

Morgan Stanley

# Technology Growth Drivers – Internet + Mobile

SIA - 11/16/06

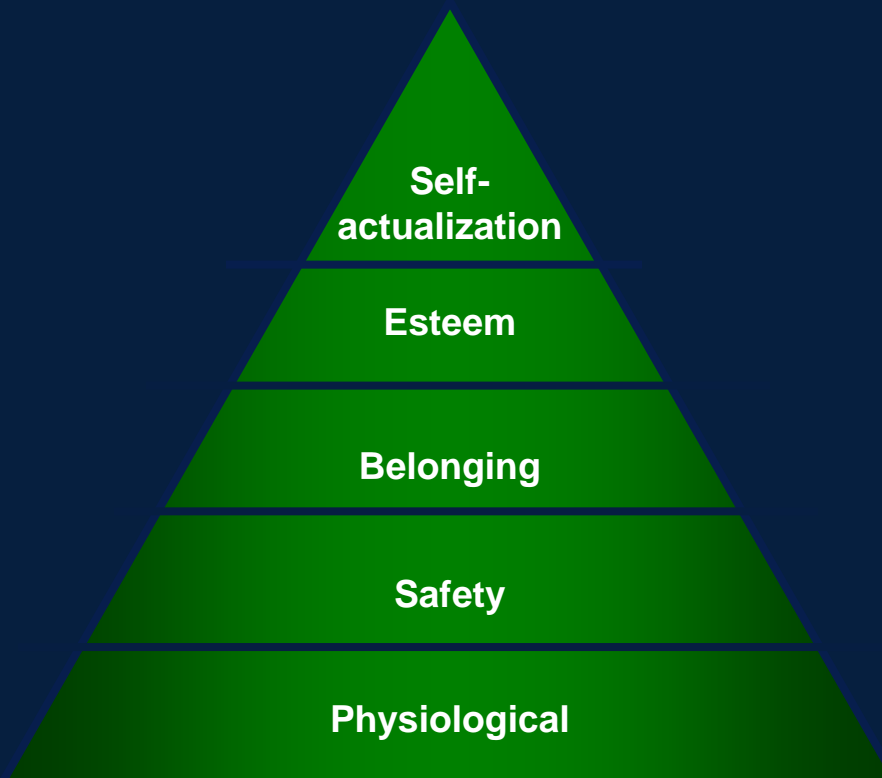
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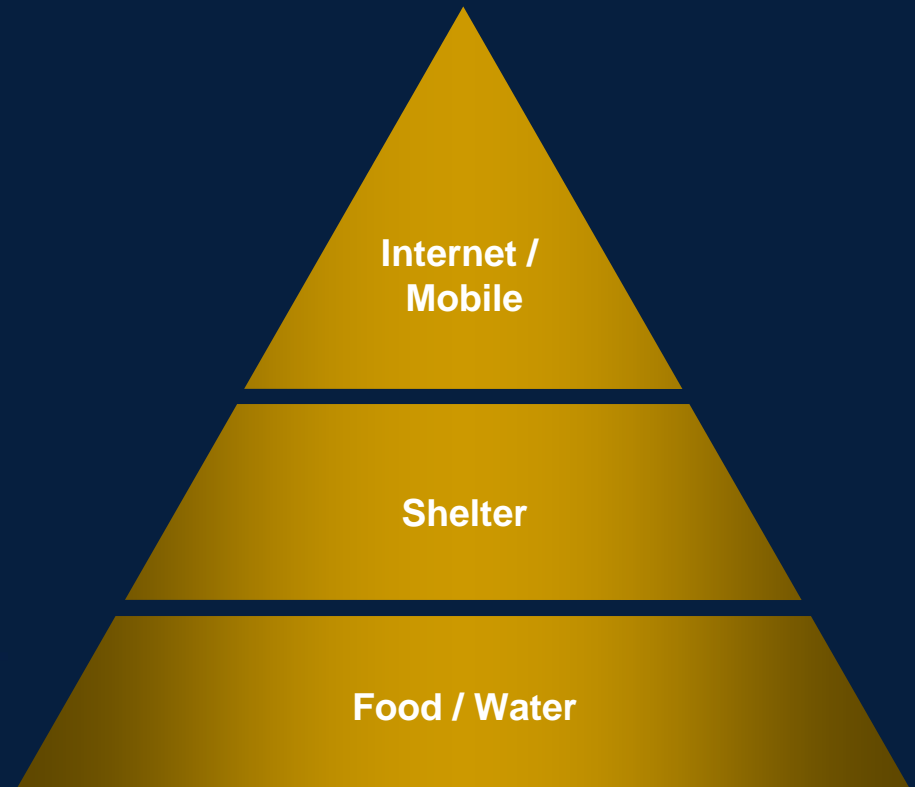
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# Hierarchy of Needs Drives Growth?!

1943 - Maslow



2006 / 2007 - ? ;)



*Created for discussion purposes and perhaps a bit of humor. Not intended to discredit Maslow's hierarchy of needs which we believe to be accurate.*

# Market Value of Top 5 Global Internet Market Leaders = 46% Higher than 3/00 Market Peak Thanks to Google

## Google + Yahoo! + eBay + Yahoo! Japan + Amazon.com

- \$ 2B = market value – pre-2000 IPO
- \$178B = market value – Nasdaq peak – 3/10/00
- \$ 32B = market value – Nasdaq trough – 10/9/02
- \$260B = market value – 11/14/06

*Source: FactSet and Morgan Stanley Research.*

# It's Tough to Succeed

- In public markets, ~2% of technology companies have created ~100% of net wealth
- On average, 2 technology 'ten-baggers' (stocks that rise 1,000%) go public each year

*Source: Morgan Stanley Technology IPO Yearbook.*

## Internet Highlights...

- **Users / Usage** — Yahoo! has base of 418MM+ unique monthly visitors (+19% Y/Y with 24% Y/Y page view growth, CQ3)
- **Customer Acquisition** — Google (500K - 1MM advertisers / vendors, and rising); 30%+ clicks (and rising) on sponsored links - effective targeting should continue to improve + drive rising monetization
- **Commerce / Payments** — PayPal (123MM accounts, +41% Y/Y, CQ3) + Shopping.com has 40MM+ products in 325+ categories

## ...Internet Highlights...

- **Advertising** — 8% of total US advertising online in 2006E growing to estimated 13%+ within 5 years - Google + Yahoo! = key drivers + beneficiaries
- **Significant targeting / conversion improvements** (related to technology improvements + data leverage) — could bolster annual global revenue per unique user of \$9 for Google (+42% Y/Y) and \$10 for Yahoo! (+29% Y/Y) 2-3x in next 5 years
- **Personalization** — Recommendation engines improve monetization – examples include Amazon.com + Yahoo! Music
- **Music** – Apple iPod + iTunes @ \$16B cumulative revenue - up from \$140MM 3 years ago

