline advertisements will benefit advertisers through the following mediums:

Type of Advertisements	Benefit	How it Works
Google Audio Ads	Targets customers on "top ten" stations in all 25 most popular US markets and access to 1,600 terrestrial FM and AM radio stations (100% US Coverage and 49% weekly reach of those age 12+)	Choose radio campaigns by demographic, geography, station format and daypart. Connects with scriptwriters, editors, voice over talent. Set a budget or price for bidding. Submit to Google.
Google Print Ads	Access to 807 newspapers, represents nearly 70% of all US paid circulation, 40 million in daily circulation covering 171 of the 210 Designated Market Areas.	Choose newspapers based on geography, demographics, circulation, ad size, section, and other criteria. Select desired days of the week section, and ad size for each publication. Name the bid price for the ad insertion or enter in any existing contracted term. Publishers will respond within 72 hours by accepting or rejecting the offer. Submit online ad to the publisher.
Google TV Ads	No forced bundling means advertisers can choose the networks that are right for them and try new networks without commitment. With auction-based pricing system, advertisers can choose the maximum cost per thousand impressions (CPM) that they are willing to pay and only pay for impressions delivered to their ads. Second-by-second data from millions of anonymised set-top-boxes provides insight into the viewership of previously unmeasured niche networks, unlocking the value of TV's long tail.	Select desired networks, dayparts and programmes with no bundling and no commitment. Upload and select the ads. Set a budget and bid the maximum CPM that is willing to be paid. Track the advertisements and understand tuning behaviour through second-by-second data from millions of set-top-boxes.

Source: Google's website.

Google's foray into the application sphere began in 2004. Since then, Google has launched an array of low-cost or free software and desktop applications for users, which are alternatives to other desktop software available in the market. This includes Gmail, Google Maps, Blogger, Google Earth, Google Talk, Google Reader, Google Analytics, Picasa, GTalk, chat in Gmail, Google Finance, Google Calendar, Google Trends, Google News, and YouTube amongst the many other tools offered. The company also delved into the enterprise market beginning year 2002 with the launch of Google Search Appliance providing search technology to larger organisations, followed by Mini in 2005 that provides search for a smaller document repository. Later in 2006, it began to sell Google Site Search and in 2007 launched Google Apps Premier Edition, which is a software-as-a-service targeted primarily for business users and Google Security Service.

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Source: Google website

from mainly simple text pages to rich, interactive applications” and “the browsers need to be stable, fast, secure, clean and easy to use”. Google’s Chrome will have multiple processes to render multiple tabs, so that even though one tab is busy, the rest are free to work.⁵ As it runs on Microsoft’s Windows operating system, it is a clear sign of leveraging on Microsoft’s strengths. Microsoft currently controls about 75% of the desktop market. However, the Internet Explorer mobile is in an almost non-existent market share. By developing Chrome, Google has found a potential extension to the Google mobile applications. The release of Chrome also signals that Google is encouraging the use of advanced applications on the web and also supporting the environment for open standards.

Competing and Working with the Rivals

Although Google has grown rapidly, doubling its revenue on average every year from 2002 to 2006⁶, the company still competes with Yahoo! and now Microsoft directly in online search and advertising. However, in February 2008, Google faced a threat from the possible merger between Microsoft and Yahoo! where the USD45 million bids for Yahoo! will enable Microsoft to compete effectively against Google. However, the merger did not materialise and in June 2008, Yahoo! and Google announced a proposal that will allow Yahoo! to place Google advertisements on its website; a bid to fend off the Microsoft-Yahoo! takeover. The consolidation would have enabled Google and Yahoo! to control more than 90% of the search advertising market⁷. This deal was to have Google selling some advertisements on behalf of Yahoo! but the Google-Yahoo! alliance also collapsed.

Google and Mobile Phones Go Together

With ever larger proportions of the world population owning mobile phones, the future of Internet appears to lie in the hands of mobile phones users. Internet access through the mobile phone is perceptibly gaining momentum, further confirming it as a ubiquitous device. According to research done by Nielsen Mobile, US is in the lead with 40 million users or 15.6% of the entire user base accessing the Internet through their mobile. UK is

⁵ Google Chrome Browser to Challenge Microsoft, http://googlewatch.eweek.com/content/google_vs_microsoft/google_chrome_browser_to_challenge_microsoft.html

⁶ [http://www.wikinvest.com/stock/Google_\(GOOG\)](http://www.wikinvest.com/stock/Google_(GOOG))

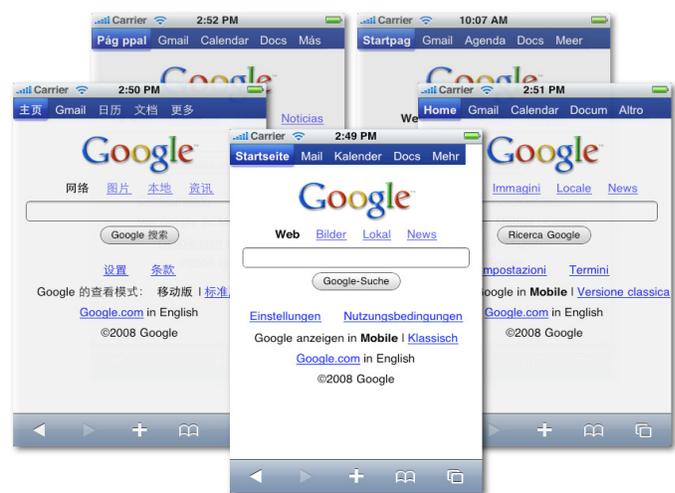
⁷ Yahoo! Turns to Google for Help, CNNMoney.com, 10 April 2008
http://money.cnn.com/2008/04/09/technology/moritz_yahoo_google.fortune/index.htm

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the second largest with 12.9% subscribers followed by Italy with 11.9%. A few years ago, users may ask for the reason on the need to access the Internet on their mobile since Internet is already accessible through the desktop PC. Fast forward today, everyone wants to access the Internet on the go. While mobile Internet is a small market today, it is one that is expected to grow rapidly in time.

To remain viable in the long run, Google is taking a step into the mobile realm as it does see mobile as its future. There is opportunity for Google in terms of mobile advertising and mobile search but the primary challenge for Google will be to encourage users to start performing functions which they are already familiar with on their desktop computer, on their mobile phone browsers now. At the same time, unlike desktop computers, mobile devices run on multiple incompatible systems, platforms and differing screen sizes that often require the application vendors to customise their software for each device. This calls for the need to work with multiple partners for the mobile offerings to work well on a large number of mobile devices.

So how close has Google adapted to mobile phones? With strength in searches, Google's debut to change the mobile experience has started through offering Google Search application for mobile devices. For Google, searches on mobile are not about browsing but more importantly, it is about finding "straight away".⁸ According to a study by comScore research, Google Inc., is in the lead for mobile search whereas close competitor Yahoo! ranks second in Germany, Italy, United Kingdom and the United States. Key findings of the study also indicated that Google has 60% share of mobile searchers in all countries worldwide.⁹



Source: <http://www.unwiredview.com/wp-content/uploads/2008/05/google-iphone-5.png>

Top Mobile Search Brands by Mobile Searcher Penetration Three-month Average Ending June 2008 United States and Western Europe

France		Germany	
Google	62.9%	Google	85.1%
MSN/Windows Live Search	9.6%	Yahoo!	9.4%
Italy		Spain	
Google	88.1%	Google	82.5%
Yahoo!	19.5%	MSN/Windows Live Search	12.1%
UK		US	
Google	74.0%	Google	63.0%
Yahoo!	16.2%	Yahoo!	34.6%

Source: comScore M:Metrics MobiLens

⁸ Google targets mobile future, BBC News, 12 June 2006.

⁹ Google reigns over mobile search: comScore research, Mobile Marketeer, 16 September 2008.

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Google is reported investing heavily in technologies related to mobile phone platforms as well as adaptation of its applications on mobile handsets. Heavily rolling-out mobile applications, Google appears to be solidifying its position, and is poised to take another step towards employing the mobile arena with a view to replicate what it has successfully done on the World Wide Web.

Among some of Google's web offering adapted for mobile usage include searches, applications such as Gmail, GOOG-411, and social networking/UGC features as follows:

Google Mobile Services	Features	
Searches		
	Search	<p>Get information searches fast – Search for everything from images to news to products and much more on mobile phone.</p> <p>Local listings at fingertips – Phone numbers, addresses, maps just a click away. And save favourite locations for quicker reference the next time.</p> <p>Location memory – Mobile search stores most recently searched locations, making it faster and easier to get the information the next time you search.</p>
	Map	<p>Locate nearby businesses and get driving directions:</p> <p>My Location – Shows current location on the map, even without GPS.</p> <p>Interactive maps – Pan and zoom the map, and view satellite imagery, and even switch into Street View (on BlackBerry and Java-enabled phones) for a closer look.</p> <p>Business listings – Search Google Maps for local businesses and points of interest. View store hours and reviews, then dial a business in one click.</p> <p>Directions – Google Maps offers turn-by-turn driving directions and also walking directions and finds public transit routes in more than 100 cities around the world.</p> <p>Traffic – Real-time traffic data helps find the fastest route to a destination.</p> <p>Street View – Views street level imagery of addresses, businesses, and turns in directions.</p> <p>Favorites – Save favorite places.</p> <p>Enterprise – IT managers can install Google Maps on corporate BlackBerrys through BlackBerry Enterprise Server.</p>
Applications		
	Gmail	<p>Stay connected with Gmail on the go:</p> <p>Multiple accounts – Quickly switch between Google Apps email and Gmail from the same client.</p> <p>Multiple Mobile Drafts – Jot thoughts down, finish and send later.</p> <p>Shortcut keys – Undo, scroll up and down, archive, delete, refresh at the push of a button. See Menu/Help in the application.</p> <p>Basic offline – Compose and read most recent email even when on the subway or plane.</p> <p>Language Support – Gmail for mobile 2.0 is available in over 35 languages.</p> <p>Message autorefresh – Gmail shows new messages in inbox without having to refresh the browser.</p> <p>Address autocomplete – Enter long email addresses using just a few keystrokes.</p> <p>View attachments – Open message attachments, including photos, Microsoft Word™ documents and PDF files.</p> <p>Gmail goodness – Spam filtering, search, labels, filters, stars – and lots of storage space</p>

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	SMS	Get the information with Google SMS
	News	<p>Read latest news from anywhere at anytime.</p> <p>Search for news – Find the latest news on any topic. Find news from multiple sources worldwide. Access a variety of sources on a given story to see how different sources are approaching it or stick to the sources trusted by most.</p> <p>Personalized news – Set up news page to show the stories that best speak to an interest.</p> <p>Images – Thumbnail images help find the news stories with just a glance. Just click on an image to visit the related article.</p>
	GOOG-411	<p>Find businesses for free from any phone – no Internet access required.</p> <p>Call the favourite local business – Dial 1-800-GOOG-411 (1-800-466-4411), then name the business sought and where it is located. GOOG-411 will find it and connect to it for free.</p> <p>Local business information through SMS – Say “text message” after hearing the exact location of the business sought, and GOOG-411 will send a text message with the business’s address and phone number.</p> <p>No more 411 charges – GOOG-411 is a free service – even the call connecting to the business sought is free.</p>
	Notebook	View and create new Google Notebook notes on the mobile device. Jot down a text note – a shopping list, a to-do list, a description of where the car is parked – then revisit it later on the mobile device or home computer.
	iGoogle	<p>iGoogle offers:</p> <p>Personalised homepage – Create a personalised page giving at-a-glance access to key information from Google and across the web.</p> <p>Access to iGoogle modules everywhere – News headlines, weather forecasts, stock quotes, your Gmail inbox – It is all just a click away. Pages are formatted for optimal usability on the mobile device's screen.</p> <p>Set up a page quickly – It is easy to set up a personalised page. Just choose the modules and arrange them in the order wanted.</p>
	Calendar	Keep track of schedule, without having to sync the mobile phone with the computer, share events and calendars with friends, family, or colleagues and set up mobile phone notifications.
	Docs	View documents, spreadsheets and presentations for free, from anywhere and at any time, with Google Docs on the mobile.
Social Networking/ User Generated Content (UGC)		
	YouTube	<p>Browse millions of videos – Including most viewed, top rated, and the day's featured videos on the mobile phone.</p> <p>Access your YouTube account – Log into YouTube account on the mobile phone and access Favourites, Playlists, and uploaded videos.</p> <p>Upload videos – Upload videos directly from the mobile phone and see them appear within moments on both the mobile site and YouTube.com.</p> <p>Community on the go – Favourite, share, rate, and comment on videos directly from the mobile website to other YouTube users.</p> <p>Search - Find the specific video by easily searching for it.</p> <p>Keep watching - Discover "Related" videos for each video watched on the mobile phone.</p>
	Photos	<p>Access Picasa Web Albums pictures from anywhere, right from the phone.</p> <p>Browse or search photos – Find pictures at any time and without requirement to update or sync them on the phone.</p> <p>Share – Share pictures with friends.</p>

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		<p>Comment – Share comments about the photos.</p> <p>Create slideshows – Right on the phone.</p> <p>Search the broader Picasa Web Albums community – Find out who else shares the same interests.</p>
	Blogger	<p>Post text and pictures to Blogger blog directly from the mobile device</p> <p>Post – Add content to a blog right from the phone, either by emailing it directly to a blog or by sending an MMS (multi-media messaging service) message to go@blogger.com.</p> <p>Save drafts through email – Go ahead and send that hilarious picture from the mobile without going through the bother of typing out accompanying text on that tiny keyboard. The post can edited and pushed live from the computer.</p> <p>Share – Read friends' comments on the blog, and visit and comment on friends' blogs from the mobile device.</p>
	Reader	<p>Keep up with the latest content on favourite blogs and newsfeeds, and share content with friends, right from the mobile phone.</p> <p>Read favorite blogs and newsfeeds on the go – Keep up to date right from the mobile phone.</p> <p>Mark content that is wanted and come back to it later – Highlight with a star, or just mark items "unread" after browsing them so they surface on top of the list next time.</p> <p>Share content with friends – Google Reader makes it easy.</p> <p>Make browsing easier using tags – Filter through all feeds to make sure browsing is done only on items in a particular category. Setting up own tags is easy.</p>

Source: Google Mobile, <http://www.google.com/mobile/default/>

Examples of Google Applications on Mobile Phone



Google Search



Gmail



Google Map



iGoogle



Google Docs

Source: Various websites

To realise its strategy to have its applications installed and integrated in as many mobile devices as possible, Google is providing its software applications for free to its users. This is expected to provide users with seamless and interoperable personalised mobile software experiences. In aligning its services with the signs of the times and making its presence felt in the wireless world, Google also collaborates with Opera. The company has been in partnership with Opera for about 7 years as a default search engine in Opera desktop web browser. Google and Opera continue their collaboration in mobile products

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by Google being the first default search engine on the start pages in Opera Mini and Opera Mobile.

