



Internet Trends 2007

Mary Meeker

October 18 @ Web 2.0 Summit

Morgan Stanley

Technology / Internet Trends

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mary.meeker@ms.com / david.joseph@ms.com / richard.ji@ms.com

Compiled by Morgan Stanley Global Technology Team

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Technology Trends

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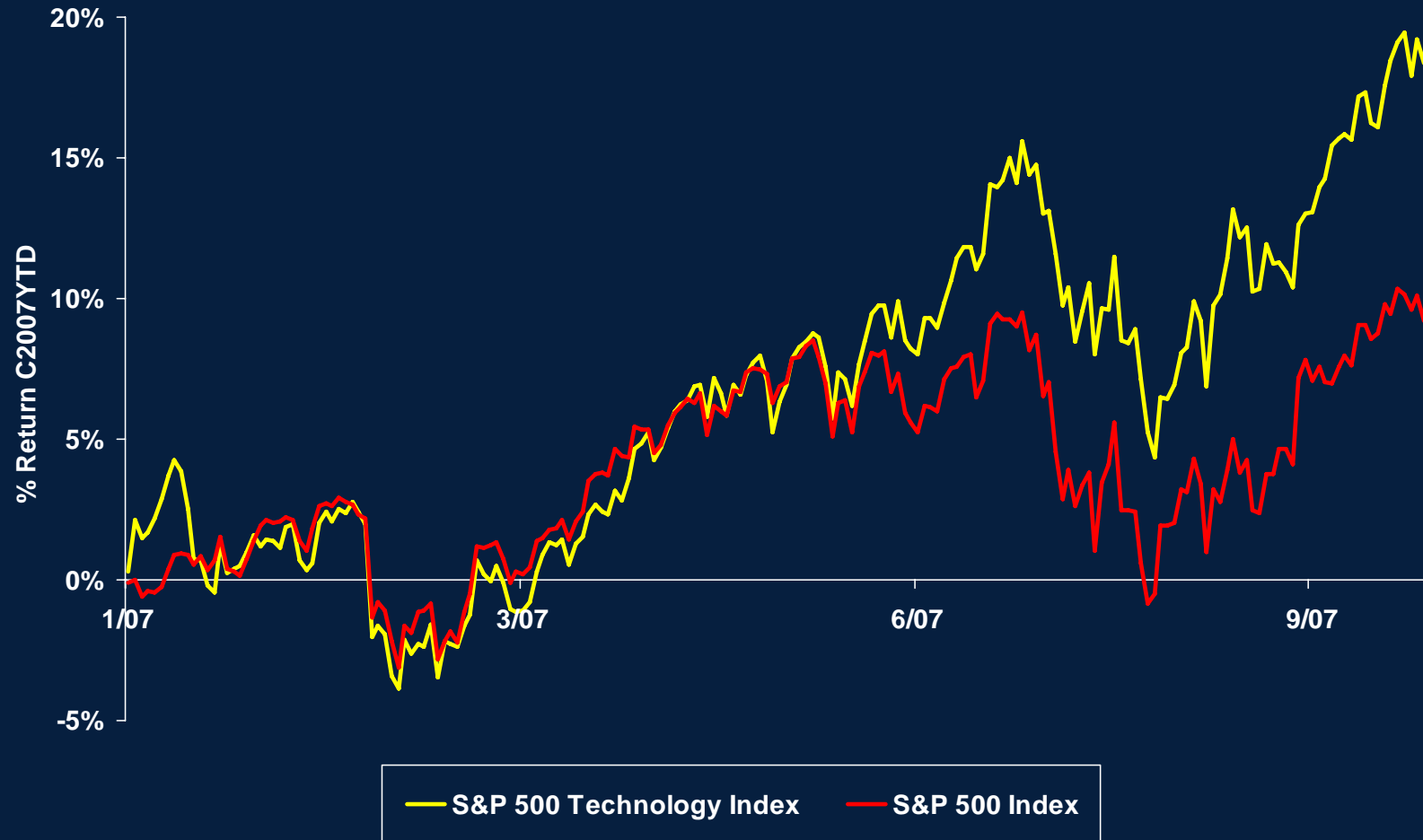
- Tech stock performance strong reflecting future expectations - for now
- Consumer demand for Internet-enabled services / products is strong
- Innovation in wireless products is accelerating
- Storage needs continue to ramp
- Data center growth is robust
- Emerging markets pacing next wave of technology adoption
- Enterprises may be coming out of relative purchasing funk
- Recession(s) = very serious potential challenge

3 Decades of Tech – Now = 2 Cycles

DESKTOP → LAN → INTERNET → CLOUD (broadband + wireless)

Tech Stocks Have Outperformed S&P500 YTD...