## ...Internet Highlights...

- **Communications / Telephony** — Skype (136MM registered users, +20% Q/Q, CQ3 — may be fastest growing product ever). Based on CQ1 data, Skype traffic = ~7% of global international long distance minutes. Global mobile data services revenue (ex. messaging) has \$10 ARPU (and rising). If Skype were a carrier, global registered user level would rank it #3 behind China Mobile (274MM subscribers) and Vodafone (187MM). IM (instant messaging) + SMS / MMS showing strong growth
- **Video** — ~60% of Internet traffic may be P2P file sharing of unmonetized video — ramp in tagging (for search) + partnerships + monetization – note recent moves by likes of ABC / CBS / FOX / NBA / Sony / Warner / Universal / Google / Yahoo!. Challenges (especially related to copyright and infrastructure stress) are significant, but over time, consumer demand should rule and content creators should benefit

## ...Internet Highlights

- **Local** — Google 'Long Tail' + eBay Classifieds (19MM+ unique visitors, +140% Y/Y, CQ2) – traction emerging
- **Community / Social Media** — Likes of Wikipedia, MySpace, YouTube, Yahoo! Flickr + Yahoo! Answers have experienced extraordinary growth. CyWorld (Korea) + TenCent (China) monetizing. 57MM blogs – doubling every 7 months, per Technorati. 1B camera-enabled mobiles within 1 year – 'citizen journalism' in infancy
- **Mobile** — While 17% of global Internet users (32% in N. America) have residential broadband, 8% of global mobile phone subscribers use 3G. American Idol - 63MM votes (via mobiles + Internet) in final 4-hour round, China's Super Girl - 12MM votes (primarily mobiles) in final 3-hour round. Mobile data services (bolstered by 2.5G & ex. messaging) revenue ~\$20B, comparable to online advertising revenue — illustrates potential monetization opportunity for broadband Internet!

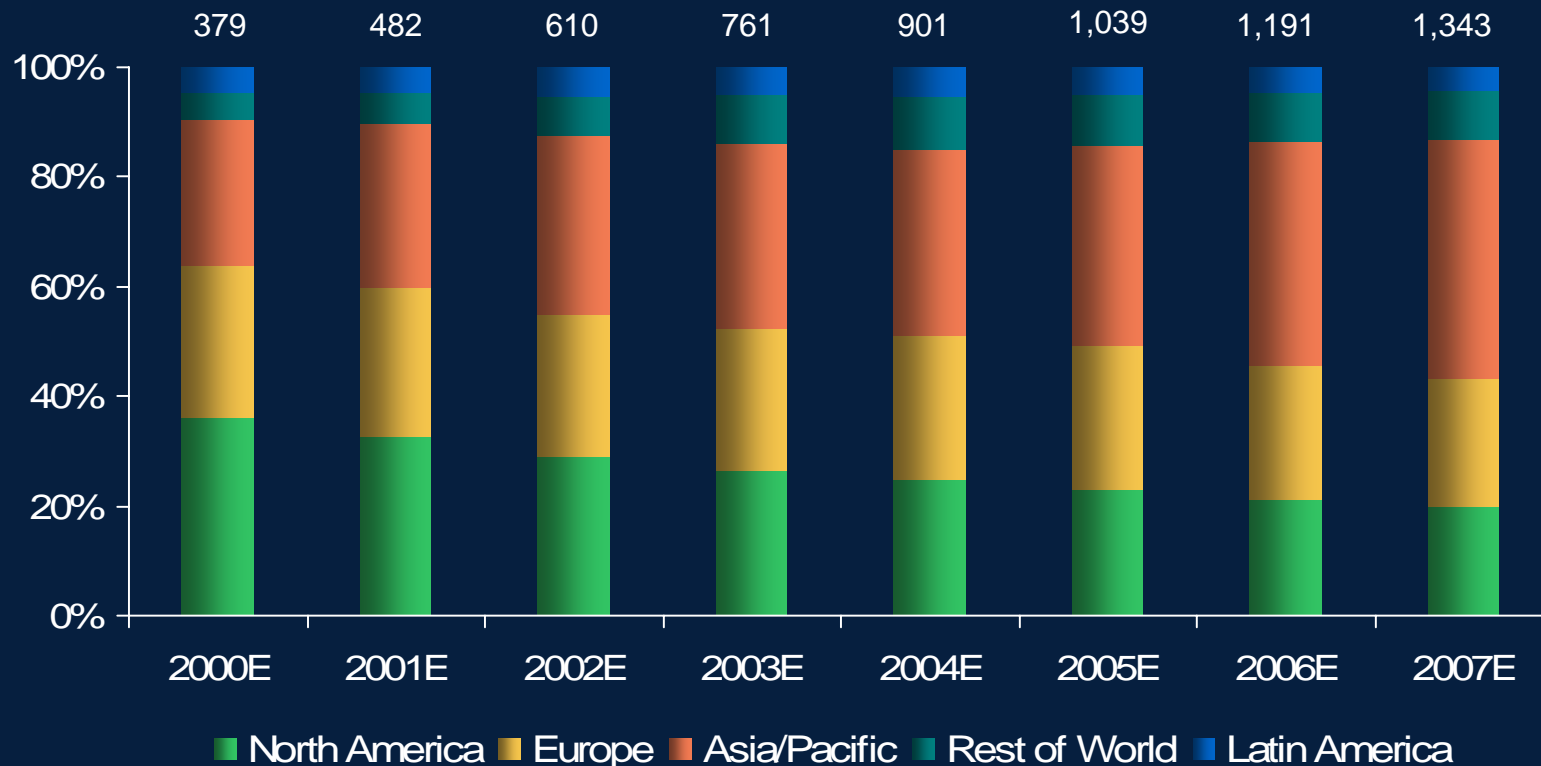
# User-Generated Content (UGC) - Wikipedia + MySpace + YouTube Have Moved to Top of Internet User Pack

Rank	Property	Total Global Unique Visitors (MM)	
		9/06	Y/Y Growth
1	Microsoft	505	5%
2	Yahoo!	481	8
3	Google	467	11
4	eBay	237	4
5	Time Warner	218	20
<b>6</b>	<b>Wikipedia</b>	<b>155</b>	<b>110</b>
7	Amazon	134	9
<b>8</b>	<b>Fox</b>	<b>118</b>	<b>303</b>
9	Ask	113	(0)
10	Adobe	95	5
11	Apple	95	38
12	Lycos	91	(3)
13	CNET	84	(10)
<b>14</b>	<b>YouTube</b>	<b>81</b>	<b>2,662</b>
15	Viacom	66	--

Source: comScore Media Metrix Global Data.