Google's Mobility through the Open Source Strategy

Considering Google's long term commitment to innovation, the company also has always been a keen supporter of open source development. It has been running its business from top down based on open source software, keeping costs low and hiring the best open source developers that will foster the creation of more such software. The company believes that by utilising open source there are less restriction issues with vendors and external parties allowing for further development in these areas.

Google, in line with its recognition of the importance of mobility and openness in the mobile industry for advantages in development, flexibility and standard¹⁰, has bid for the wireless spectrum in the 700MHz band offered in the Federal Communications Commission (FCC) auction in early 2008. An open letter by Google to FCC convinces the FCC to require the adoption of the following four types of "open" platforms as part of the auction¹¹:

Platform	Policy
Open applications	Consumers should be able to download and utilise any software applications, content, or services they desire
Open devices	Consumers should be able to utilise their handheld communications device with whatever wireless network they prefer
Open services	Third parties (resellers) should be able to acquire wireless services from a 700 MHz licensee on a wholesale basis, based on reasonably nondiscriminatory commercial terms
Open networks	Third parties (like Internet service providers) should be able to interconnect at any technically feasible point in a 700 MHz licensee's wireless network

Source: Google Public Policy Blog <http://googlepublicpolicy.blogspot.com/2007/07/our-commitment-to-open-broadband.html>

Despite Verizon Wireless winning the most sought-after C block 700 MHz spectrum licence auction, Google's ongoing efforts to help open the wireless world was at the winning end as FCC has set a provision for the eventual winner to give consumers the right to download any software they want, and that consumers could use their handsets with whatever wireless network they want.¹²

With the benefits of a more open environment, Google has spearheaded the Open Handset Alliance, an open ecosystem that has led to the innovation of the Android platform. The alliance advocates open standards for mobile software in efforts to coordinate its work with that of handset makers, chip developers, application developers and cell phone operators and commit to commercially deploy handsets and services using the Android Platform¹³. Google partners with more than 30 other technology and mobile industry leaders including mobile operators, handset manufacturers, semiconductor companies, and commercialisation companies like T-Mobile, Motorola

¹⁰ Mobility Matters – Will Open Source Finally Move Mobile Software, Commercial Adoption of Open Source by The 451 Group

¹¹ Google Public Policy Blog <http://googlepublicpolicy.blogspot.com/2007/07/our-commitment-to-open-broadband.html>

¹² Google Public Policy Blog, <http://googlepublicpolicy.blogspot.com/2007/09/consumer-choice-is-always-right-answer.html>

¹³ Open Handset Alliance, <http://www.openhandsetalliance.com/index.html>.

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Inc., Samsung Electronics, HTC, Qualcomm to develop a new mobile handset operating system known as the Android that is expected to bring a whole new mobile experience to its users as well as opportunity to create compelling services and devices.

The members of the Open Handset Alliance are:

	Mobile operator	Software company	Commercialisation company	Semiconductor company	Handset manufacturer
Founding Members	<ul style="list-style-type: none"> China Mobile KDDI Corporation NTT DoCoMo Sprint Nextel T-Mobile Telecom Italia Telefónica 	<ul style="list-style-type: none"> Ascender Corporation eBay Esmertec Google LivingImage NMS Communications Nuance Communications PacketVideo SkyPop SONiVOX 	<ul style="list-style-type: none"> Aplix Noser Engineering The Astonishing Tribe Wind River Systems 	<ul style="list-style-type: none"> Audience Broadcom Corporation Intel Corporation Marvell Technology Group Nvidia Corporation Qualcomm SiRF Technology Holdings Synaptics Texas Instruments 	<ul style="list-style-type: none"> HTC LG Motorola Samsung Electronics
Joined 9 December, 2008	<ul style="list-style-type: none"> Vodafone Softbank Ericsson 	<ul style="list-style-type: none"> Borqs 	<ul style="list-style-type: none"> Omron Software Teleca 	<ul style="list-style-type: none"> AKM Semiconductor ARM Atheros Communications 	<ul style="list-style-type: none"> ASUSTek Garmin Huawei Technologies Sony Ericsson Toshiba

Source: Open Handset Alliance by Wikimedia, http://en.wikipedia.org/wiki/Open_Handset_Alliance

T- Mobile G1



According to Google, its new brainchild, the Android is the first truly open and comprehensive platform for mobile devices. It is expected to provide an easier and smoother access to the Internet on the move. With Android as a mobile platform, Google is well-positioned to be integrated into every mobile handset devices. After much anticipation, the Android was launched on 21 October 2008 and the source code is provided for free to everyone. Following this, Google and T-Mobile announced the release of an Android embedded phone known as T-Mobile G1 that comes preloaded with Google's applications deemed a rival to Apple's iPhone. Apple, by now successful in the mobile arena, already has followers who identify themselves with the brand.

T-Mobile G1

The phone that's built for the internet



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Source: Various websites

This development is yet another milestone to the Google versus Apple rivalry in the mobile market – setting a fast pace development for the smartphone segment. With competition fuelling progress, more Google powered mobile phones are expected to be released in the near future.

Google is also working with VISA by utilising the Android in providing mobility to VISA's services. Google's Android-VISA initiative will allow its Chase Visa cardholders to use their Android powered mobile phones for not only transferring money, but also to receive real-time email alerts when transactions happen on their Visa account; receive offers from merchants; and view images on Google maps to find the location of those merchants who are offering the specials. The Google-Visa deal is expected to begin sometime end of 2008.¹⁴

Conclusion: Google at the Crossroads

While Google may seem to be not involved in the hardware game, the search giant is still keen and dedicated in providing users around the world with easier access to information and services. Though the company is focusing the majority of their developments on web-based applications, they have appeared to have found one of the winning formulas to further penetrate the market which is the mobile phone environment.

By extending its business models to mobile devices, improving mobile users experience through innovative applications is now of strategic importance to Google as much as the traditional search has been. A broad alliance with mobile giants and leaders along the way is also central to Google's strategy into going mobile and a reflection of the company's openness towards technology and developments. This will help Google to realise its goals to provide information and services connectivity at all times and boost mobile web surfing.

The developments in the communications and multimedia (C&M) industry are taking giant leaps every year. The year 2009 has many expectations despite the economic challenges hovering ahead. There is still an air of optimism in the C&M industry in terms of providing cost savings, business advantages in C&M services based on IP and video communications, social networking, innovations in the enterprise realm for business communities contributing to doing more with less and the green movement. Also mobility is being explored through multi-services devices in business management. Looking ahead, web 2.0, mobile enterprise or enterprise 2.0, mobile advertisements, open source and open access, green technologies and next generation network are buzzwords for the C&M industry in 2009.

¹⁴ Visa's charge card concept goes wireless, CNet News, 25 September 2008, http://news.cnet.com/8301-1035_3-10051159-94.html?tag=mncol

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Key Communications and Multimedia Market Trends for 2009

5 TELECOMMUNICATION TRENDS FOR 2009 – Redback Networks

More functionality at the edge leads to cost savings from equipment consolidation	Less will definitely be more in 2009, as operators look for ways to minimise hardware investments while maintaining highly scalable and flexible networks. For example, rather than purchasing and managing separate devices for edge routing, Ethernet aggregation and subscriber management, carriers are opting for multi-service devices that integrate various functionality into a single routing platform. This trend to continue gaining momentum into 2009.
A new utilitarian view of IP convergence	As the lines between service networks continue to blur, there is expected greater convergence and a more "utilitarian" view of the network based on IP. Over the years a mix of business and residential service networks, as well as fixed and mobile, has been introduced into the operations centre, adding greater complexity. This layering of services has made it difficult and expensive for operators to manage each individual network - signaling a much-needed move towards convergence.
Seismic architectural transformations	2009 is the year of architectural transformation. For the first time in decades, operators have opportunity to revamp legacy strategies and leverage routing innovations based on the increased importance of the edge and the move to converged IP. Operators take stock of their networks and begin to implement more scalable metro solutions and lower-cost core networking solutions in response to global economic pressures. As telecoms providers continue IP infrastructure transformations, the role of legacy equipment such as core routers focuses more on switching and optics while intelligent routing functions move closer to the edge. This shift has a greater proportion of multi-service devices at the edge tasked with routing, and managing intelligent service functions like subscriber management.
Enterprise IT pushes service innovation	It is a buyer's market, and the pressure will be on carriers to step up service offerings in support of enterprise initiatives such as cloud computing and virtualisation. As a result, expect greater subscriber management intelligence to be built into the network, causing a fundamental change in the economic relationships between carrier and enterprise. The enterprise to increasingly look to carriers to provide them with innovative, cost-saving virtualised IT services, placing carriers in an ascendant role to driving the development of next-generation networks.
Mobile broadband proliferation	Cellular Telephone Industry Association (CTIA) indicated US mobile data usage grew 42.5% in the 12 months to June 2008. By 2011, the number of mobile broadband users is expected to overtake fixed broadband users. In response, carriers are working with telecommunications providers to optimise their mobile broadband infrastructures. Over the next 12 months, carriers are expected to move pilot programmes to execution mode in a new era of mobile broadband. Operators to favour equipment providers who can deliver end-to-end mobile and fixed solutions.

Source: Redback Networks

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OPPORTUNITIES FOR VENDOR STRATEGISTS AT TELCOS IN 2009 – Forrester

Market competition	Reduced competition in some markets
Next-generation-network	Expedited next-generation network (NGN) plans
Video	A marketing battle royale for video
Regulators	More intervention from regulators
Enterprise and consumer spending	Enterprise spending on communications will remain neutral in 2009, while consumer spending will fall
Emerging markets	For global operators, emerging markets like Africa and Eastern Europe are expected to be a focus of growth.
Innovation	More emphasis on innovation will be a likely outcome as telcos try even harder to rise above being just the bit pipe in a slower economic environment.

Source: Forrester

TOP 10 BUSINESS TECHNOLOGY TRENDS FOR 2009 – Verizon Business

Enterprise 2.0 (Social networking and Web 2.0)	Web 2.0 is quickly transforming into Enterprise 2.0 with the rise of social networking tools like Facebook, Wikis, Mash-ups and Twitter. Yesterday's work style is being replaced with interactive ways to communicate. By eliminating the traditional barriers of walls, wires, time and distance and replacing them with social networking tools, workers will be able to connect to their customers, suppliers, vendors and employees no matter where they are located.
Work as activity versus place (Telework)	High fuel prices prompted many companies to start allowing their employees to work from home instead of commuting long distances to the office. Verizon Business predicts that more companies implementing a teleworking option for 2009 as high-definition (HD) video conferencing gains more momentum.
Doing more with less (Outsourcing/out tasking)	In today's tough economy, companies more than ever are trying to find ways to do more with less. IT organisations are also looking for the right technologies such as advanced automated speech systems, to better serve customers. For 2009, it is all about productivity.
Visual communications (IP-based video)	With companies slashing travel expenses to cut costs, video will continue to be important as companies make the most of IP connections to create a culture of collaboration. HD video will begin to pay off for extended enterprise communications between employees, customers, suppliers and partners. As HD video equipment becomes more affordable and interoperable, the opportunity to video-enable corporate IP network endpoints enables companies to enhance existing networks with less cost.
Unified communications (UC) integrated into business processes	UC uses Internet protocol networks to integrate various systems, media, devices and applications to streamline business processes, accelerate decision-making, and reduce costs. With UC in business communications strategies, companies are looking for voice telephony solutions that will enable more collaboration and productivity. Verizon Business predicts that UC integrated into automated business processes will be next. This means human and machine intelligence working together in an IP world to further drive business growth.

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Ready, set, go IPv6 (IPv6)	The number of IP-addressable devices and systems is soaring within enterprises. Documented data on what the IP assets are, how they are used and how important they are to operations will assist IT leaders prioritise data and applications needed to be future-proof with IPv6 capabilities while replacing those that are idle or no longer productive for operations. IPv6 is for companies looking to achieve mobility and scalability with increased efficiency and growth.
Getting Software-as-a-Service (SaaS)	SaaS will help keep IT resources (connectivity, server and storage) in check and eliminate the need, time and effort to outfit every desktop. Centralisation to keep IT departments ahead in 2009.
360 security (Improved security)	Whether at home or on-the-go, security needs to be an important aspect of any business. With the rise of mobility, users will also see a rise in spam messages. A company's security should cover every endpoint, every device and every situation, both physical and logical. Home and office need the same amount of protection as boundaries continue to be unclear.
Eco-responsibility as sound business strategy (Green Tech)	Companies will look to become more "green" as part of their overall business strategy. Corporate social responsibility is becoming more important in how companies are seen by their employees, customers and investors. According to "Smart 2020: Enabling the low carbon economy in the information age" published by The Climate Group, information and communication technology (ICT) can cut total global carbon emissions by 15% by the year 2020. If companies can reduce their energy consumption, they can also cut their energy costs to gain a competitive advantage.
Cutting through the compliance clutter (Compliance tools)	Enterprises should be prepared to be forward-thinking, strategic, and innovative. Professional services and Web-based dashboards that assist in assess, monitor and enable controls for compliance will support companies looking to get it right. These "smart" tools will help organisations to quickly review whether its partners, customers and suppliers, are following regulations - an important consideration in today's connected world.