C2007YTD % Return of S&P500 Tech vs. S&P500



...Tech Stocks Have Outperformed S&P500 YTD

- Tech underperformed market in 6 of last 7 years
- Tech outperformed by 918 basis points YTD ⁽¹⁾
- Recent tech stock performance supported by positive earnings revisions
- Especially high recent private company valuations reflect market enthusiasm – superior execution required to justify valuations

Consumer Demand for New Internet-Enabled Services / Products is Strong

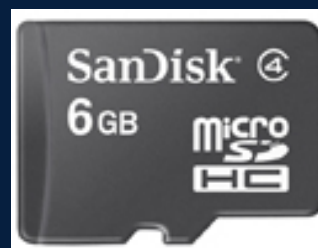
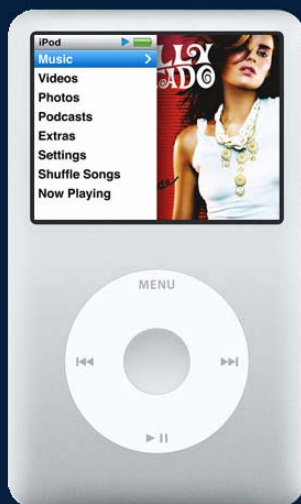
- Strong tech hardware / infrastructure demand related to demand for likes of Yahoo!, eBay, Amazon.com, Google, PayPal, iTunes, MySpace, YouTube, Skype, Facebook, WiFi, 3G...
- Consumers = #1 users of semiconductors (vs. IT + government) in 2003 / 2004 – enterprises had driven demand for technology products for most of history
- Consumer IP traffic should surpass enterprise for first time in 2008E (Cisco)
- IP traffic should nearly double every two years through 2011...with consumer IP traffic growing at 58% and business IP traffic growing at 21% CAGR...key drivers will be high definition video + high speed broadband penetration.' (Cisco)
- Technology is evolving faster than most enterprises' ability to deploy new products / services

Innovation in Wireless Products is Accelerating

- Apple iPhone, 3 Skype Phone, Amazon Kindle, Google 'GPhone'...
- 3G+ = 10% of 3.2B global mobile subscribers in C2007E – 21% (critical mass inflection point) of 3.9B in C2009E (iSuppli)
- Japan's mobile data traffic nearly 50% higher than any region...by 2011, rest of Asia-Pacific should surpass Japan (Cisco)
- 91% of mobile users keep phone within 1 meter reach 24x7 (China Mobile 50K survey)
- 15-20% of mobiles have GPS, 50% within 5 years (L. Gerhardy)
- Watch for new generation of Internet leaders to capitalize on growing access to fast Internet access on mobiles
- Incumbent carriers + handset manufacturers still desire to control markets - financial dislocations / costs / opportunities may be substantive as wireless industry evolves over next 2-5 years

Storage Needs Continue to Ramp

- Consumers expect to connect AND carry mobile devices
- 50MM+ iPods with 4GB+ storage in use since 9/05 launch (K. Huberty)
- 7MM+ mobile phones with 1GB+ storage, up 2-3x Y/Y (A. Ahmad)
- High definition content presents next major step-up in storage capacity requirements – ~40x more bandwidth required to stream DVD-quality movie than mp3 file (K. Huberty)