# # of Internet Users – ROW Continues to Rise in Relevance N. America = 36% of Users in 2000E; 20% in 2007E

## Geographic Distribution of Internet Users (MM)

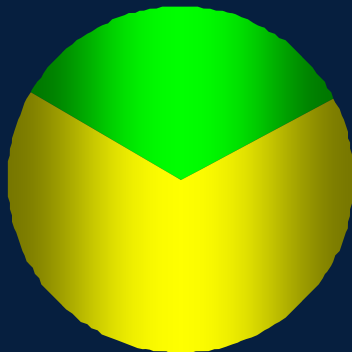


Note: ROW denotes rest of the world.  
Source: Morgan Stanley Research.

# Global Market Capitalization Growth = Outside US

**1970**

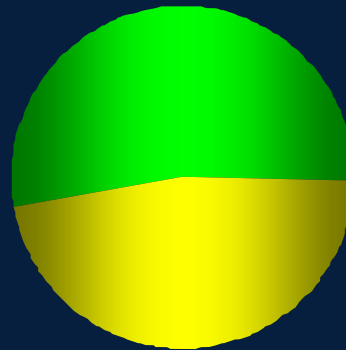
**Rest of  
World  
34%**



**US  
66%**

**2001**

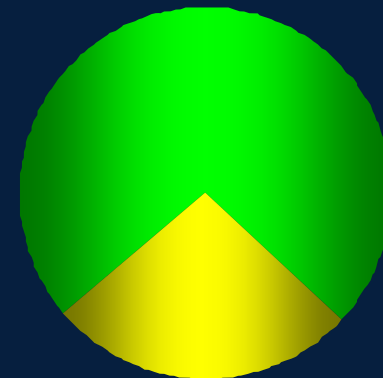
**Rest of  
World  
53%**



**US  
47%**

**2030E**

**Rest of  
World  
73%**



**US  
27%**

*Source: AXA.  
Projected data for C2030E calculated using the rate of growth of market capitalization for Rest of World and USA since 1970.*

# Fastest TMT (Technology / Media / Telecom) Growers = Internet + Mobile

Category	2004 Growth Rate	Market Size (MM)
Internet Users	18%	901MM
Mobile Phones in Use	14	1,589
Installed PCs	11	696
Credit/Debit Cards in Use	9	3,567
Cable TV Subscriptions	9	459
GDP per Capita	6	\$19,168
Telephone Lines	4	1,198
Population	1	6,288

Source: Morgan Stanley Research; GDP figures from IMF, shown in current USD.  
 Note: Data include totals for 50 countries in our TMT database, updated for 12/2004; GDP updated for 12/2005.

# Most Impressive TMT Gains = China / India / Russia

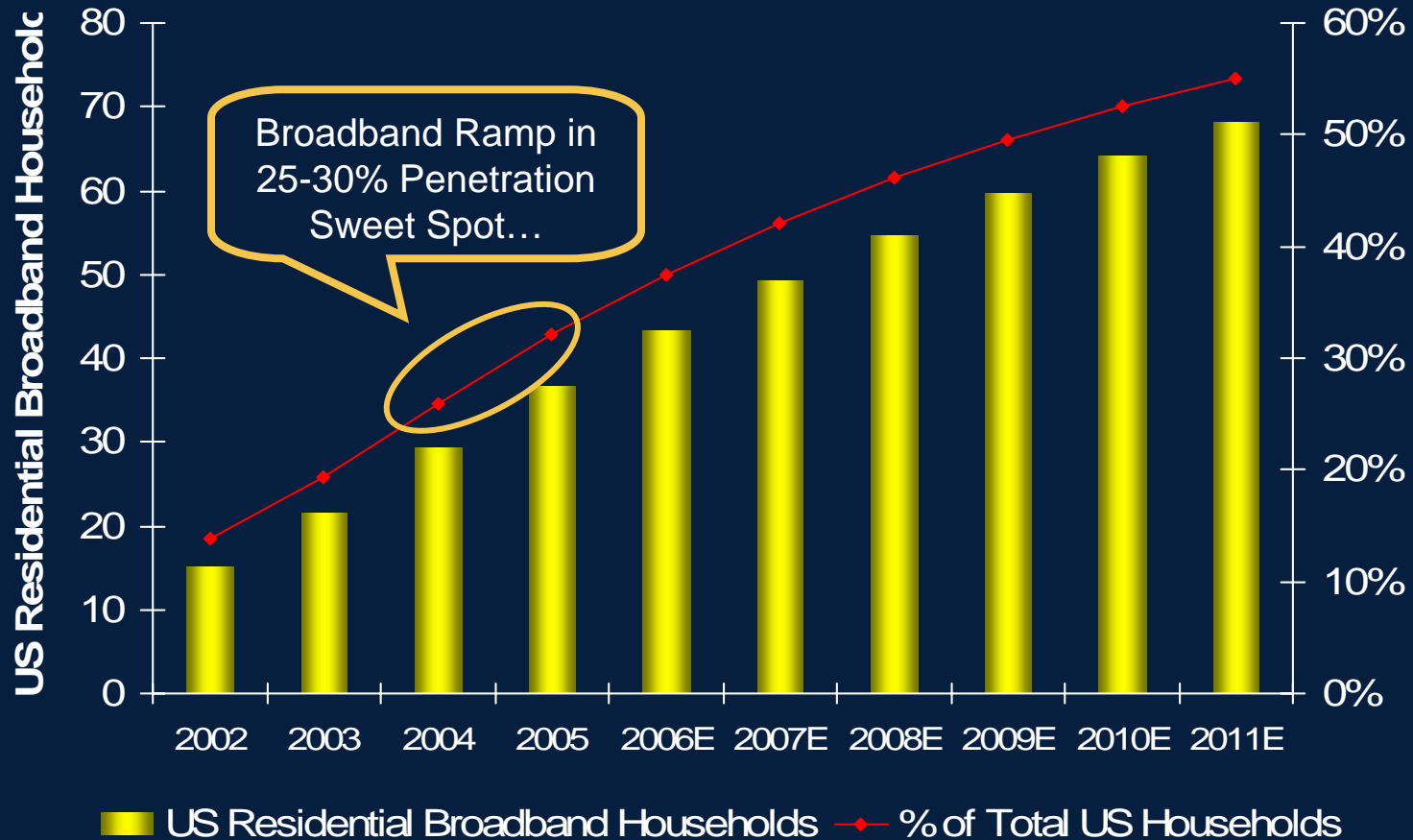
2004			2010E		
Rank	Country	Relative Weighting	Rank	Country	Relative Weighting
1	USA	9.0	1	China	8.7
2	China	8.2	2	USA	7.7
3	Japan	6.5	3	India	7.0
4	Germany	5.7	4	Japan	5.9
5	United Kingdom	5.5	5	Germany	5.3
6	India	5.3	6	United Kingdom	5.2
7	France	5.2	7	Russia	5.2
8	Italy	5.2	8	France	5.1
9	South Korea	5.1	9	Brazil	5.1
10	Canada	5.1	10	South Korea	5.0