Source: Verizon Business

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WIRELESS INDUSTRY REPRESENTATIVES EXPECTATIONS –

Wireless Week

AT&T	<i>Growth in mobile enterprise applications adoption</i>	<p>Maturity of networks, devices and applications – networks that work in virtually every corner of the globe, at broadband speeds, with the GSM ecosystem continuing to create a broad device choice, for every worker and every type of work, and with mobile solutions now available to extend virtually any backend system to any device.</p> <p>There is increased realisation by businesses of all sizes of the value of real-time information and location services to their business processes – you do not need to be a large, sophisticated enterprise with a large IT shop to make it happen.</p> <p>Business-focused carriers plan to play a more proactive role in delivering hosted and managed enterprise mobile applications. With assistance every step of the way, there is no reason for customers to wait.</p>
Motorola Mobile Devices	<i>Real impact of open source</i>	<p>While 2008 introduced the promising opportunities of open source to a broader consumer audience, most recently through Google Android, the year 2009 is expected to see the rollout of even more open platform devices and wider industry backing of the open model. Open source will encourage innovation on all levels, even on mass-market devices. No longer reserved for high-end smartphones, the mobile Web is expected to be coming to life for more everyday users through the integration of open source platforms. Mobile devices across the board are evolving to bring more advanced, PC-like features to millions, and open source is playing a large part in enabling them.</p>
Yahoo!	<i>It is about monetisation</i>	<p>2009 will be a pivotal year for mobile advertising. While brands and mobile commerce sites further embrace mobile, they are expected to show if they are hitting the mark, acquiring the right users and delivering value – ROI and accurate targeting will be key. When it comes to mobile search, great products are only one part of the equation – it is also about distribution and reaching the end-user. And winning mobile search leads to a win in monetisation. The industry, including carriers, OEMs, advertisers and content providers have to make long-term investments in building and nurturing the mobile ecosystem, including mobile monetisation.</p>
Mobility Solutions, Cisco	<i>Next-generation 802.11n wireless will experience broad adoption in 2009</i>	<p>New platforms that simplify deployment and deliver full 802.11n performance are expected to become a de facto standard for new deployments – even prior to a formally ratified IEEE standard. Yet, more exciting are the applications that 802.11n will enable. True business quality video over wireless becomes a reality. The wireless network is expected to be a platform for a variety of video applications, including wireless video surveillance, high-definition streaming video for mobile learning and two-way video for mobile collaboration. The mobilisation of collaborative applications with video to accelerate the pervasive adoption of high performance wireless.</p>
Fox Mobile Group	<i>Development of more innovative mobile video</i>	<p>With increased adoption of 3G phones comes an increased demand for compelling mobile video content. This along with the value of new direct channels to consumers is expected to spur an</p>

BITS AND BITES

	content	increase in entertainment content made specifically for the mobile medium.
	Increased demand for casual mobile games	The advanced graphical and functional capabilities of next-generation handsets create a great deal of potential for mobile gaming, making room for a wide array of new interactive, motion-controlled, educational and even health-related titles, as well as for the introduction of new and unique gaming genres and formats.
	Ad-supported mobile content will continue to grow	Mobile advertising to continue its upward path as advertisers look for better and more targeted ways to reach consumers. The most significant increases will be seen in ad-supported video content and in more passive formats like in-game advertising.
	Increase in contextual integration	All kinds of businesses – OEMs, online service providers, traditional media companies – will continue to look for ways to offer more to consumers while increasing revenue. Contextual integration, the seamless integration of related content and services into existing products and websites, enable these companies to add a revenue stream that strengthens their consumer offering without incurring significant additional costs, which is an attractive combination.
Accenture	Advances in Web 2.0, surface computing	Wireless broadband and Web 2.0 will be significant drivers of mobile usage in the next several years.
		Mobile surface computing will enable users to interact with objects or content, manipulating information through natural and intuitive hand movements without a keypad or stylus.
		Widgets will become the new mobile user interface.
		Internet Protocol connectivity to span multiple access technologies, and applications make real-time decisions, driven by quality of service.
		Considerations about which access technology to use and for what purpose.
		Advanced mobile content management systems will have end-to-end frameworks that embed rules and regulations about content and usage at different control points in mobile computing systems.
		Profile management services, aided by biometric technologies such as fingerprint, iris scan or voice print identification, will be available in products.
		Mobile security will encompass infrastructure and corporate data, with mechanisms and services in place to detect and recover from attacks.
		The mobile industry will be highly proactive in its efforts to reduce the carbon footprint.

Source: Wireless Week

BITS AND BITES

5 MAJOR TRENDS IMPACTING THE MOBILE DEVICE MARKET IN 2009 – Gartner

Established vendors consolidate and new players join the fray	New device vendors such as Apple and Garmin, are looking to differentiate themselves, while others such as Motorola, face pressure as market shares decline and design innovation becomes increasingly challenging. The lower cost of mobile phone reference designs and modules, as well as the appeal of a large market, will attract more conventional consumer electronics companies to join the market.
Device vendors build out ecosystems	Pressure from operators to lower the price of devices will drive some established players to seek out new sources of revenue from content and services sold to end users. This trend is epitomised by Nokia with Ovi, Sony Ericsson with PlayNow and Apple with its iTunes store. This new market will bring changes in relationships between vendors, operators and content providers. Applications relevant to enterprises, such as location and navigation, will increasingly become available directly from device vendors that are integrating GPS into their products.
Device makers will focus on removing complexity for the user	Increasing device functionality and a need for differentiation will drive demand to simplify the user interface (UI) and service experience. As a consequence, mobile device vendors need to build up their UI competencies while retaining familiarity as well as considering how users can move horizontally across their devices' applications, rather than simply vertically within them.
Mobile devices increasingly become lifestyle statements	Style will play more of a role across the range of devices, driven not only by fashion trends but also by consumers' desires to reinforce their lifestyle choices. Vendors need to have established platforms on which small changes to casings and colours can be made without impacting costs. They will also need to consider partnering with nonmobile companies and brands — such as consumer electronics, fashion or sports companies — to increase the lifestyle appeal and consumer reach of their products.
High-end device platforms become "Field-Refreshable"	As cellular technologies become part of increasingly expensive consumer devices, vendors must manage ongoing support, upgrades and enhancement of drives. Because many users hold onto high-end devices longer, these platforms will need more life cycle management in the form of upgrades and enhancements. Some vendors are implementing these "field refreshes" that can be made to support new digital rights management (DRM) requirements, download bug fixes, or download new applications, wallpapers or skins to keep devices up-to-date.

Source: Gartner

BITS AND BITES

MOBILE SLOWDOWN IN 2009 AND TRENDS – Nokia

Mobile device market continue to be negatively impacted	The mobile device market will continue to be negatively impacted by the effects of a slowdown in consumer spending. Nokia also expects that operator and retail distribution channels will go through a period of destocking, resulting in lower sales volumes by manufacturers (sell-in) than purchase volumes by consumers (sell-through) for the industry in the first half of 2009.
Industry mobile device volumes to decline	While noting the extremely limited visibility, Nokia expects 2009 industry mobile device volumes to decline 5% or more from 2008 levels.
Mobile subscription increase	Nokia expects the four billion mobile subscriptions mark to be reached in the first quarter 2009.
Mobile and fixed infrastructure and related services market decline	Preliminary estimate is that the mobile infrastructure, fixed infrastructure and related services market will decline 5% or more in euro terms in 2009, from 2008 levels.

Source: Nokia

SURGE IN 2009 FOR MOBILE BECOMING A KEY PLAYER FOR ONLINE ADVERTISING – Bango Analytics

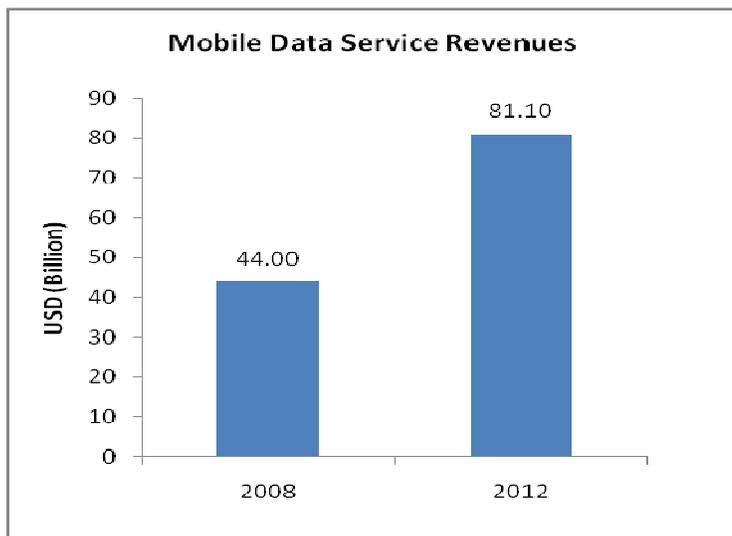
Advertising through mobile looks a lot more appealing	Tightening marketing budgets demands more controlled spending and better value. Mobile starts to look a lot more appealing, offering attractive costs of acquisition and more precise targeting than offline or PC delivery. Brands will be able to measure mobile ROI with a very high degree of accuracy and use analytics to better deliver mobile campaigns and understand their consumers.
“Big Guns” in online retailing eye new opportunities in mobile	One major “e-commerce” retailer will acquire a Direct to Consumer (D2C) mobile content provider to expand its presence in digital content. The big guns in the online music, video and books markets will have identified mobile as an increasingly important media platform and will want to expand into this area. One implication is how such a move from a major player would threaten Apple’s position as a leading music retailer for mobile devices.
Music becomes DRM free	Online music retailers follow Amazon and Napster’s lead and meet consumer preference for DRM free music that can be transferred effortlessly between phone and PC. Mobile phones to become the dominant platform for listening to music, boosted by their portability, high storage capability of the latest phones and ability to play the ubiquitous MP3 format - DRM free of course!
Cash-strapped consumers snip broadband landlines, use mobile data plans to access Internet	Over recent years, people have started to cancel their landlines in favour of using mobiles for all voice calls. We predict users will start to cancel their fixed line broadband subscriptions and upgrade to Smartphones and wireless “dongles” to get on the Internet. This consolidation is expected to happen first in the US where nearly 20% of mobile users have a Smartphone.
Open access fever continues	Of the remaining proprietary players, US operator Verizon to finally open up its Brew platform in 2009, enabling it to further grow its data business with a fully realised, open Internet offering. Apple is likely to remain closed on the back of the momentum it has built around the iPhone and its App Store. Apple solution to plateau as more mainstream, open and cost-effective content and application environments emerge, leading to become “Microsoft of the mobile world.”

Source: Bango Analytics

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

Changing Consumer Habits

Consumers are ever ready to ride on the new waves in technology. Anything that provides comfort without leaving their homes or work place serves as incentives to experiment on the latest applications. This is especially so for the young generation today who grew up amidst the new wave of telecoms connections, particularly the Internet. The mobile phones that initiated transition of voice services into a mobile device service three decades ago carry the title of 'everyone's best friend' these days.



Source: "Moving Ads for Moving Businesses: The Mobile Advertising Opportunity in Asia Pacific", ICT Practice, Asia Pacific, Frost & Sullivan, 19 November 2008

With total global mobile subscriber base totaling 3.97 billion in 2008, the advent of mobile technology can reach the masses faster and cheaper, with content being the driver to new media. A promising approach to this is the mobile medium beginning to gain share from other media. This is benefiting many "early adopter" marketers and advertisers. Traditional TV broadcasters and content aggregators are going into this data market for their content to reach wider audience and create a new source of revenue. In Asia Pacific alone, mobile data services are projected to grow from USD44 billion in 2008 to USD81 billion in 2012, contributing to 27.7% of total mobile revenues in 2012.

Informa Telecoms & Media reported that voice still makes up an average of 80% global mobile revenues in light of the growing new media. In contrast, the total value of the global data market in 2007 was USD157 billion, an increase of 35% from 2006 (USD116 billion)¹⁵. The latter is perhaps driven in large part by the expansion of 3G networks, the increasing availability of video-capable handsets and the amount of available content.

Mobile Internet is in fact driving web usage globally in the mobile data market. Nielsen Mobile¹⁶ reported that the US is the number one country in the world with 40 million users now surfing through their mobiles. This is 15.6% of the entire mobile user base in America. The UK is the second most active country with 12.9% of subscribers browsing on the move whilst Italy follows with 11.9%. Meanwhile, in Malaysia, 84.4% users access the Internet on their cellular phones through GPRS and 16.5% are 3G users¹⁷.

Overall, JP Morgan estimates US mobile Internet users will grow at a 37% CAGR over the next three years¹⁸. In view of this, in the US alone, analysts estimate an expected 28 million subscribers for mobile TV and video markets in 2012 from the 12 million subscribers in 2007¹⁹.