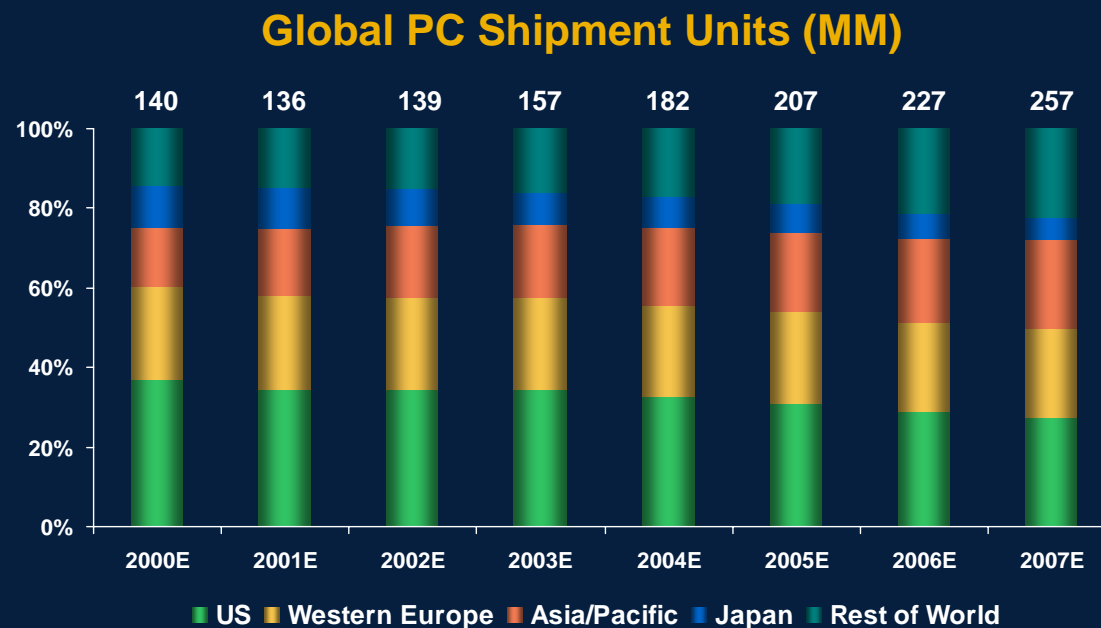


Data Center Growth is Robust

- As users integrate digital technology into daily lives, number of access points increases as does importance of reliability + speed - IT effectiveness increasingly becomes competitive weapon
- New compute / storage architectures emerging quickly – virtualization + data duplication + thin computing...
- Google - cumulative capex = \$4.5B @ 21% of Q2 net revenue
- VMWare - 90% Y/Y revenue growth in CQ2

Emerging Markets Pacing Next Wave of Tech Adoption

- **Non-US PC units** = 70%+ of global market, grew 5x US rate in C2006 (K. Huberty)
- **Non-US Internet users** = 86% of global users – China + India + LatAm + ROW (38% of total) growing at 30% vs. 3% in US (14% of total), C2007E
- **Non-US mobile users** = 92%+ of global users – China + India + LatAm + ROW (43% of total) growing at 30% vs. 11% in US (8% of total), CQ2:07E (Informa)



TMT Update = China / India / Russia / Brazil Gaining Ground

2004			2006		
Rank	Country	Relative Weighting	Rank	Country	Relative Weighting
1	USA	9.0	1	USA	8.7
2	China	8.2	2	China	8.7
3	Japan	6.5	3	Japan	6.3
4	Germany	5.7	4	Germany	5.7
5	UK	5.5	5	India	5.5
6	India	5.3	6	UK	5.4
7	France	5.2	7	France	5.3
8	Italy	5.2	8	Brazil	5.3
9	S. Korea	5.1	9	Russia	5.3
10	Canada	5.1	10	Italy	5.2

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 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 in 2004, 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.