From our database on market sizing of global TMT (Technology, Media & Telecommunications) products and services. We measure market sizes and growth rates for core TMT metrics: nominal GDP per capita (current USD); telephone lines; cable subscribers; installed PCs; mobile phones in use; Internet users and credit/debit cards in use. For each economy, we calculate past / present / potential global market weightings across seven TMT metrics - we call this our relative weighting and we use it to measure / rank a country's propensity for TMT products and services. We do this for the 50 most important economies based on purchasing power/economic strength, as measured in terms of population size, land mass and GDP per capita. We standardized each country's position in the global market in each category and adjusted the values to reflect a positive scale. The relative ratings and ranks were determined by calculating an average of z-scores across categories. For example, in the United States, standardized and adjusted values of 6.4 in GDP per capita, 8.4 in telephone lines, 11.3 in installed PCs, 7.6 in mobile subscribers, 8.9 in cable subscribers, 10.7 in Internet users, and 9.6 in credit/debit cards produces a relative weighting of 9.0. 2010E relative weightings derived by assuming 2003-2004 growth CAGR for each category to 2010, and ensuring category penetrations were not exceeded.

Source: Morgan Stanley Research.

Red indicates countries moving out of the top 10 TMT countries; green indicates countries moving into the top 10. GDP figures from IMF, shown in constant USD

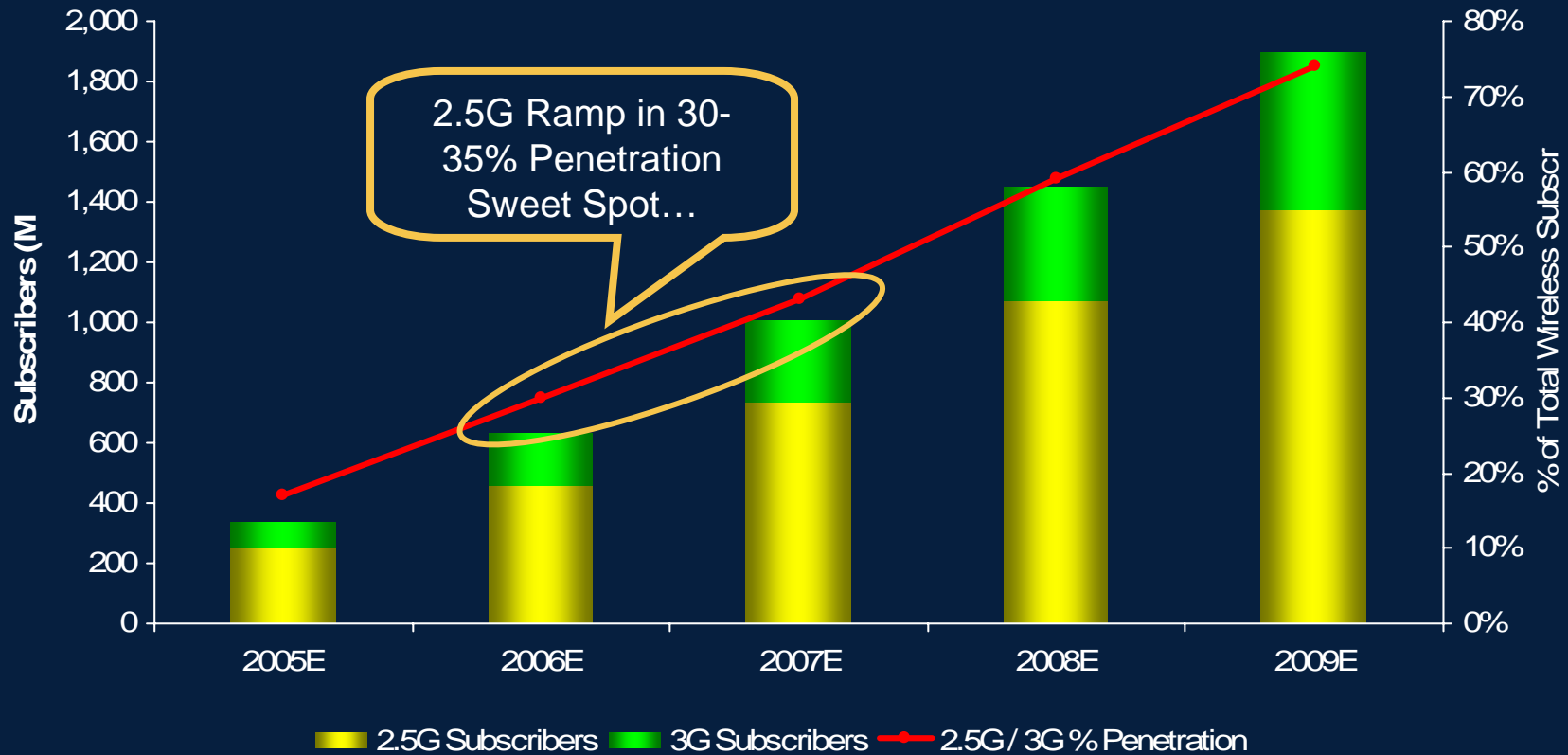
# Broadband (“Always On”) – In Adoption Sweet Spot (25-50% Penetration)



Source: Morgan Stanley Research.