¹⁵ "Key trends and issues in the telecoms sector in 2009", Informa Telecoms & Media, October 23, 2008

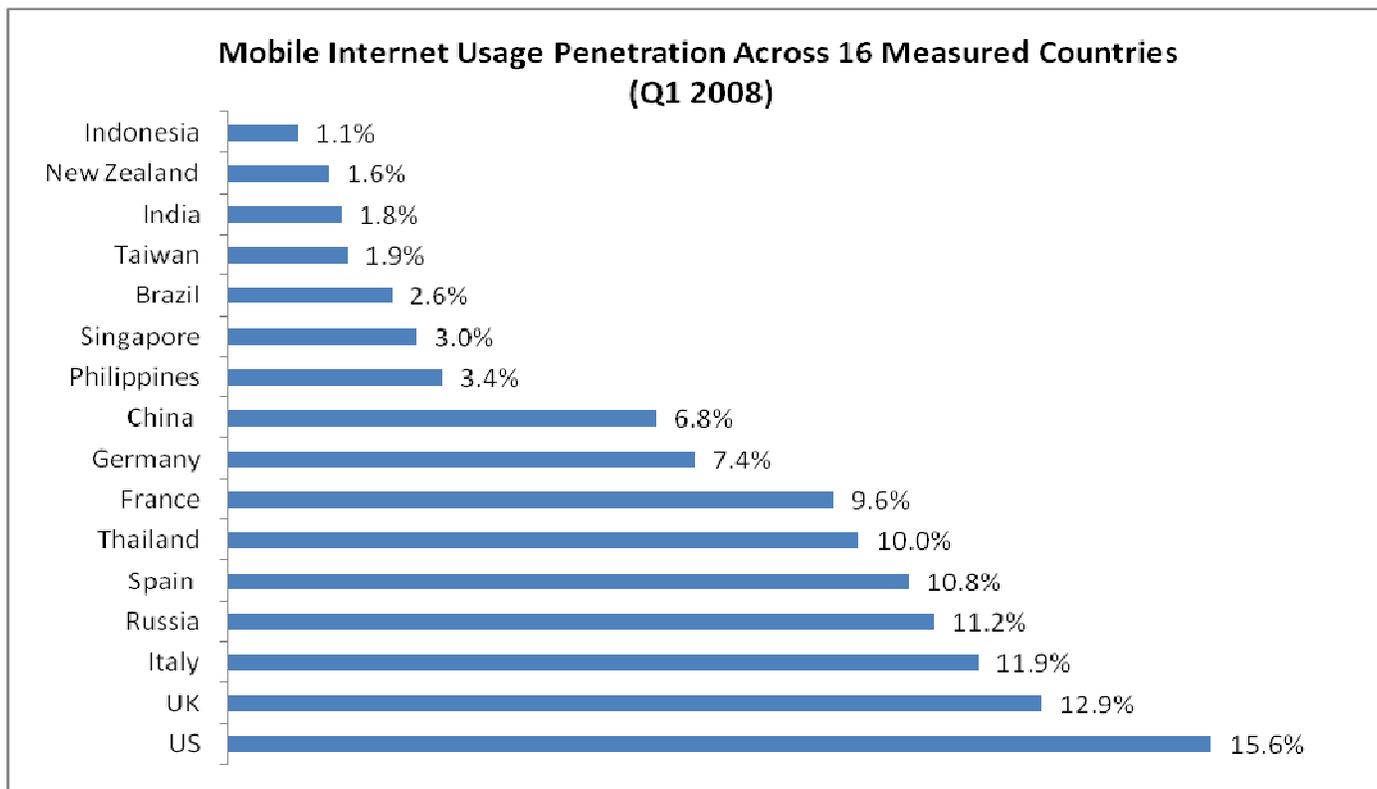
¹⁶ Nielsen Mobile is a service of The Nielsen Company and provider of syndicated consumer research to the telecom and mobile media markets.

¹⁷ Percentage of cellular phone users who access the Internet on their cellular phones in 2007: GPRS (84.4%); 3G (16.5%); WAP (12.1%); EDGE (1.5%) - SKMM

¹⁸ "State of the Mobile Internet Market", North America Equity Research, JP Morgan, 18 September 2008

¹⁹ "Significant growth in mobile TV, video content in Q3", QuickPlay Media, 10 December, 2008

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH



Source: Nielsen Mobile, 11 July 2008, Internet Advertising Bureau UK www.iabuk.net

Mobile as an Advertising Medium

Mobile ad spend is growing from a relatively small base compared to other mediums of television, cinema, magazine, newspapers and outdoor. However, as mobile phones get 'smarter' with increasing bandwidth and applications, users would be able to enjoy better features and improved quality of services. For example, the new generations of smart phones today such as Apple's iPhone, Google's G1 and the BlackBerry Storm have touch-screens and improved resolutions large enough to display the web and advertisements.

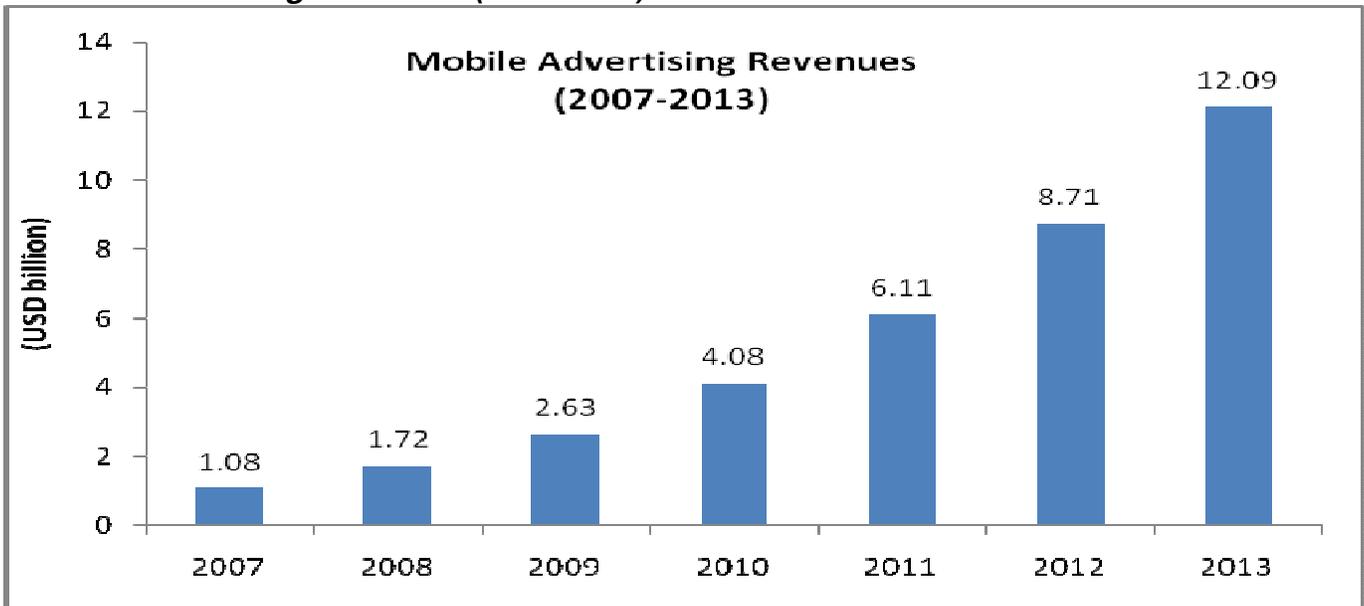
Faster networks will also accelerate the mobile Internet adoption. Nielsen Mobile's findings showed that 3G networks perform up to six times faster on data throughputs used for mobile Internet than 2G and 2.5G networks. This will greatly improve the user experience and make it more comparable to that on a PC. Nielsen also indicated that unlimited data packages are an important part of the growth of mobile Internet. These are increasingly popular with US consumers. Nielsen reported that today 14% of US wireless subscribers have unlimited data packages, and 50% of data users say they would prefer to have such packages.

With the number of Internet users growing especially in the US, the US market is very much ready to attract advertisers. Informa Telecoms and Media predicts that globally, mobile advertising revenues is expected to reach USD12.09 billion in 2013, which is 2.2% of total global advertising spend and 1.29% of global revenues. At best, the mobile advertising medium is considered a growing medium from a so far relatively small base of users. AdMob, a globally leading mobile-advertising firm, said that the number of advertisements delivered "over the mobile phone" worldwide has tripled to 4.5 billion from year 2007²⁰.

²⁰ "Madison, we have lift-off", Nov 27th 2008, from The Economist, print edition

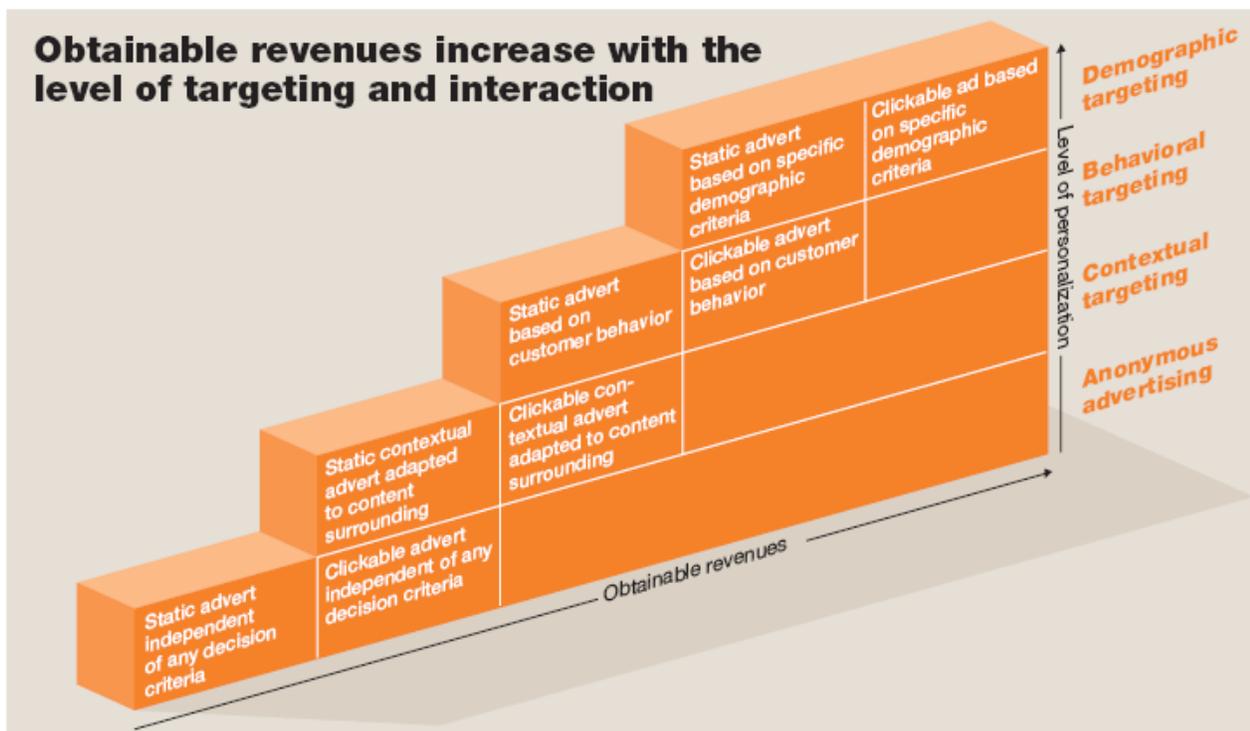
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Mobile Advertising Revenues (2007-2013)



"Key trends and issues in the telecoms sector in 2009", Informa Telecoms & Media, October 23, 2008

One of the drivers for this growth is that mobile as an advertising medium has good reach and relevance. Nevertheless, the share of advertising is distinctively dependent on the parameters of improving 3G (and beyond) penetration; time spent on accessing mobile Internet in a day; and Internet content usage. Another threshold for advertisers to add value to their advertising programme is having the level of customer-profiling where mobile operators are able to target specific customers with advertising information that matches customers' preference. This would require some level of co-operation between the parties concerned.



Source: 'Sweet Dreams of Advertising Revenue', Reinhold van Ackeren, Ericsson Business Review 3 2007

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

Strengths and Weaknesses of Mobile Advertising

Strengths	Limitations
Aimed at individual, not family	Handset capabilities limit visual impact and features
Ubiquitous presence	Limited data rates could affect delivery speed, quality, and impact of ad
Interactive, can directly complete transaction	Formats/approaches still undetermined
Can leverage other media, such as billboards or TV advertising	Device/technology platforms vary, making it difficult to reach a mass audience and offer a consistent user experience
Multimedia platform: audio, video, text, games	Mobile usage very bursty and purpose-driven, very low tolerance for advertising
All-digital environment enables detailed usage metrics, personalisation and targeting	

Source: Heavy Reading

Advertising Effectiveness of a Medium

	Reach	Frequency	Saliency*	Share of Adex
TV	90%	4.87 hours	Medium – High	40%
Radio	98%	2.17 hours	Low	10%
Print	70%	1 hour	High	36%
Internet	~40%	0.5 hours	Low – Medium	10%
Mobile	<30%	<1 hour	Low – Medium	(estimated in 2010) 2-3%

•Figures are for the US market

•TV Saliency is Medium since the attention span is confined to 20 odd channels but this 20 is different across viewers

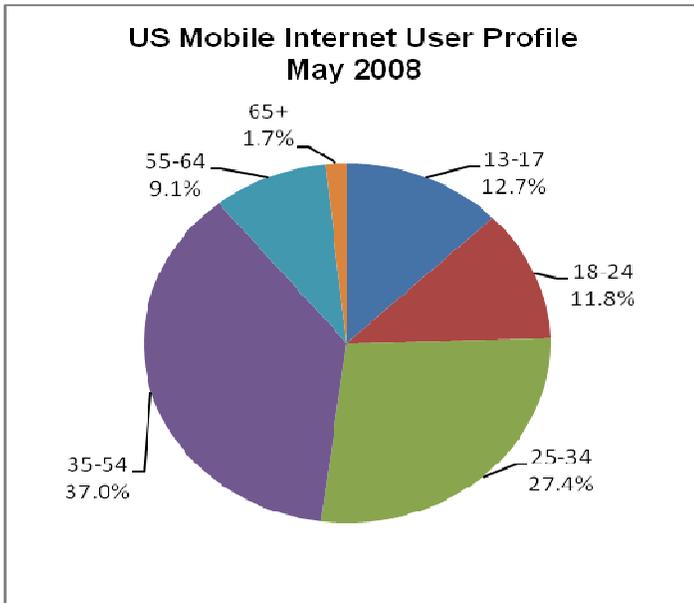
•Print has highest saliency since there is no option of attention diversion, like channel change of TV

•Radio has low saliency as the attention is never captured completely due to medium limitations

Source: "Moving Ads for Moving Businesses: The Mobile Advertising Opportunity in Asia Pacific", ICT Practice, Asia Pacific, 19 November 2008

Nielsen data revealed that as of May 2008, the US mobile Internet audience is about evenly split between those over the age of 35 (48%) and those under the age of 35 (52%). Breakdown by gender shows that 56% of mobile Internet users are male and 44% are female. On income levels, 24% of mobile Internet users have household incomes of USD100,000 or more, 26% have a household income of less than USD50,000. This reach is expected to broaden the medium's appeal to advertisers. Additionally, mobile phones improvement has appealed to many consumers. In the same study, Motorola RAZR series phones are viewed as the most popular devices among mobile Internet users in the US. Today, one in 10 US mobile Internet users accesses the web over a RAZR device.