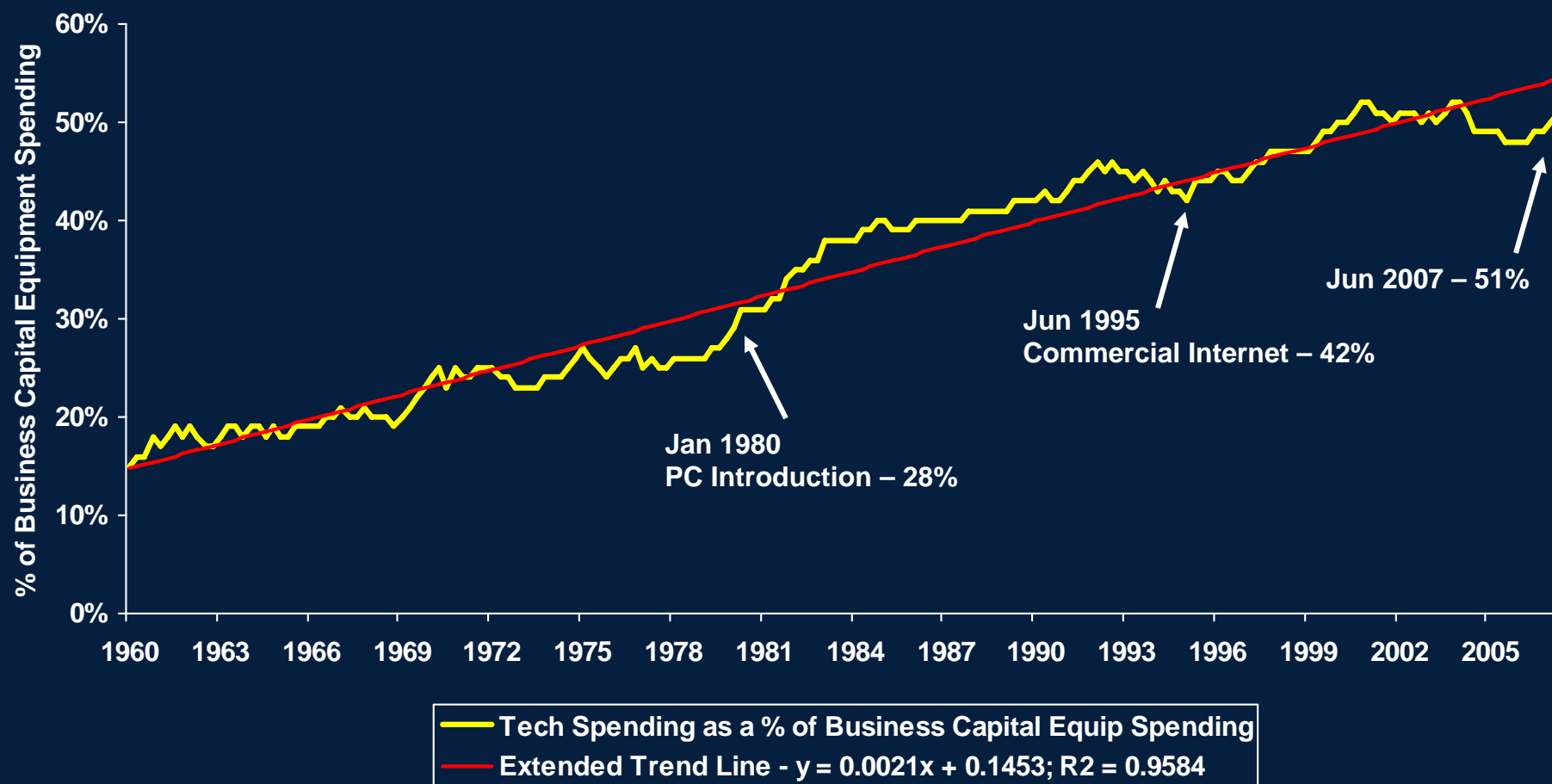
Note: Red indicates countries moving out of the top 10 TMT countries;
Green indicates countries moving into the top 10 and highlights China / India
Source: Morgan Stanley Research

Web 2.0 Driving Enterprise Growth?

- Next wave of corporate productivity gains should be paced by Web 2.0 driven collaboration tools that use the network as the platform to enable users to connect 'any device to any content over any combination of networks' (John Chambers, CEO, Cisco Systems, 5/22/07)