# Mobile – Entering Adoption Sweet Spot – Key to Differentiate 2.5 vs. 3G

## Global 2.5G / 3G Penetration

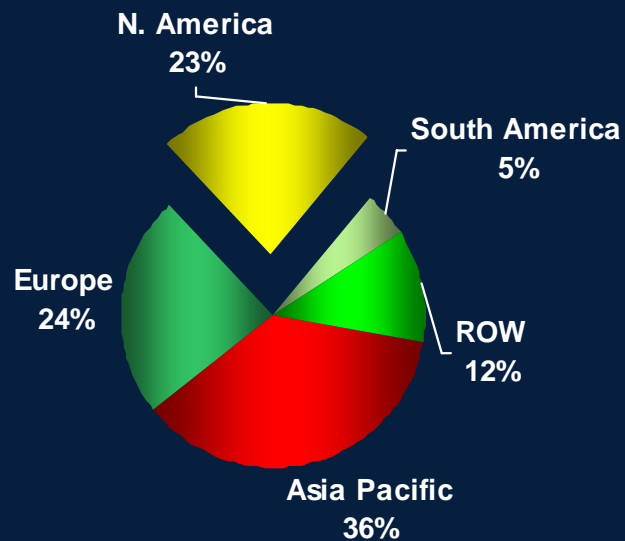


*Note: 2.5G can be compared to 'narrowband' Internet access, while 3G can be compared to 'broadband / lie' Internet access.*

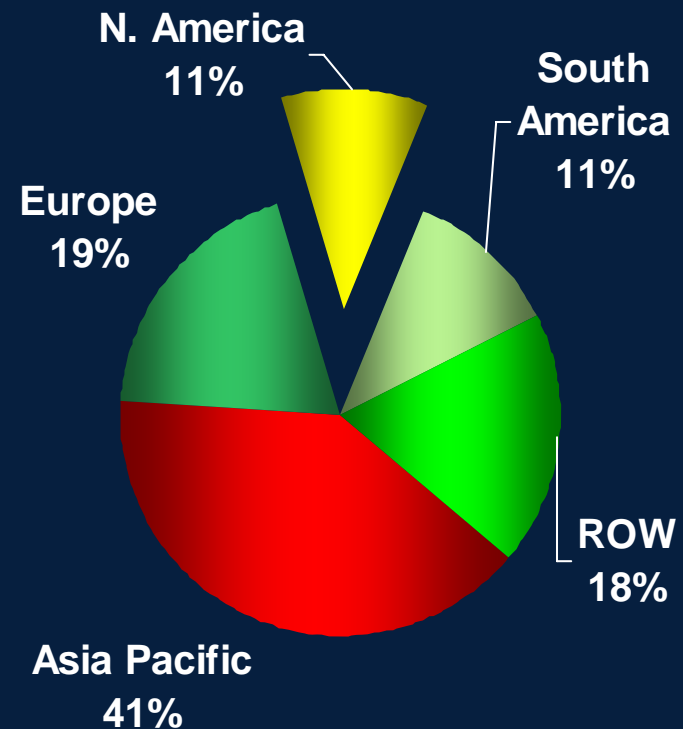
*Source: Morgan Stanley Telecom Research Scott Coleman, John Marchetti.*

# Mobile Users 2x > Than Internet Users – N. America = 11% of Mobile / 23% of Internet Users

**Internet Users – 1B**  
**C2006E (1)**



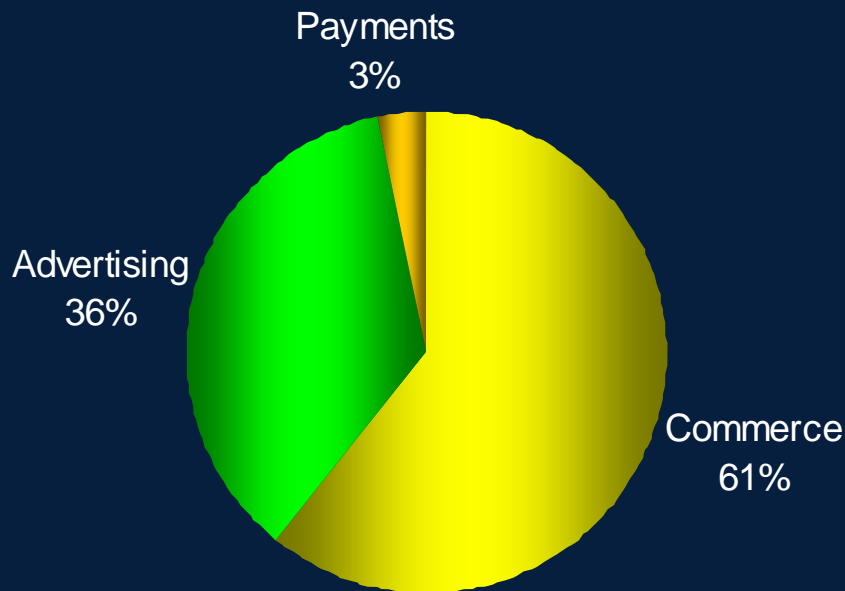
**Mobile Subscribers – 2B**  
**C2006E (2)**



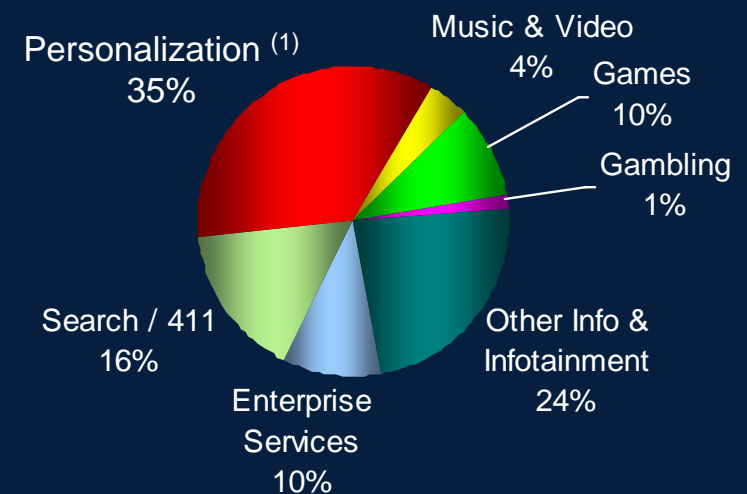
Source: Morgan Stanley Research and Morgan Stanley Communications Equipment Research - Scott Coleman, John Marchetti.

# Broadband – Vendor / Seller Pays Mobile – User Pays...Make Up on Volume?!

**Top 10 Internet Companies - Revenue Composition  
C2005 - \$42B**



**Mobile Internet - Revenue Composition  
C2005E - \$19B**



Source: Left Chart - Morgan Stanley Research estimates: includes revenue from Google, eBay, Yahoo!, Yahoo! Japan, Amazon.com, T-Online, InterActive, Time Warner (AOL only, ex-access), Microsoft (MSN only, ex-access), and Rakuten. CQ4:05 annualized revenue for Rakuten, and T-Online. Right Chart – Morgan Stanley Research estimates, Global Data. Informa (5/05), Ovum (5/05). Data excludes IVR. (1) Personalization includes ringtones, wallpapers, and screensavers. If SMS / MMS were added to Mobile Internet—it would add \$55B to total revenue and would account for 74% of total revenue.