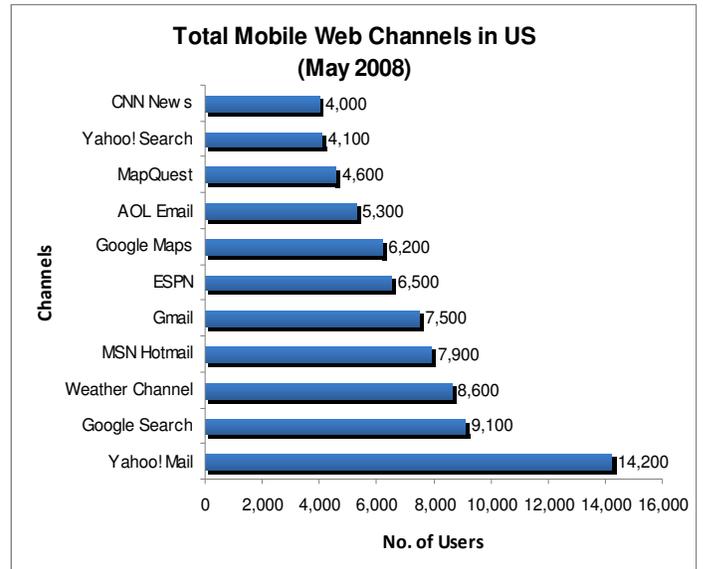
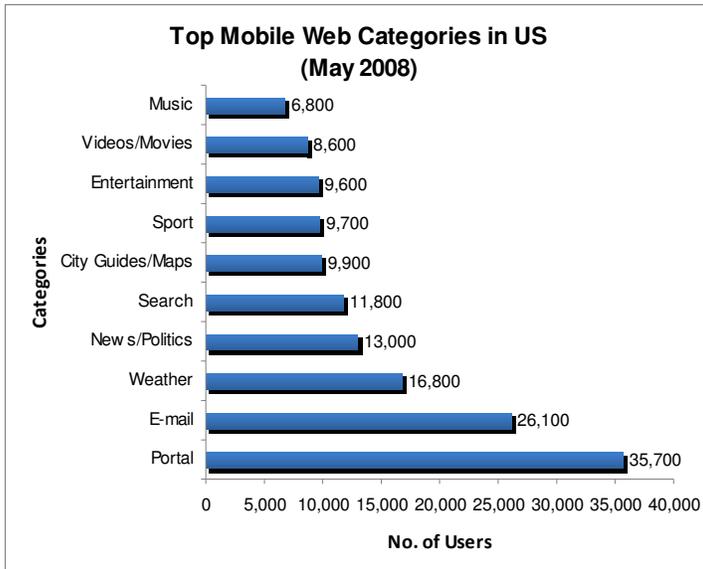
MOBILE ADVERTISING – A PROMISING REVENUE GROWTH



**Top Devices – Mobile Internet Users in US
(Q1 2008)**

	Device	%
1.	Motorola RAZR/RAZR2	10
2.	Apple iPhone	4
3.	RIM BlackBerry 8100 series (Pearl)	2
4.	RIM BlackBerry 8800 series (8820, 8830)	2
5.	Motorola Q Series (Moto Q, 9h, 9c, 9m, Q Glo)	2

Source: "Critical Mass-The Worldwide State of the Mobile Web", Nielsen Mobile, July 2008



Source: "Critical Mass-The Worldwide State of the Mobile Web", Nielsen Mobile, July 2008

Expanding the reach opportunity for mobile marketing is important for leading brands. According to Nielsen Mobile data as of May 2008, portals with brands such as Yahoo! and Google were the most popular categories of mobile websites. A total of 36 million unique mobile Internet users (89% of the mobile Internet audience) accessed portals over the mobile Internet. Email is the next most visited category with 26 million unique users (65% of the mobile Internet audience). Meanwhile, Yahoo! Mail has the largest unique audience, with 14 million unique monthly users; and Google Search and the Weather Channel coming in next with nine million unique monthly users.

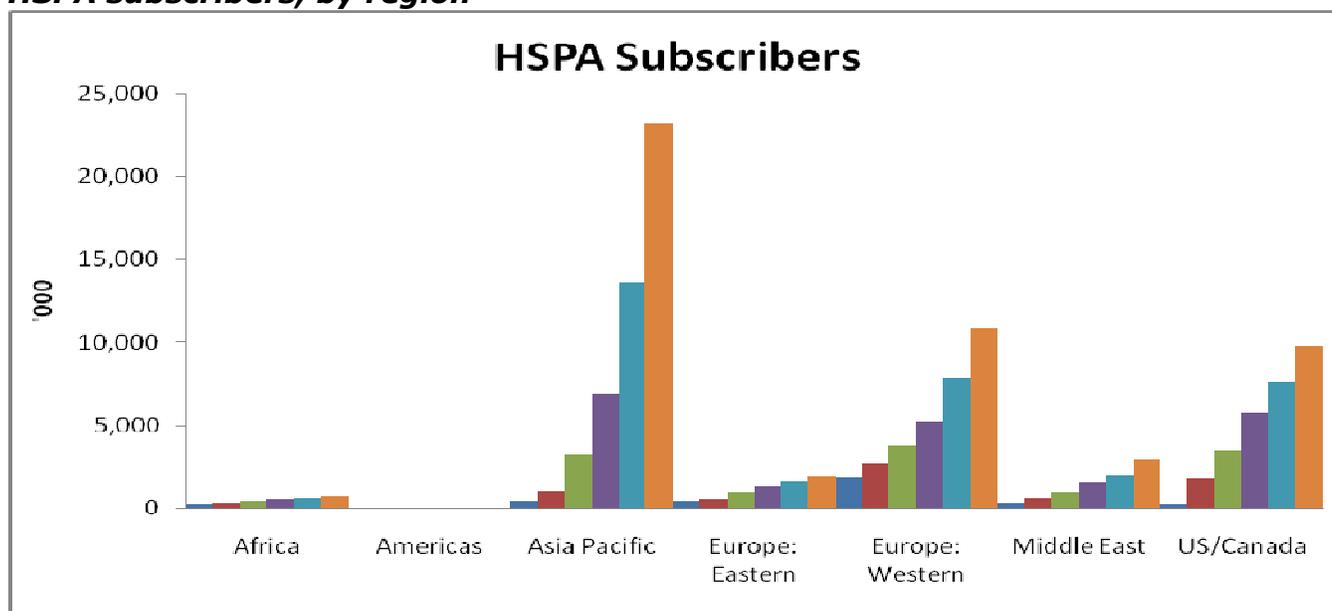
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Rich Media Advertising

This wireless technology allows rich media advertising delivered to consumers through their mobile phones in the form of TV, video, games, user-generated content (UGC) and music. Asia Pacific leads in having more than 23 million HSPA²¹ subscribers followed by Western Europe at 10.9 million subscribers. Screen Digest²² believes the market for rich media advertising on mobile will reach USD2.79 billion by 2012. However, factors holding back the greater market take up of mobile advertising are:

- *Data pricing structures;*
- *Handset and mobile web usability;*
- *Content quality;*
- *The lack of audience metrics to measure effectiveness; and*
- *Mobile media advertising competes with search, display, messaging advertising as well as innovative uses of mobile in marketing campaigns.*

HSPA subscribers, by region



Region	Dec-2006	Mar-2007	Jun-2007	Sep-2007	Dec-2007	Mar-2008
Africa	230.3	264.5	392.9	524.2	623.8	729.1
Americas	0.2	0.3	0.5	2.3	3.8	29.1
Asia Pacific	423.9	1,022.1	3,201.2	6,901.5	13,561.9	23,249.1
Europe: Eastern	390.8	559.5	888.1	1,276.0	1,671.2	1,935.3
Europe: Western	1,846.1	2,694.4	3,755.5	5,225.0	7,884.7	10,867.6
Middle East	368.0	615.8	982.7	1,559.6	2,005.9	2,951.0
US/Canada	210.3	1,751.0	3,513.0	5,748.0	7,575.3	9,802.6
World Total	3,469.6	6,907.6	12,733.9	21,236.6	33,326.6	49,563.8

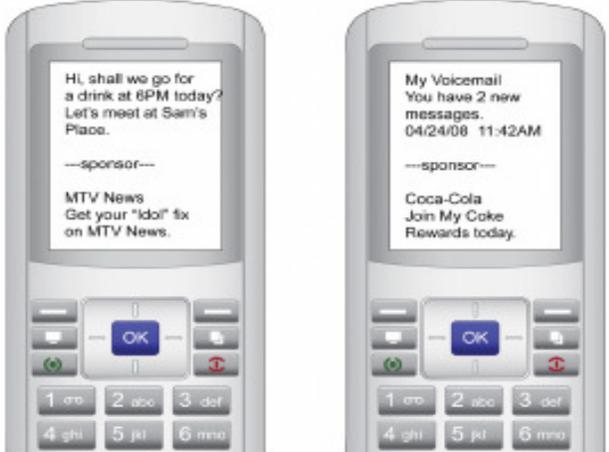
"Key trends and issues in the telecoms sector in 2009", Informa Telecoms & Media, October 23, 2008

²¹ HSPA is part of the GSM 3G network and is (predominately) a software upgrade of the network infrastructure. Various enhancements on the HSPA route are HSDPA, HSUPA, and HSPA Evolved (HSPA+).

²² "Mobile advertising using rich media formats", 29 April 2008, Screen Digest

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

Industry analysts have divided mobile Internet advertising into three categories: Message Advertising, Mobile Display and Mobile Search.

	<p>SMS advertising</p> <p>Mobile message advertising is currently the largest medium for mobile advertising as text messaging usage does not require high data speeds or advanced phone capabilities. Campaigns can include placement in text messages, direct spending on a message campaign and spending on promotional coverage of end-user messaging costs.</p>
	<p>Mobile Display Advertising</p> <p>Mobile display advertising includes spending on display banners, links, or icons placed on WAP, mobile HTML sites or embedded in mobile applications such as maps or games and videos. Analysts expect that mobile display advertising will be a high growth area over the next few years as improvements to data-loading speeds and better phones fuel mobile Internet usage.</p>
	<p>Mobile Search Advertising</p> <p>Mobile search advertising includes spending on sponsored display ads and text links that appear alongside mobile search results as well as spending on audio ads played to mobile phone callers making a directory inquiry (e.g., GOOG-411 and 1-800-FREE411). Analysts think mobile search advertising will be a high-growth area given its high volume and starting point status.</p>

Source: "State of the Mobile Internet Market", North America Equity Research, JP Morgan, 18 September 2008; Various websites [will get copyright permission]

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

Charges for Internet Browsing on Mobile

Operators are searching for ways to increase the mobile data consumption of customers. Table below shows the charges for casual Internet browsing on handsets from selected European mobile operators. According to the data, Virgin is up to three times cheaper than most other networks.

Mobile Charges (Selected European Mobile Operators)

		Cost	Fair Usage	Other
T-Mobile	Casual User	GBP0.73 per KB (GBP0.75 per MB) capped at GBP 1 per day	40 MB per day	Use over 40MB charged @ GBP0.73 per MB
Vodafone	Casual User	GBP2 per MB capped at GBP 1 per day	15 MB per day	Use over 15MB charged @ GBP2 per MB
Orange		GBP3 per MB capped at GBP1.50 per day	25 MB per day	Use over 25MB charged @ GBP3 per MB
		GBP3 per MB capped at GBP2 per day	25 MB per day	Use over 25MB charged @ GBP3 per MB
3		GBP2 per MB		
		GBP1 per MB		
O2		GBP3 per MB capped at GBP 1 per day	Unlimited	
		GBP3 per MB		
Virgin		GBP3 per MB	25 MB per day	Use over 25 MB charged @ GBP2 per MB

Source: Teligen Outlook 2008 – Tariff Outlook 11 December 2008, Issue no. 84

Comparison Company Initiatives in Mobile Advertisements

Advertisers or marketers are starting to work out which type of advertising work on mobile phones. With many platform and portal in the market to choose from (as in table below), perhaps more importantly is for them to target their audience effectively, for example, using several channels.

Company Comparison in Offering Mobile Advertisements

Company	Platform	Mobile Products	Description
Google	Android Platform (Fully integrated mobile "software stack" consisting of an operating system, middleware, user-friendly interface, and applications.)	<ul style="list-style-type: none"> • Search • Gmail • YouTube • Picassa • Maps • GOOG-411 	Advertisers can elect to place mobile search or content ads through AdWords.
Yahoo!	Yahoo!'s Mobile Widget Platform (XML-based blueprint and instant scalability across all mobile devices that Yahoo!'s own mobile services run on)	<ul style="list-style-type: none"> • Mobile Homepage • Yahoo! oneSearch - which provides instant answers to any query and not just web links • Yahoo! oneConnect - an all-in-one communications application offering 	<ul style="list-style-type: none"> • Yahoo! recently announced a strategic partnership in the UK that will deliver the first graphical advertising to appear on T-Mobile's Web'n'walk service. • Recently, Maxis Communications Berhad in Malaysia and Idea Cellular

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		<ul style="list-style-type: none"> • Yahoo! onePlace - a content management application 	Limited in India extended Yahoo!'s mobile graphical advertising reach through new partnerships.
Microsoft	<ul style="list-style-type: none"> • MSN Mobile • Stamp (Screen Tonic) • TellMe • Danger 	<ul style="list-style-type: none"> • Email • News • Sports • Entertainment • Local movie listings • Maps and directions • Windows Live Messenger • Live Search • Text or banner links on portals • Ads in SMS messages • Ads in mobile Web pages that vary depending on where the reader is located • Provides a voice search recognition platform • Provides communication, organisation, information services through real-time mobile messaging, social networking, web browsing, and personal information management applications 	<ul style="list-style-type: none"> • Microsoft software and services including Windows Mobile, Windows Live Messenger, Hotmail, and Windows Live Spaces are also used by device makers including HTC Corp, LG Electronics, Motorola, Nokia, Palm, RIM, and Samsung
AdMob	<p>Landing Page Builder (For advertisers who want to enter the space but do not have mobile landing pages)</p> <p>AdMonitor (Shows live data of who is viewing mobile ads around the world)</p>	Allows advertisers to create ads, choose landing pages, and target ads to specific sites, audiences, locations, carriers, phone platforms, and phone manufacturers	AdMob clients include ESPN, CBS, Geico and Starbucks
Amobee	Delivers a unified, telco-grade system for funding mobile content and communications through advertising revenues.	<ul style="list-style-type: none"> • Videos • Music • Messaging • Games • WAP 	Inserts targeted, interactive advertisements into all types of mobile entertainment and communication channels.
Enpocket	Mobile advertising campaign management and delivery system distinguished by advanced consumer insight, targeting, and measurement.	Deliver mobile advertising across multiple formats, including SMS, MMS, mobile Internet advertising, and video.	Allows brands to plan, create, execute, measure, and optimise mobile advertising campaigns around the world

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

Greystripe	AdWRAP products provide mobile content free to consumers in an ad supported model through the operation of an in-game mobile ad network and mobile game distribution platform.	The ad network takes full screen Images, videos, and scrolling banners and dynamically delivers them into mobile games and applications.	Recently, Greystripe announced that it is Launching an iPhone 3G API for game developers.
JumpTap	JumpTap's search and advertising solutions	Enable carriers to maintain a position in the mobile marketing value chain, drive traffic and revenue opportunities to content publishers, and provide advertisers access to targeted customers	JumpTap reaches over 150 million mobile subscribers through partnerships with 17 mobile operators and numerous content publishers

Source: "State of the Mobile Internet Market", North America Equity Research, JP Morgan, 18 September 2008

Mobile Advertising Formats

Mobile advertising must have a globally interoperable platform to build upon that can fit not only mobile but converged ecosystems. Today, we see various bodies standardising the mobile advertising framework.