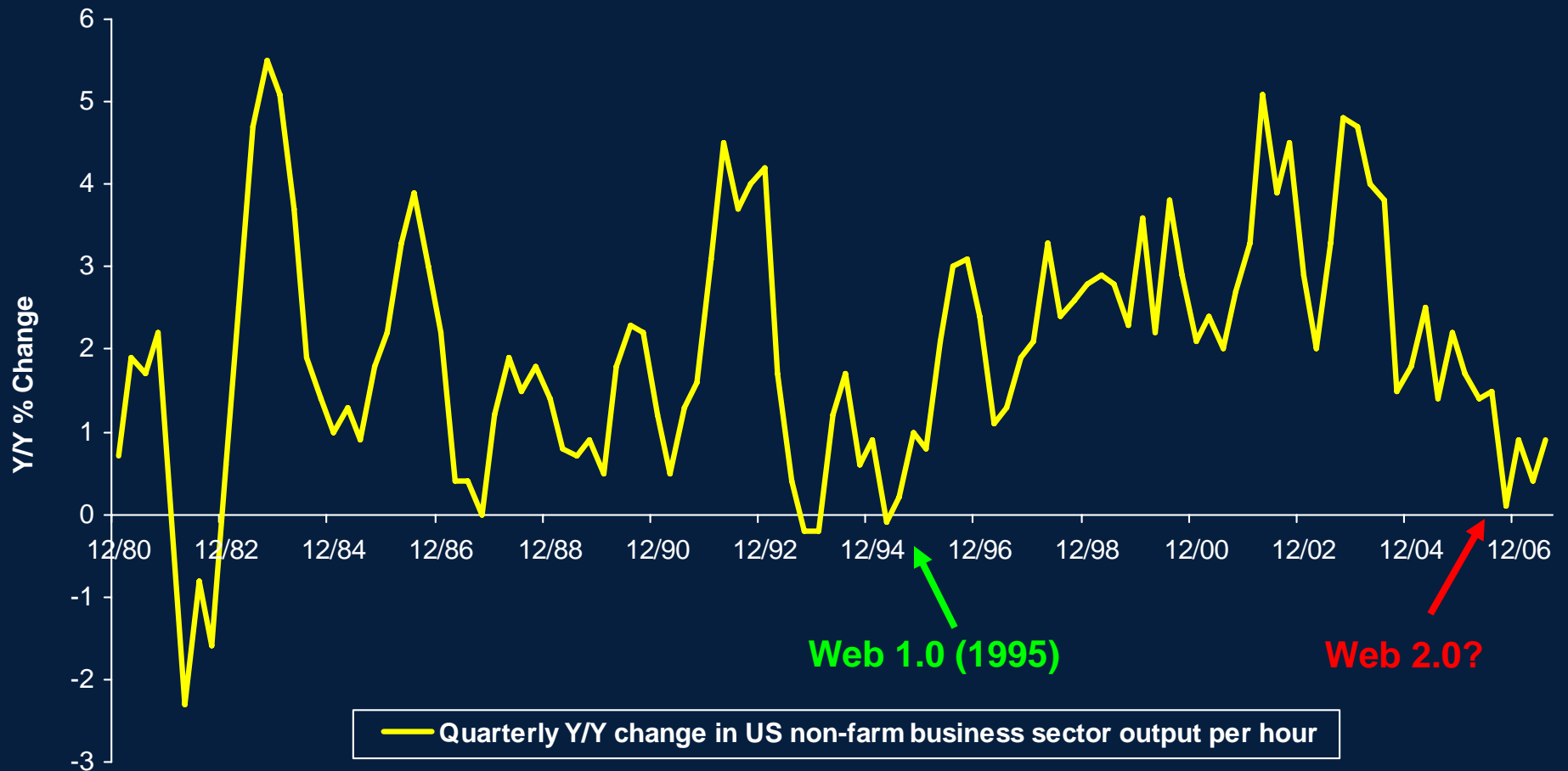
Enterprises May be Coming Out of Relative Purchasing Funk

US-based IT as % of Nominal Business Capital Equipment Spending



US Productivity on Rise à la 1995?

While US non-farm productivity grew nicely from C1995-C2003, rates of growth have waned in recent years but have moved up in last 2 quarters