# Internet Ad Spend = Movin' on Up - \$217 Per Home vs. \$980 for Newspapers?

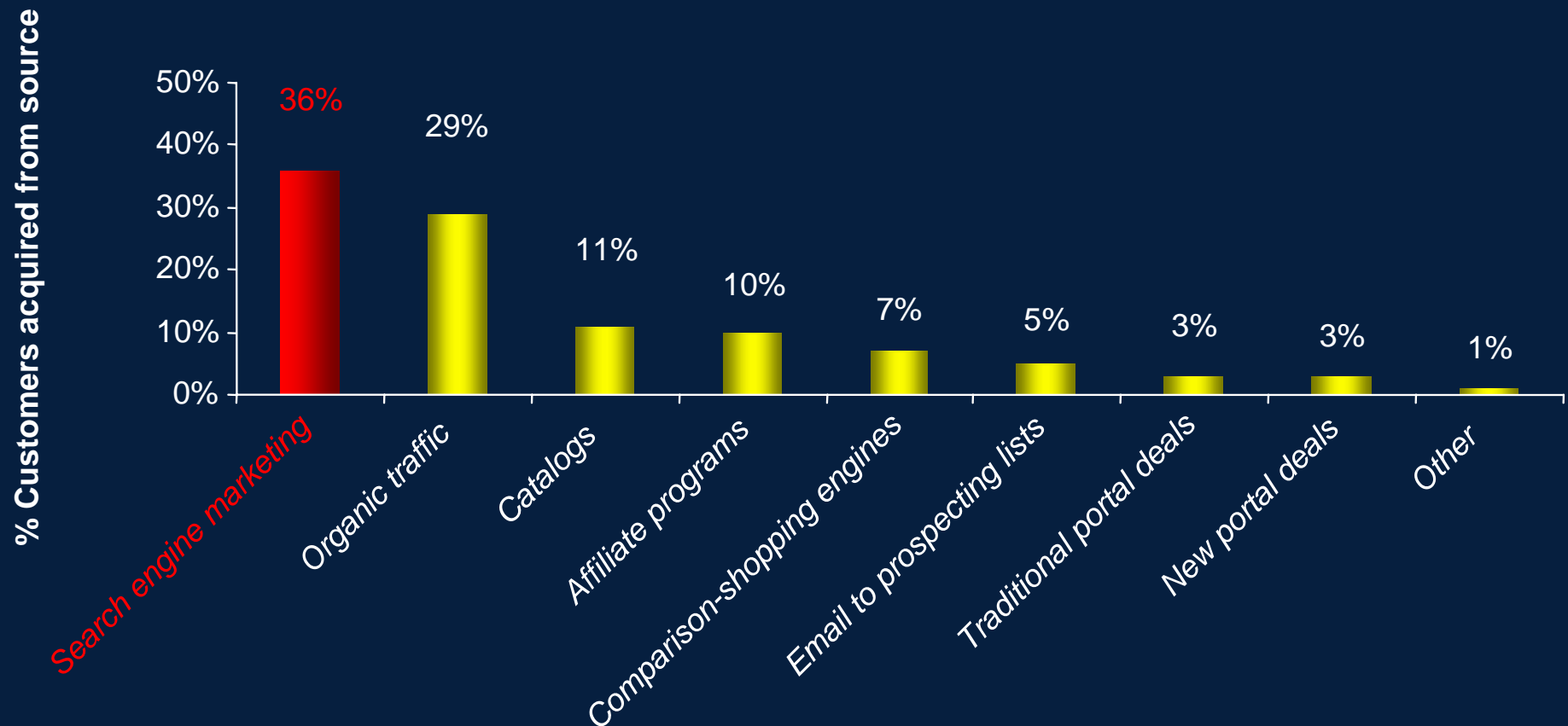
Medium	2005 Advertising Spending (\$B)	Households (MM)	Ad Spending / Household (\$)
Promotions	\$106	99	\$1,071
Newspapers	49	50	980
Classifieds	17	55	309
Direct Telephone	97	99	980
Direct Mail	57	99	576
Broadcast TV	45	99	455
Radio	20	60	333
Cable TV	19	70	271
<b>Internet / Online</b>	<b>13</b> ↑	<b>60</b> ↑	<b>217</b> ↑
Yellow Pages	16	99	162
Outdoor	6	99	61
<b>Total</b>	<b>\$428</b>	<b>834</b>	<b>\$5,106</b>
<b>Average</b>	<b>43</b>	<b>83</b>	<b>511</b>

*Morgan Stanley Research, PricewaterhouseCoopers, IAB, Jupiter Research, McCann-Erickson, RAB; Newspapers include Classifieds. Promotions (\$106B) include: incentives (\$28B), promotional products (\$23B), point-of-purchase (\$18B), specialty printing (\$8B), coupons (\$7B), premiums (\$7B), promotional licensing (\$6B), promotional fulfillment (\$5B), product sampling (\$2B), and in-store marketing (\$2B). Households may use multiple advertising mediums.*

# 67% of Global Internet Users Use Search

## Search = Top Customer Acquisition Tool for Online Retailers

% of New Online Customers for Online Retailers / Marketing Spend Mix (2005)