Among them is the Mobile Marketing Association (MMA). It provides global formats, guidelines and best practices necessary to implement mobile advertising initiatives in a variety of mobile media channels, including Web, messaging, applications and video. Other bodies include the GSM Association and Open Mobile Alliance (OMA).

GSM Association (GSMA)

GSMA has recently created a Mobile Advertising committee that will work in the standardisation of Mobile Advertising issues. A number of focus areas for this group includes:

- standards for ad inventory, for example, size and placement;
- establishment of "best practice" guidelines, especially to insure that subscribers are not overwhelmed by unwanted advertisements on arriving on their phones;
- a cross operator ad planning and purchasing system, to broaden the reach of available to an advertiser; and
- defining the standards for measurement, so that there is a single set of metrics that can be applied across the industry.

Open Mobile Alliance (OMA)

OMA is the focal point for the development of mobile service enabler specifications, which support the creation of interoperable end-to-end mobile services. Other organisations with which OMA might collaborate in the mobile advertising area are CDMA Developers Group (CDG), Mobile Entertainment Forum (MEF) and Interactive Advertising Bureau (IAB).

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

Advertising Guidelines from the Mobile Marketing Association (MMA)

	Mobile Web - Provide recommendations for graphical banner advertising and text links.	Text Messaging (SMS) - Supports text messages of up to 160 characters each, although longer messages may be cut into 160-character sections.	Multimedia Messaging (MMS) - Rich media messaging service that allows mobile users to send and receive messages that include graphics, photos, audio video and text.	Mobile Video and TV
Ad Units	a) Mobile Web Banner Ad – the default colour graphics ad type to be offered by all Mobile Web ad publishers; b) WAP 1.0 Banner Ad – an optional black-and-white graphics ad type for use in campaigns that target older mobile phones; c) Text Ad – an additional optional Mobile Web ad unit displaying text instead of an image.	a) Short SMS Ad (Teaser) – The content portion of the SMS message is the core part while remaining space can be made available for advertiser usage. It is recommended that SMS ad providers reserve the last 20-40 characters for advertiser usage per message; b) Complete SMS Ad (Full Message) – Up to 160 characters for advertiser usage.	a) MMS Square Ad – 1:1 aspect ratio, meaning the horizontal and vertical dimensions are equal; b) MMS Banner Ad – additional optional MMS ad unit available for use alongside other content; c) MMS Audio Ad – audio clip that can be played in parallel to a Square or Banner Ad.	a) Bumper/Billboard – Short (< 5 seconds) promo/logo bumper to introduce/close content on behalf of a sponsor b) Pre-roll only - <30 sec video ads c) Mid-roll only - <30 sec video ads d) Post-roll only - <60 sec video ads
Aspect Ratios	The recommended aspect ratios for Mobile Web Banner Ads are 6:1 (default) and 4:1 (extended).	-	Recommends using the square (1:1) aspect ratio for MMS Square Ad image ads to ensure best fit.	4:3 or 16:9
Formats	The recommended formats for banner ads are: a) .gif, .png or .jpg for static banners b) .gif for animated banners	SMS is a text-only medium. No rich media is supported, however some handsets with click-to-call/mobile Web capability will display coloured links and underlining of URLs and phone numbers	a) Images can be static or animated; b) Static images may be .jpg or .gif; c) Animated images should be in the animated .gif format; d) To use transcoding on the network to adapt the PC composition formats to be mobile delivery format.	a) File - .wmv, .avi, .mov, .mpg, .3gp b) Audio quality - @16bit 44Khz stereo c) Video quality – QVGA@250kbps, 20-30 frames per second
Dimensions	The recommended mobile web banner ad widths are 120, 168, 216 and 300 pixels.	-	a) MMS Square Ad – 320x320 pixels b) Small MMS Square Ad – 120x120 pixels c) MMS Banner Ad – as per the X-Large Image Banner d) MMS Video Ad – Not yet available	-
Size	a) Mobile Web Banner Ad Sizes – the maximum graphic file size is dependent on the banner format chosen. b) Text Tagline Sizes – Character limits (rather than file size limits) are applicable for text ads. Screen size has no effect on text tagline sizes.	-	a) Mobile phone’s capabilities to receive MMS (between 100KB and 600KB per MMS message) b) Mobile networks support MMS messages (between 100KB and 300KB)	-

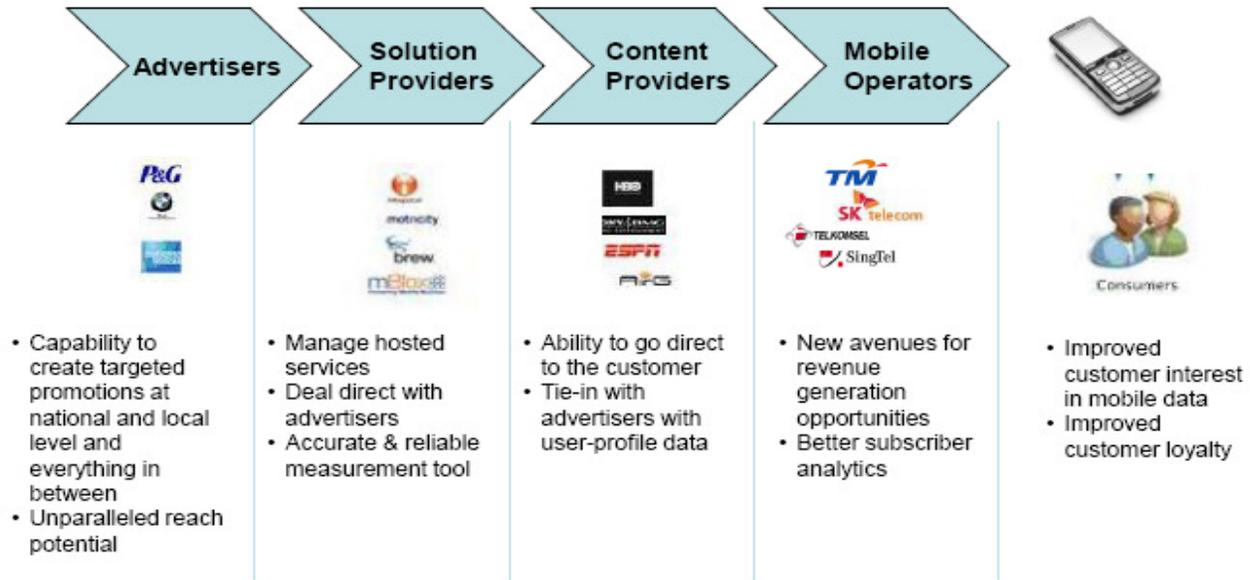
Source: Extracted from the Mobile Advertising Guidelines, Mobile Marketing Association

MOBILE ADVERTISING – A PROMISING REVENUE GROWTH

Mobile Advertising Ecosystem

Each of the players in the mobile advertising value chain would have some inherent benefits and hence incentives to drive the market further.

Mobile Advertising Value Chain



Source: "Moving Ads for Moving Businesses: The Mobile Advertising Opportunity in Asia Pacific", ICT Practice, Asia Pacific, 19 November 2008

Mobile Advertising in Malaysia²³

The face of advertising is set to change in Malaysia as one of the country's major cellular operators introduces the mobile channel to advertisers in the country. An example is Maxis Communications Berhad (Maxis) WAP portal, which carries a variety of graphical advertisements, served by Internet giant Yahoo!. Yahoo! and Maxis will combine their expertise and knowledge of consumer habits to enable leading brands to undertake targeted advertising, created specifically for the mobile environment. The first advertiser on the WAP portal is IT gear maker, Benq. Maxis currently has about 10 million mobile subscribers and an average of 40 million hits per month on its WAP portal.

Conclusion

Advertising sent through mobile phone reaches the recipient directly, wherever they are, at any time desired, offering effective targeting as well as interactivity and consumer engagement. Today, the Malaysian environment is seeing mobile Internet driving 3G take-up, where more than 30% of the telco's mobile subscribers are mobile Internet users. However, if falling handset prices can spur migration to 3G with careful planned data prices, we might see a wider acceptance among consumers.

In Malaysia, while mobile advertising is regarded at infancy stage, further progress can be achieved on the back of carefully tapping the high market potential from a large base of mobile users in the country today, and optimising collaborative industry efforts in innovative ways to engage the consumers.

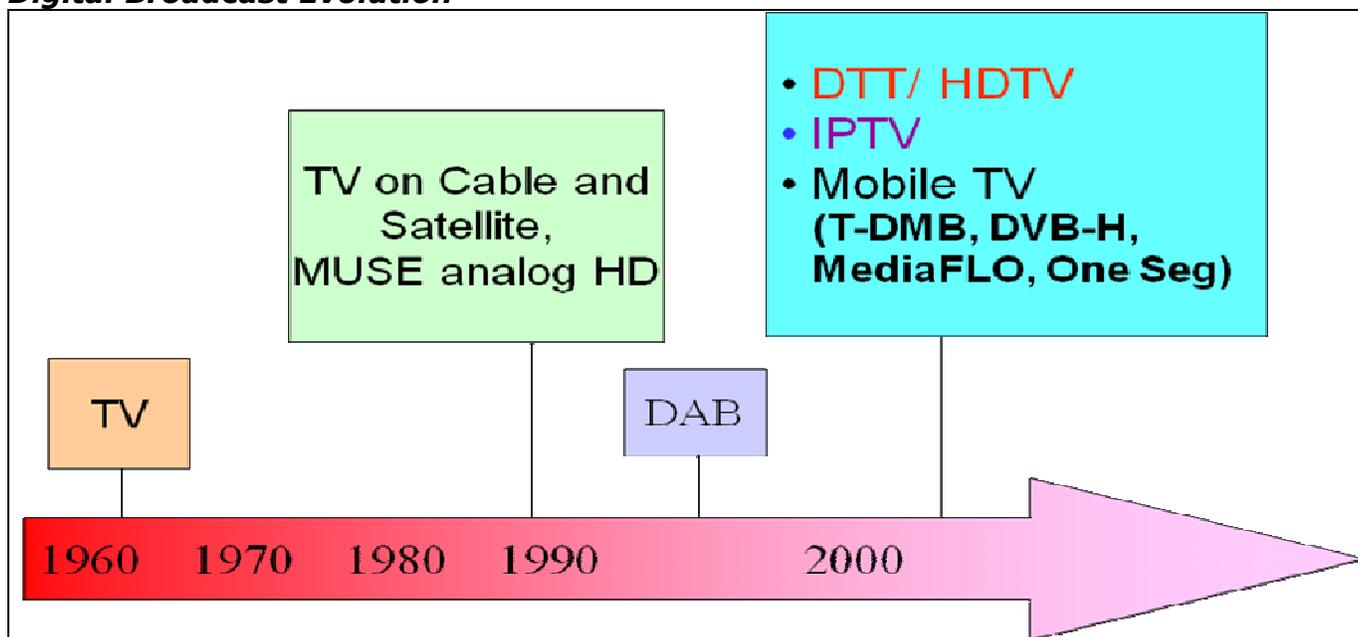
²³ "Ads get mobile channel in Malaysia", Edwin Yapp, ZDNet Asia, June 18, 2008

DIGITAL TV – STATUS AND DEVELOPMENTS

Broadcast Technology – In Transition to Better Offerings

The broadcast sector is evolving as consumers expect more from their TV offerings and on-demand services transform the method consumers obtain content. For almost 50 years, digital broadcast technology has transformed TV content into multiple platforms and standards. Datamonitor²⁴ highlighted that Digital TV (DTV) adoption is expected to illustrate strong growth over the next two to three years as consumers demand enhanced service functionality including on-demand entertainment and bundled communications offerings. A key driver in the transition to DTV services is the switch off of analogue transmission in the US and Western Europe. With the US switch off (ASO) date mandated for 17 February 2009 and most Western European countries switching off transmission before the European 2012 deadline, the next two to three years will see significant increases in DTT consumers.

Digital Broadcast Evolution



"Digital Broadcast Technology Development", Radio Television Hong Kong (RTHK), December 2006

TV Trends and Shipments

As the market for TV sets is rapidly switching from analogue to digital, large screen size TV market will make up most of the volumes and revenue. PricewaterhouseCoopers²⁵ projected that the global TV subscription and licence fee market will increase from USD173.5 billion in 2007 to USD280.8 billion in 2012, a compound annual growth rate of 10.1% during the five-year forecast period. In addition, Asia Pacific and Latin America will have average double-digit annual increases of 16.1% and 14.9%, respectively.