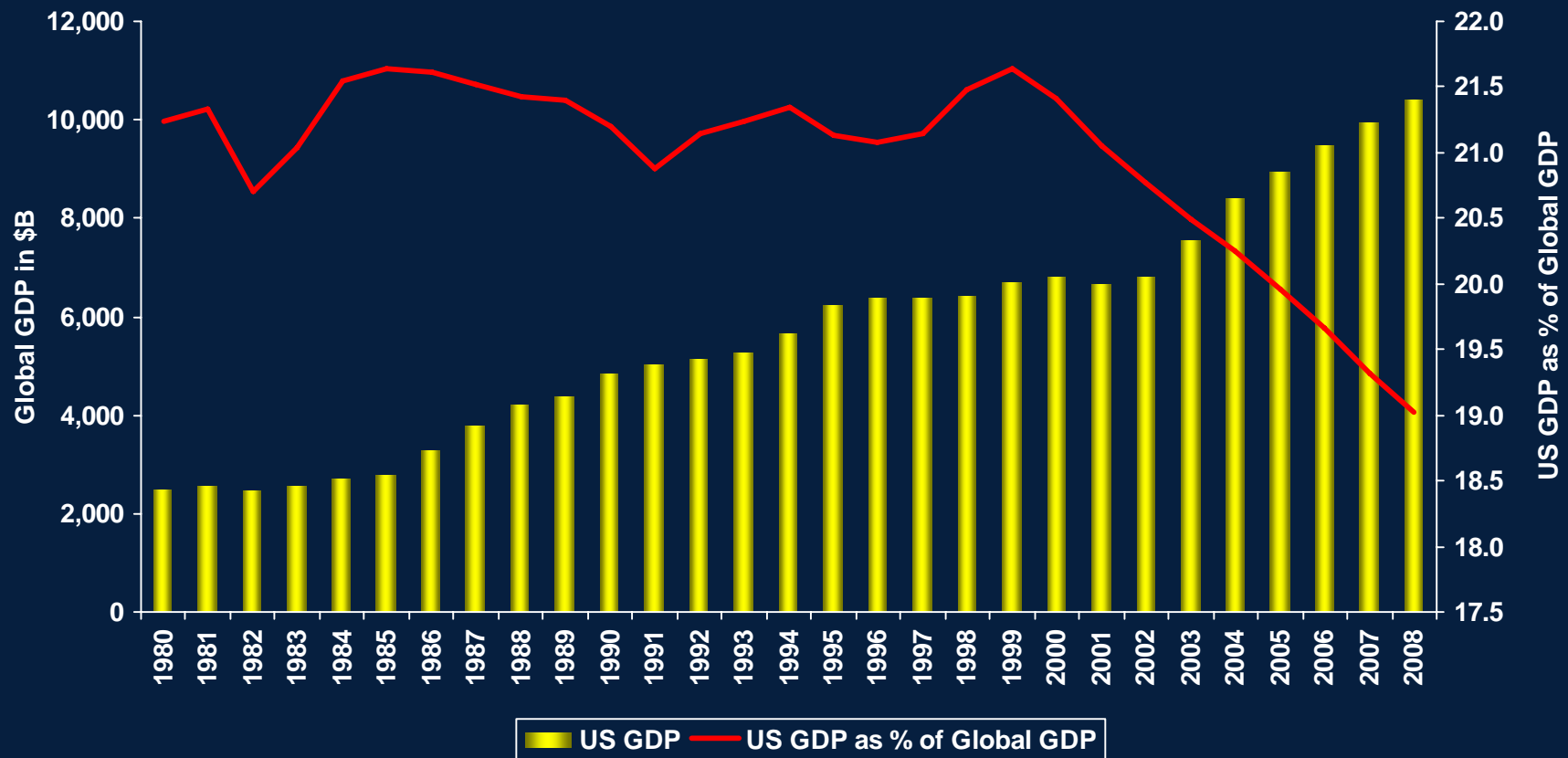


Recession(s) = Very Serious Potential Challenge...

- Impact of US subprime woes should not be underestimated
- Average GDP growth rate forecasts for C2008E have already fallen to 2.0% (from 3.0%) over 4 months – a 33% reduction in rate of growth. Average annual GDP growth over past decade = 3.1%
- US less relevant to global economy - US share of global GDP has declined steadily since 1999 to 19% of GDP