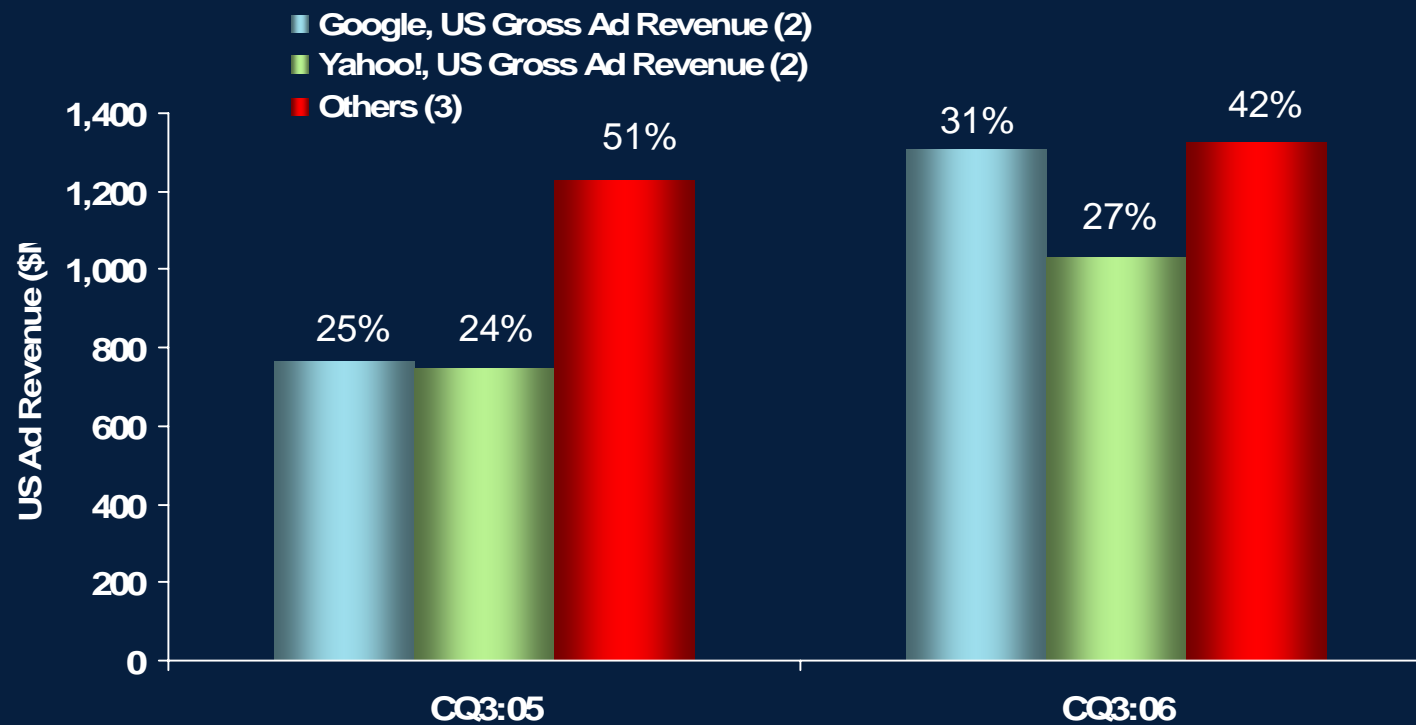


Note: 8% of global Internet traffic was derived from search while 67% of global Internet users used search in 1H2006, per comScore.

Source: The State of Retailing Online 2006, Forrester Research.

# Google + Yahoo! = ~58% of US Online Ad Revenue

## US Online Ad Revenue Mix (1)



(1) Source: Ad revenue totals from IAB/PriceWaterhouseCoopers Interactive Advertising reports.

(2) Calculated as reported revenue multiplied by the reported percentage of US Ad Revenue.

(3) Calculated as the difference between total IAB US revenue and the sum of Google, Yahoo! gross revenue.

(4) Assuming that TAC of Google and Yahoo! was included in others total, this segment would have been up 20% Y/Y.

## Google + Yahoo! Share Significant (~30%) Portion of Revenue with Partners + Affiliates – Trend Will Continue

- Google generated \$2.7B in gross revenue in CQ3; it **PAID OUT** \$825MM to thousands of partners like AOL, Ask Jeeves, Blogger, EarthLink, and HowStuffWorks
- Yahoo! generated \$1.6B in gross revenue in CQ3; it **PAID OUT** an estimated \$459MM to thousands of partners like CNN, ESPN and *The Wall Street Journal*

# U.S. Internet Advertising – Search Has Been Growth Engine (Largely Related to Text) – Video Next?

(US\$ in MM, except where noted)

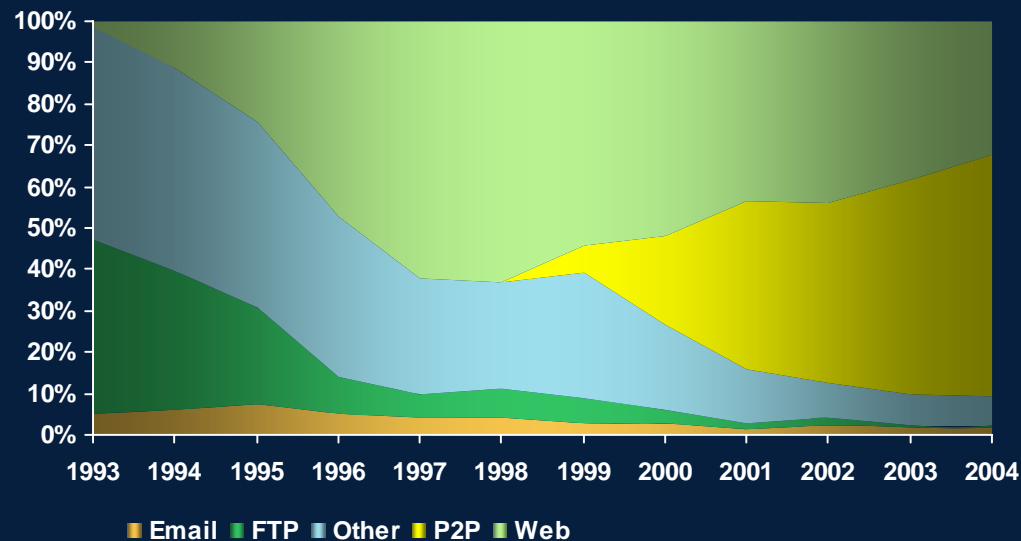
	2001E	2006E	CAGR '01E-06E
<b>Search Advertising</b>	\$285	\$6,681	88%
<i>% of Total</i>	4%	42%	
<b>Display and Sponsorship</b>	\$4,423	\$4,108	(1)
<i>% of Total</i>	62%	26%	
<b>Rich Media</b>	\$357	\$1,123	26
<i>% of Total</i>	5%	7%	
<b>Classifieds</b>	\$1,141	\$2,587	18
<i>% of Total</i>	16%	16%	
<b>E-mail and Other</b>	\$927	\$1,498	10
<i>% of Total</i>	13%	9%	
<b>Total U.S. Internet Spending</b>	<b>\$7,134</b>	<b>\$15,998</b>	<b>18</b>
U.S. Internet Users (MM)	141	205	8
U.S. Internet Households (MM)	51	73	8
<b>U.S. Internet Spending per Internet Household</b>	<b>\$140</b>	<b>\$218</b>	<b>9</b>

Source: Internet Advertising Bureau and Morgan Stanley Research estimates.