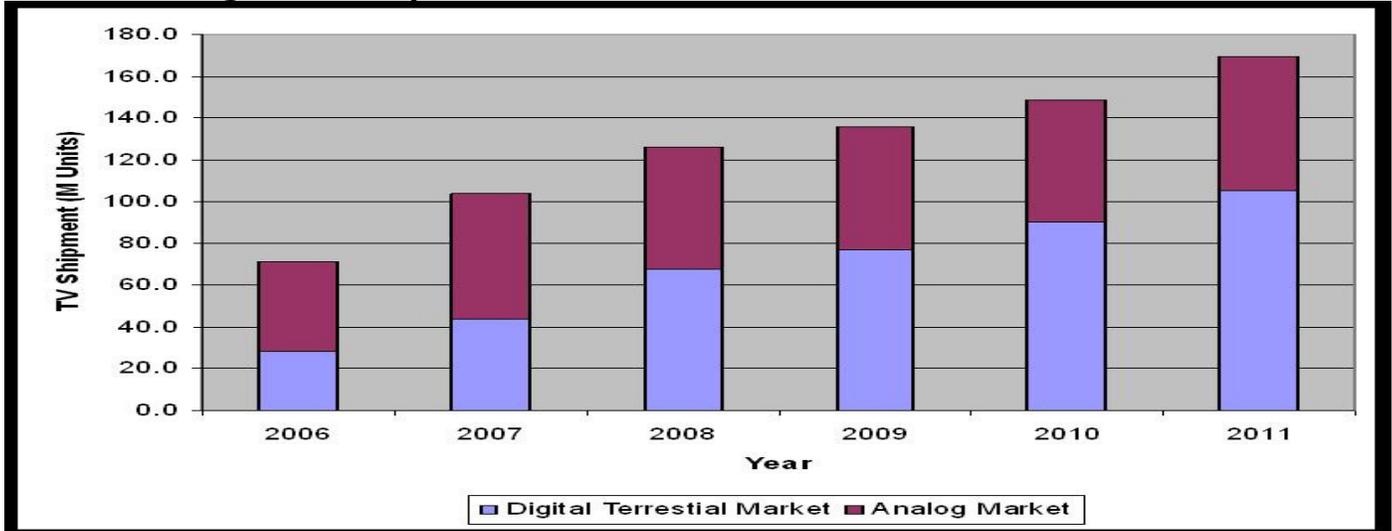
With reference to the Worldwide Digital TV Shipment Forecast chart below, by year 2009 until 2010, TV shipments in the digital terrestrial market are expected to increase to more than 60 million units, making it more than half of the TV shipments in the analogue market.

²⁴ European and US Digital TV, 2008 (Strategic Focus), Datamonitor, July 2008

²⁵ Global Entertainment and Media Outlook 2008-2012, PricewaterhouseCoopers LLP, Wilkofsky Gruen Associates

DIGITAL TV – STATUS AND DEVELOPMENTS

Worldwide Digital TV Shipment Forecast

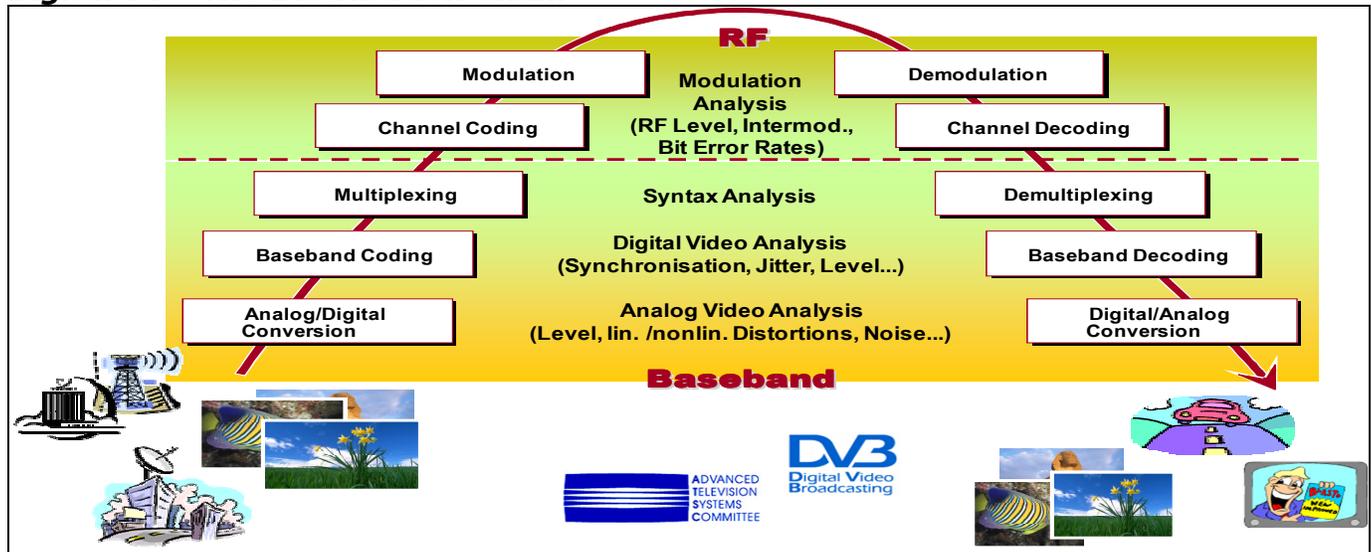


Source: "GLGi: Worldwide Rollover to Digital TV Broadcast", Jon Peddie Research

In-Stat²⁶ reported that TV set manufacturers are beginning to add new connectivity features to TV sets, which is expected to serve towards maintaining TV's role as the centre of household entertainment. These features include:

- Direct Internet connectivity, with content offered through TV set manufacturer services such as from Samsung, Vizio, Sharp, Sony and Panasonic which will bring high-definition movies, music and other online services on demand;
- Wireless network connectivity, which will let consumers connect to networked cable boxes, computers, games devices, PVRs and DVD players; and
- TV manufacturers working with US cable companies to include next generation tru2way two-way CableCard direct cable connection features on TV sets marketed in the US.

Digital TV - The Distribution Chain



Source: "Signal Monitoring Demands in a Digital TV Network", Rohde & Schwarz International Operations Munich Germany, November 2008

²⁶ Digital TV 2008: Shipments Increase While Revenues Flatten in Worldwide Market. In-Stat, August 2008

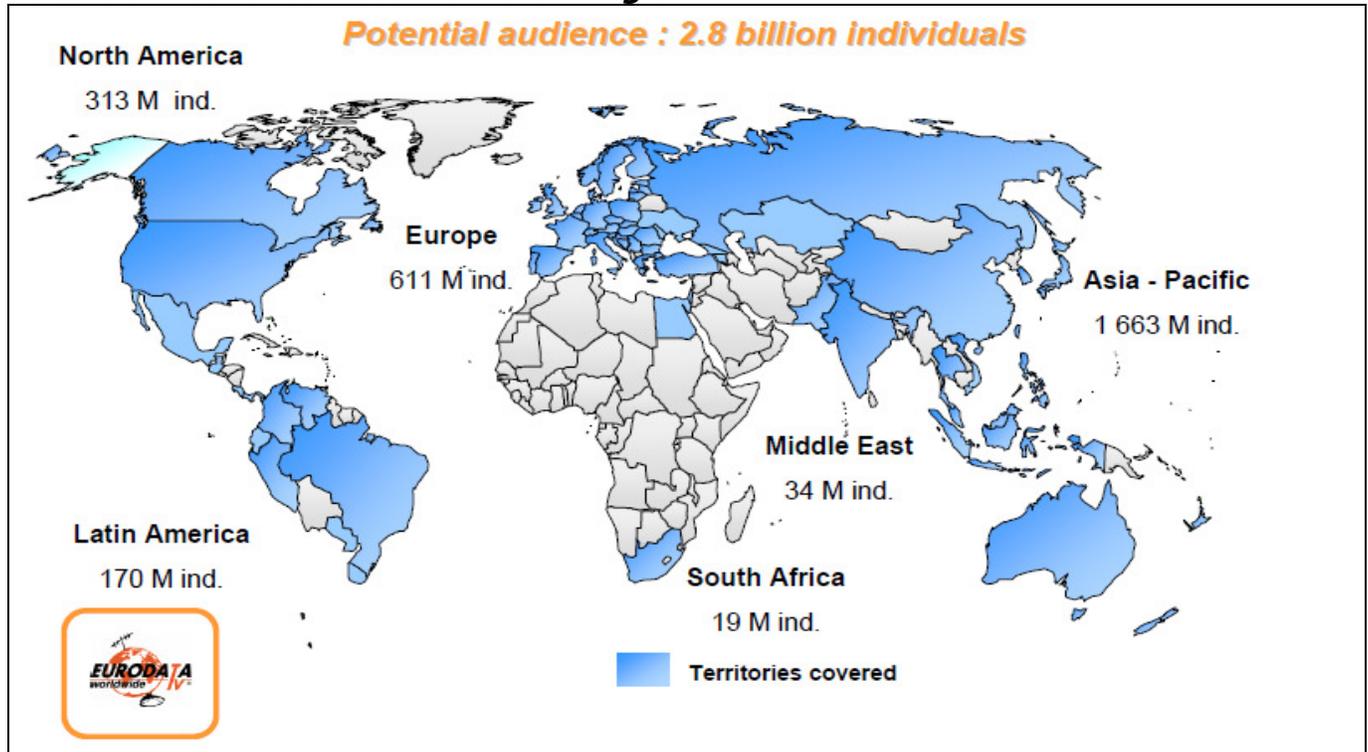
DIGITAL TV – STATUS AND DEVELOPMENTS

Global DTT Scenario and Standards

Analogue terrestrial transmission is being discontinued worldwide in a phased manner. Digital Terrestrial TV (DTT) is either being thought of or implemented in almost all countries in the world. Many countries have announced the date for completion of digitalisation and subsequent switch off of analogue terrestrial service, worldwide.

When digital TV takes off globally, it is expected that more than 80 territories will be covered with a potential audience of 2.8 billion individuals and 2,000 channels worldwide. A glimpse of selected countries in DTT deployment is mentioned below.

Potential Audience Measurement – Digital TV



Source: "Audience measurement developments and challenges as Digital TV is taking-off", April 2008, Eurodata TV Worldwide

Many countries have chosen their technical standards for DTT broadcasting. A few countries are developing their own DTT technical standard such as China's homegrown standard DMB-T/H. Others alike are the American ATSC-T standard, the European DVB-T standard and the Japanese ISDB-T standard.

DIGITAL TV – STATUS AND DEVELOPMENTS

DTT Deployment Status in Selected Countries

Country	DTT Standard	Service Launch	Business Model	ASO* Date
Australia	DVB-T	2001	FTA	2013
Austria	DVB-T	2006	FTA	2010
Belgium	DVB-T	2002	FTA	2012
Brazil	SBTVD	2007	FTA	2016
Brunei	DVB-T	August 2008		
Cambodia	DVB-T			
Canada	ATSC			
Colombia	DVB-T	2H 2010		
Croatia	DVB-T	2007	FTA	2010
Czech Republic	DVB-T	2005	FTA	2010
Denmark	DVB-T	2006	FTA	2009
Estonia	DVB-T	2006	PayTV + FTA	Jun 2010
Ethiopia	GE'06 signatory**			
Faroe Islands	DVB-T	2002	FTA	
Finland	DVB-T	2001	FTA + PayTV	2007
France	DVB-T	2005	FTA + PayTV	2011
Germany	DVB-T	2002	FTA	2009
Ghana	GE'06 signatory**			
Greece	DVB-T	2006	FTA	2012
Hong Kong	DMB-T/H			
Hungary	DVB-T	2008		2012
Iceland	DVB-T			
India	DVB-T			
Indonesia	DVB-T			
Iran	DVB-T			
Ireland	DVB-T	2008	FTA	2012
Italy	DVB-T	2003	FTA + PayTV	2012
Japan	ISDB-T			
Kenya	DVB-T			
Laos	DVB-T			
Latvia	DVB-T			
Luxembourg	DVB-T	2006	FTA	2006
Malaysia	DVB-T			
People's Republic of China	DMB-T/H			
Poland	DVB-T	Soft launch completed - full launch Sep 2009	FTA	Jul 2013
Portugal	DVB-T	April 2009	FTA	Jan 2011
Saudi Arabia	DVB-T	2006	FTA	
Singapore	DVB-T	2001	FTA	
South Africa	DVB-T	2008		2011
South Korea	ATSC	2001	FTA	2012
Spain	DVB-T	2000	FTA – Add Pay TV in 2009	Apr 2010
Sweden	DVB-T	1999	PayTV + FTA	Oct 2007
Switzerland	DVB-T	2001	FTA	2008
Taiwan	DVB-T	2004	FTA	2010
Thailand	DVB-T			
Ukraine	DVB-T	2006		2014/2015
United Arab Emirates	GE'06 signatory**			
United Kingdom	DVB-T / DVB-T2	1998	FTA + PayTV	2012
United States	ATSC		FTA	2009
Vietnam	DVB-T	2007	FTA	

*ASO – Analogue Switch Off

**GE'06 signatory was the final outcome of the Regional Radiocommunication Conference 2006 in Geneva, which created regional spectrum plans for DVB-T implementations. Neither ATSC nor ISDB-T was considered at this conference. It can be assumed that all GE'06 signatories will ultimately adopt DVB-T (or DVB-T2) for the implementation of DTT services.