...Recession(s) = Very Serious Potential Challenge

US GDP Declining as % of Global GDP



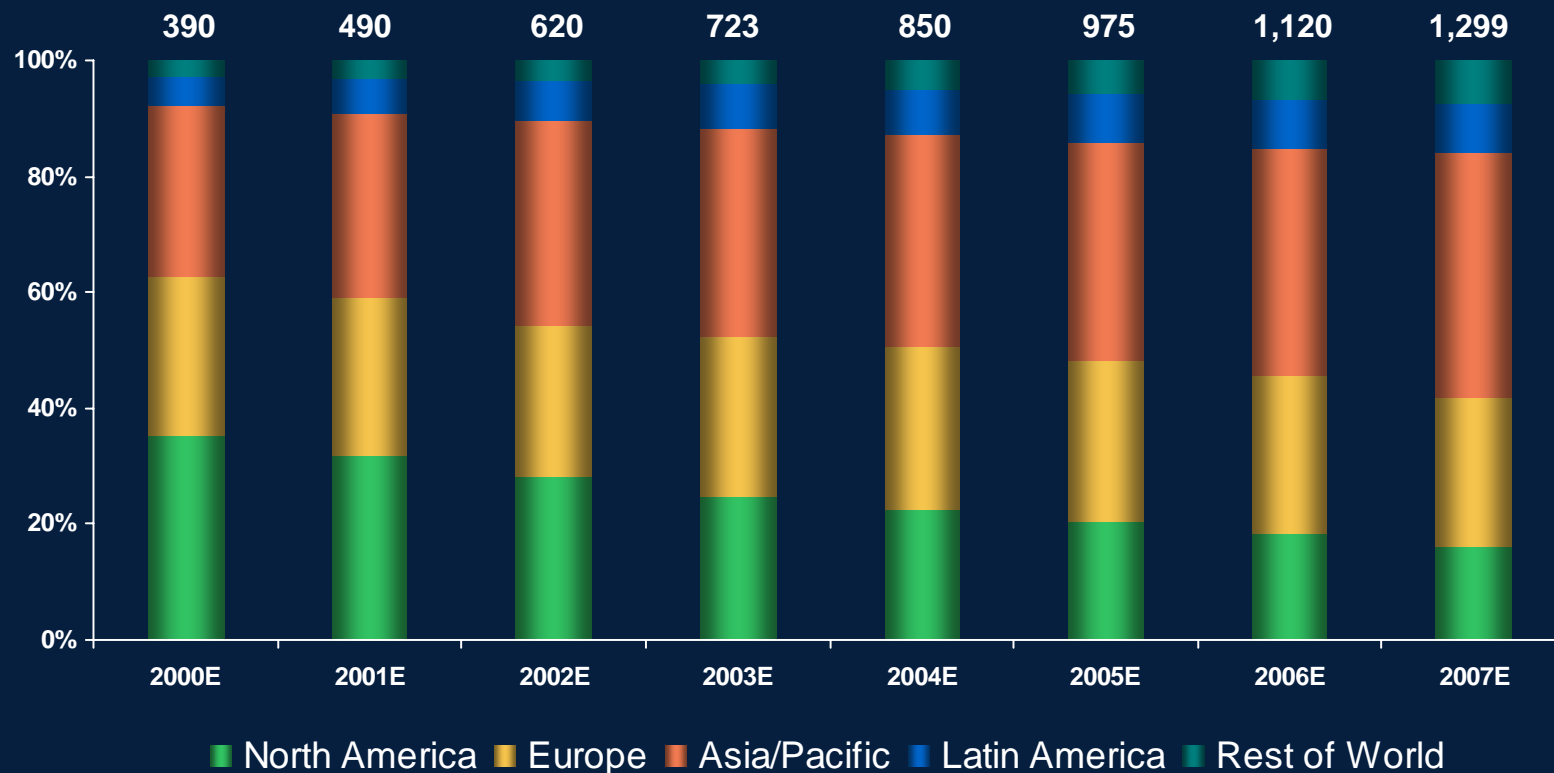
Internet Trends

- Strong Internet user growth – fastest in non-US markets
- Strong broadband growth – with more upside
- Search continues to improve as content access tool
- Ongoing share gains to online from offline – large markets to tap
- Turf wars increasing – core / emerging businesses + M&A
- High level Web 2.0 trends are compelling
- Software as a service (SaaS) momentum = strong + broad-based
- Emerging Internet-enabled devices gaining traction

Internet User Growth +16% Y/Y in C2007E – Asia! - Now 42% of Users - 30% in 2000E