# Rapid P2P Growth (Mostly Video) is Stressing Internet + Is Undermonetized

- Peer-to-Peer (P2P) traffic was 60% (and rising) of Internet traffic in 2004 (of which 62% was video), with BitTorrent accounting for 30% of traffic, per CacheLogic
- “P2P affects Quality of Service (QoS) for ALL subscribers” (1)

Internet Protocol Trends (1)

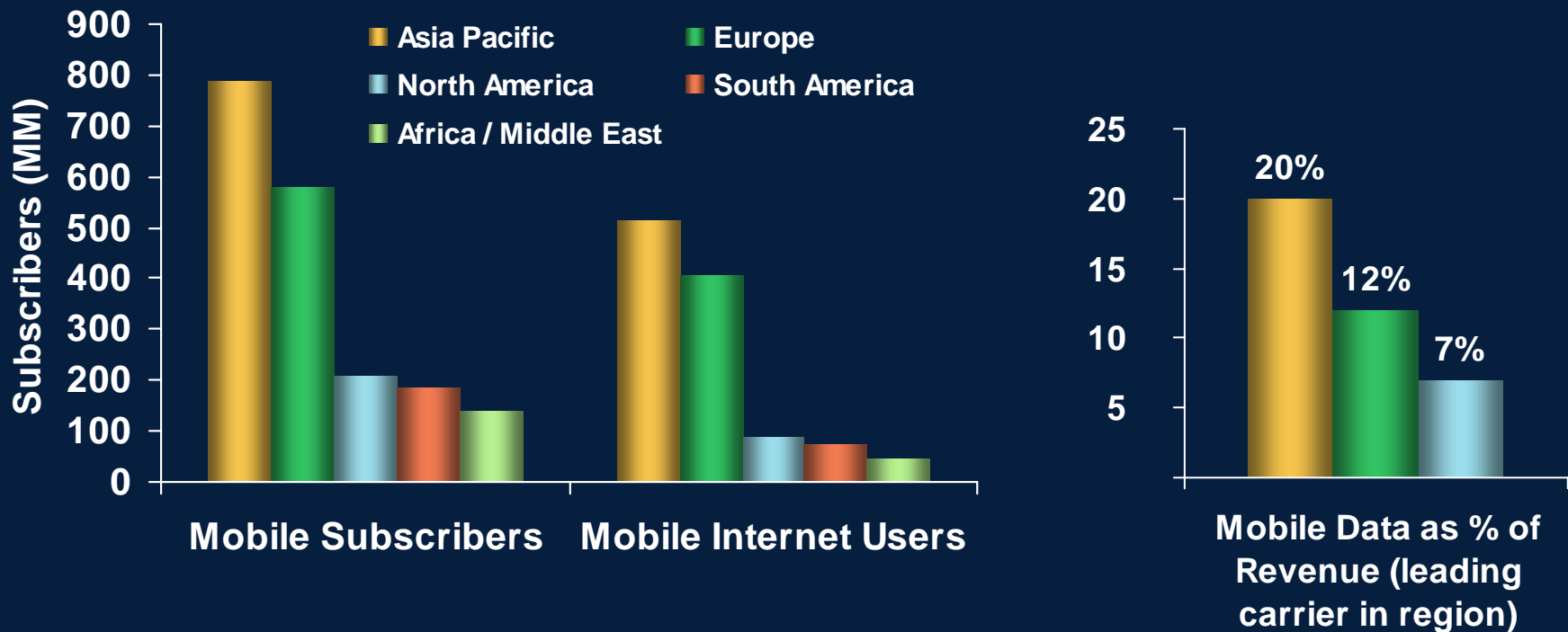


(1) Source: CacheLogic “P2P in 2005,” (9/05).

# Mobile – A New Computing Cycle

- **Mobile Internet represents a new computing cycle**  
Mainframe → Minicomputer → PC → PC Internet → Mobile Internet
- **Unlike past cycles, US is follower, not leader**
  - 89% of mobile subscribers, 93% of Mobile Internet users in non-US markets; China is #1
- **Uncharted / new sources of usage generated for / from Mobile Internet platform**
  - What will be the dominant killer application for the mobile consumer? E-mail? SMS? Ringtones? Games? Search? Blogs? Location-Based Services?
- **Why now? 1) handsets becoming small functional computers; 2) cheaper / faster / more data; 3) more content**
  - 334MM (48%) of handsets shipped (18% of base) Mobile Internet ready (can run Java or BREW applications...), 2006E
  - Mobile content improving steadily - consumers are spending billions on it

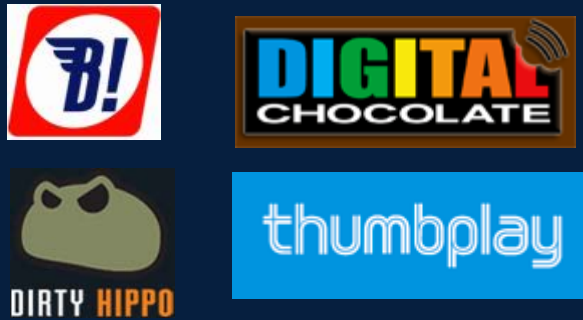
# Asia / Europe Lead – Mobile Internet Adoption + Carrier Revenue



Source: Informa 5/05. Mobile Internet user defined as someone who regularly uses data (including SMS) a minimum of once per week, whether for internet browsing or regular push services to their terminal. For right chart, leading carriers by wireless subscribers in Asia Pacific, Europe, and North America are China Mobile, Vodafone, and Cingular, respectively.  
Based on 2005 year-end data

# Watch Where Global Younger Generation Goes

## Ringtone Downloads, Connecting Mobile to Net



## Social Networking



## Video



## Web OS Programs



## Blogs



## In-Game Advertising



## Knowledge Sharing



## Tencent Instant Messaging (PC / Mobile)



# A Look at Some of Biggest Winners of Our Day

	Huge Market	Simple, Focused Mission	Active, Missionary Founders	Great Management Team, Culture	Constant Improvement	Insane Customer Focus	Big Gross Margin	Annuity -Like Model	Strong Board
Apple	X	X	X	X	XX	X	28	X	X
Cisco	X	X	O	X	X	X	68	X	X
Dell	X	X	X	X	X	X	19	X	X
eBay	X	X	X	X	X	X	82	X	X
Google	XX	XX	X	X	X	X	89	X	X
Intel	X	X	X	X	X	X	61	X	X
Microsoft	X	X	X	X	X	X	82	XX	X
Yahoo!	X	X	X	X	X	X	87	X	X

Source: Morgan Stanley Research (2005).

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(as of October 13, 2006)

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Stock Rating Category	Coverage Universe		Investment Banking Clients (IBC)		
	Count	% of Total	Count	% of Total	% of Rating Category
Overweight/Buy	744	36%	276	40%	37%
Equal-weight/Hold	937	45%	323	47%	34%
Underweight/Sell	400	19%	95	14%	24%
Total	2,081		694		

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Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

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More volatile (V). We estimate that this stock has more than a 25% chance of a price move (up or down) of more than 25% in a month, based on a quantitative assessment of historical data, or in the analyst's view, it is likely to become materially more volatile over the next 1-12 months compared with the past three years. Stocks with less than one year of trading history are automatically rated as more volatile (unless otherwise noted). We note that securities that we do not currently consider "more volatile" can still perform in that manner.

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Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index.

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