Source: www.dvb.org

DIGITAL TV – STATUS AND DEVELOPMENTS

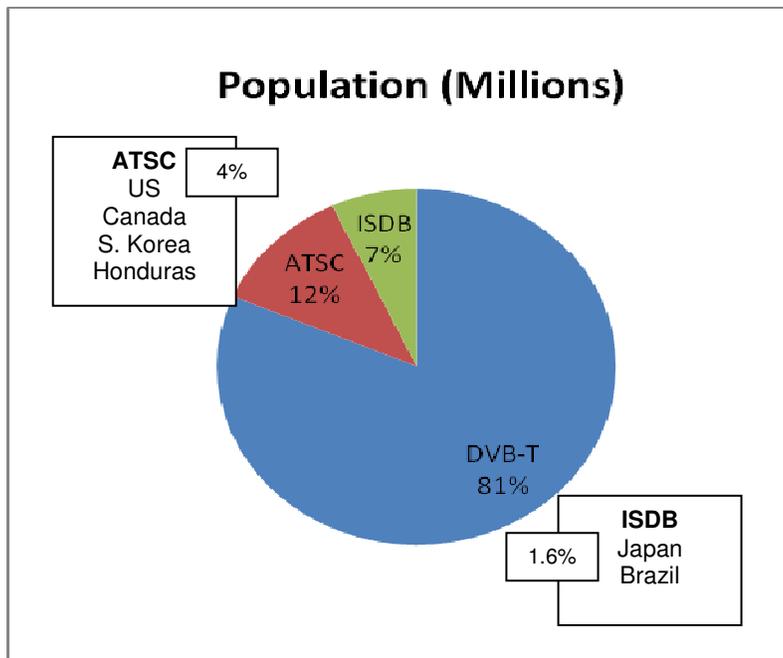
The History of DVB Delivery Standards

Digital Video Broadcasting (DVB) is an industry-led consortium of over 270 broadcasters, manufacturers, network operators, software developers, regulatory bodies and others in over 35 countries are committed to designing open technical standards for the global delivery of digital television and data services²⁷. Services using DVB standards are available on every continent with more than 220 million DVB receivers deployed.

Standard	Ratified	First Deployed	Overview
DVB-S	1994	1995 (France)	<ul style="list-style-type: none"> The first DVB standard for transmission QPSK Modulation Used in Direct-to-Home and Primary Distribution
DVB-C	1994	1995	<ul style="list-style-type: none"> The second DVB standard for transmission QAM Modulation Used in HFC networks Direct-to-Home
DVB-T	1997	1998 (UK)	<ul style="list-style-type: none"> More complex than previous standards OFDM Modulation Used in Direct-to-Home

QPSK - Quaternary Phase Shift Keying; QAM - Quadrature Amplitude Modulation; HFC - Hybrid Fibre Coax; OFDM - Orthogonal Frequency Division Multiplexing

Source: "DVB-S2/T2/C2 – a market outlook for 2.0 standards", November 2008, Tandberg Television



It is noted that the standard DVB-T is by far the most adopted and implemented in the world - covering more than 100 countries. Other DVB Standards such as the DVB-C, DVB-S and the like that have become world standards are also available.

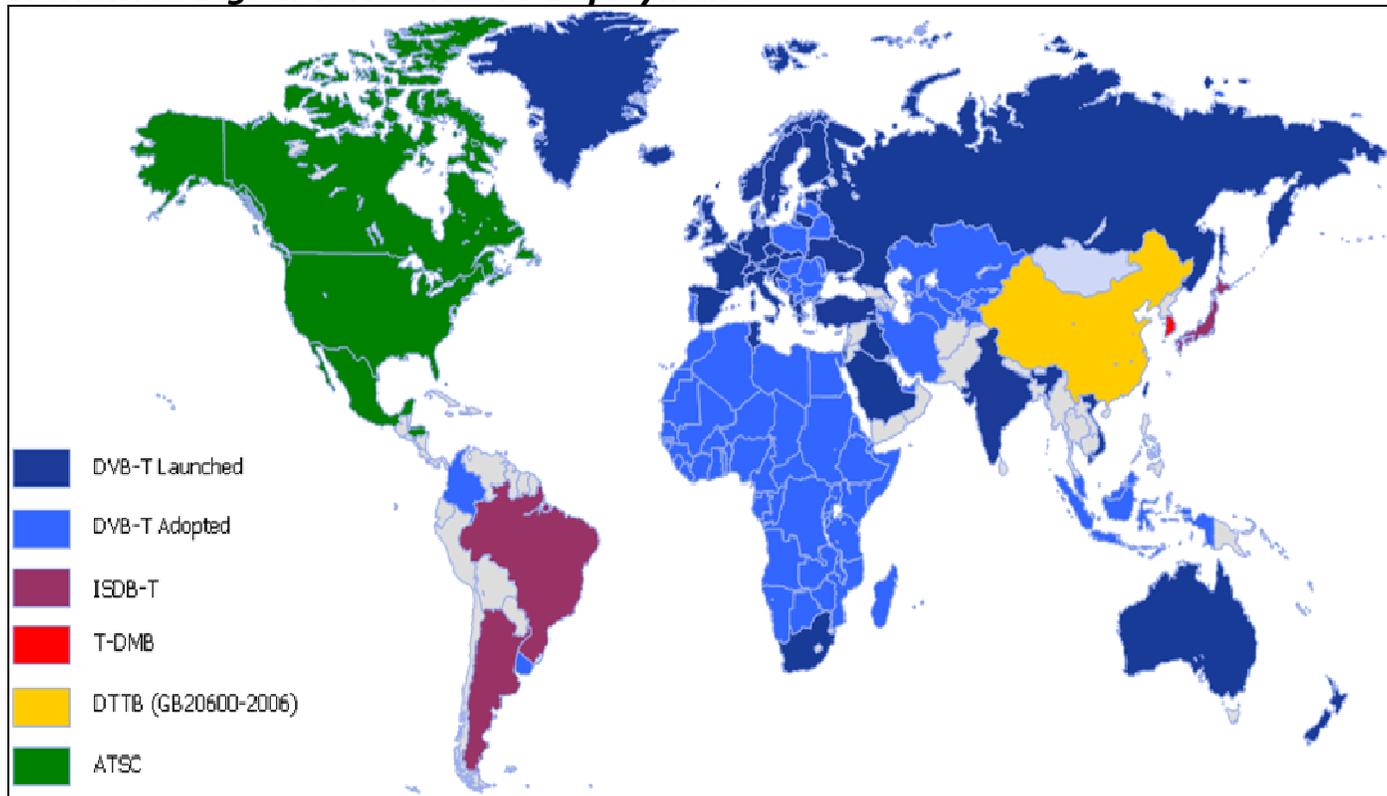
DVB-T commercial service has been on air since 2005 and covers more than 350 million people over 20 to 40 channels available. In Europe, it covers countries such as UK, Germany, France, Italy, Spain, Sweden, Netherlands, Finland, and Norway, while in Asia the countries include Malaysia, Vietnam, Philippines, Taiwan, China and Australia.

Source: The Evolving Family of DVB Standards, November 2008, DVB Asia

²⁷ www.dvb.org

DIGITAL TV – STATUS AND DEVELOPMENTS

Worldwide Digital Terrestrial TV Deployments



Source: *Mobile TV Market: Reality, Trends and Challenges*, November 2008, DiBcom

Summary of Development of Digital Terrestrial Television Broadcasting in Other Countries

ASEAN

ASEAN countries are working closely to set digital TV standards and policies and to create content for digital broadcasting in alignment to the global trend for broadcasters to switch from analogue to digital broadcasting over the next five to 10 years.

Among the standards and policies agreed on are:

1. The common set of technical specifications for standard definition and high definition (HD) digital set top boxes;
2. The alignment of technical specification standards for set-top-boxes to create economies of scale for equipment manufacturers and thus encouraging lower prices of set top boxes for regional consumers;
3. Technology standards would continue on four areas:
 - a. exploring interactive TV software costs;
 - b. MPEG4 licensing issues;
 - c. establishment of a common Digital TV Sound Standard; and
 - d. study of the high-definition transmission and production formats; and
4. The establishment of an ASEAN HD Centre which would provide training on HD productions and facilitate HD co-productions within the region.

Source: *Various websites*

DIGITAL TV – STATUS AND DEVELOPMENTS

Asia and Oceania

Country	Standard	Progress
Mainland China	DMB-T/H	<ol style="list-style-type: none"> 1. Digital rollover is expected in 2015 with technical standard of DMB-T/H; 2. There are five HDTV programme channels in service and Olympics 2008 was broadcasted in HD within major cities; 3. Launch of digital television will begin with cable and satellite systems and followed by terrestrial systems; 4. DTT Implementation Timetable: <ul style="list-style-type: none"> - Before 2005: Adopt national DTT standard - 2005: Formal launch of DTT - 2015: Analogue switch-off
Australia	DVB-T	<ol style="list-style-type: none"> 1. DTT launched in January 2001 in five largest cities; 2. Current coverage exceeds 65% of population with reported 130,000 DTT households; and 3. There are more than two million DTT units; Free-To-Air HD broadcasts.
Singapore	DVB-T	<ol style="list-style-type: none"> 1. Launch of DTT in February 2001 by government-owned MediaCorp for mobile reception in public buses under the brand of TV Mobile; and 2. Pilot trial of DTT for fixed reception in operation. Full scale service subject to commercial decision.
Japan	ISDB-T	<ol style="list-style-type: none"> 1. DTT broadcast will begin with three major urban areas (Tokyo, Osaka and Nagoya) in December 2003. Other regions to launch by 2006; 2. Aim to switch off analogue TV by 2011; and 3. There are more than 12 million DTT sets; about 7 million are HD ready; HD started in December 2003.
South Korea	ATSC	<ol style="list-style-type: none"> 1. One of the first nations outside America adopting the ATSC standard for digital terrestrial broadcasting in 1997. DTT was launched in October 2001 and is expected to provide coverage to 70% of the population; and 2. There are more than three million DTT sets, about two-third are HD ready.
Taiwan	DVB-T	<ol style="list-style-type: none"> 1. Government originally favoured the ATSC standard as a natural evolution from its analogue NTSC system. However, the broadcasters prefer the DVB-T standard. In June 2001, the government agreed to follow a technology neutral approach and adopted the DVB-T standard recommended by the Television Academy of Arts & Sciences representing the five TV broadcasters; and 2. DTT was launched in April 2003. Full implementation aimed by 2006.

Source: Various websites

North and South America

Country	Standard	Progress
US	ATSC	<ol style="list-style-type: none"> 1. Digital Tuner Mandate since March 2007 and supports HD; 2. Analogue broadcast to end in February 2009 got delayed and postponed the shutdown to 12 June 2009; 3. USD40 rebate coupons for set top converter boxes; 4. FCC has started (in 2007) imposing fines to TV manufacturers and retailers; and 5. More than 17 million DTV sets sold. Most TVs have ATSC tuners. More than 1,525 stations in 211 cities.
Canada	ATSC	<ol style="list-style-type: none"> 1. The first commercial DTT station went on the air in Toronto in early 2003; and 2. Now, they have more than 1.2 million sets with more than 21 HD channels.
Argentina	ATSC	Formally adopted ATSC in end 1998.

Source: Various websites

DIGITAL TV – STATUS AND DEVELOPMENTS

Europe

The recommendation to turn off analogue broadcasting in the European region is expected in 2012. A concern here is the interference in airwaves within the neighbouring countries due to the different rollover times²⁸ that varies from country to country. The European rollover is for standard definition TV only and not High Definition (HD). There are currently 24 HD channels in service, such as the Euro1080 HDTV and Pay-HD in Germany.

Country	Standard	Progress
UK	DVB-T	<ol style="list-style-type: none"> 1. DTT launched in November 1998. Target to achieve analogue switch-off in 2006-2010; and 2. More than 10 million DTT Rx's and more than 1.4 million sets are HD-ready; BBC introduced HD in 2007.
Sweden	DVB-T	<ol style="list-style-type: none"> 1. DTT launched in September 1999; 2. Pay TV model; and 3. Four multiplexes currently covering 90% of population with about 175,000 DTT households (3-4 % penetration). Sales of set-top boxes started growing during the summer of 2003.
Spain	DVB-T	DTT launched in May 2000. There are five national and one regional multiplex.
Germany	DVB-T	<ol style="list-style-type: none"> 1. DTT first launched in Berlin area in November 2002; 2. It is a Free TV model. Between 160,000 and 200,000 boxes have been sold since launch. There are 160,000 terrestrial-only households in the area, so presumably all of them are now receiving DTT; and 3. Berlin and the surrounding Brandenburg area achieved analogue switch off in August 2003, the first in the world, largely due to heavy reliance on cable and satellite for TV reception.
Netherlands	DVB-T	<ol style="list-style-type: none"> 1. DTT launched in April 2003 by single commercial operator Digitenne, which was allocated with 4 national multiplexes. DTT can be received by small indoor aerial (most houses do not have aerials on the roof as the country is very cabled); 2. It is a pay TV model (only one free-to-view channel); 3. A fifth multiplex will be allocated for national and regional public TV service; and 4. Coverage at launch was 20% of the population and aimed at areas that have bad cable services.
France	DVB-T	<ol style="list-style-type: none"> 1. The regulator, CSA, formally issued DTT licences in June 2003. DTT services were launched in 2004; and 2. France government has mandated in December 2008 for TVs to have a tuner that supports H.264 <i>-This is accelerating the H.264 development at the semiconductor companies.</i>
Italy	DVB-T	<ol style="list-style-type: none"> 1. Grant of two multiplexes expected in January 2004, one national and one regional. Initial coverage for 50% of the population in the 20 regional capitals. Extension of coverage in 2005 to 70% of the population in all provincial capitals; 2. Free-To-Air service with government subsidising set-top boxes with MHP.

Source: Various websites

²⁸ Refers to the analogue switch off date that varies among the European countries

DIGITAL TV – STATUS AND DEVELOPMENTS

Conclusion

Worldwide deployments of analogue switch over is occurring at different phases, from as early as in year 2009 in the US to later ones in 2015, in Malaysia. Nevertheless, the switchover is happening, which is a good sign for the industry and the nation. However, caution in approaching the transition is needed. This means that the industry needs to 'get it right the first time' – timely collaboration with all stakeholders concerned is highly important. There is also a need to prepare and plan well apart from executing it well. This includes the requirement to increase consumer awareness of the switchover and what it involves as well. Perhaps the industry could also learn from other jurisdictions that have proceeded ahead in taking the good approaches and avoiding the pitfalls.

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