Asia (547MM users, +24% Y/Y); **Europe** (336MM, +10%); **N. America** (211MM, +3%);
LatAm (110MM, +17%); **ROW** (95MM, +27%)

Geographic Distribution of Internet Users (MM)

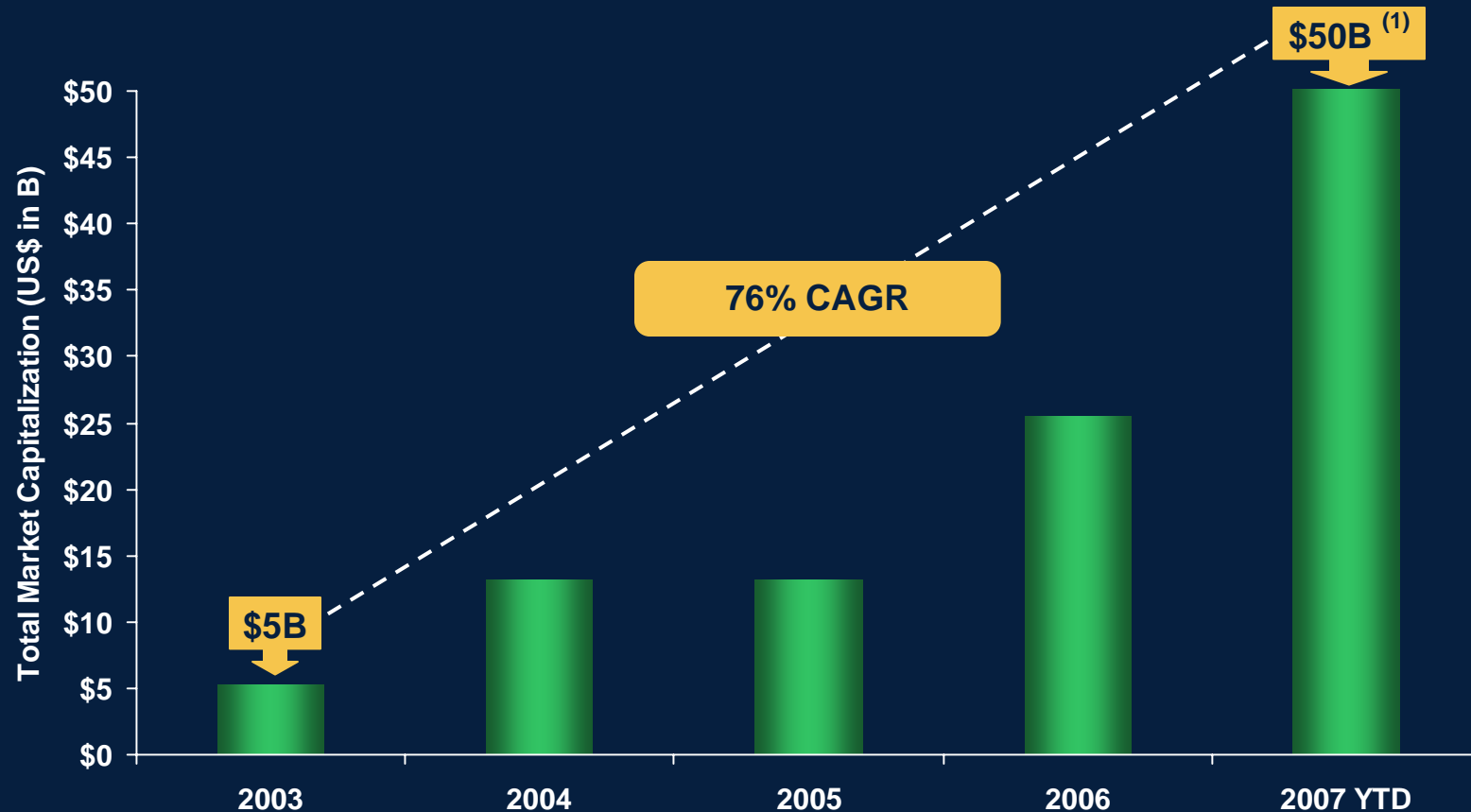


Non-US Markets Lead Usage Penetration in Many Categories



China – Internet Market Capitalization - 76% CAGR over 4 Years

China public Internet company market capitalization (US\$ in B)



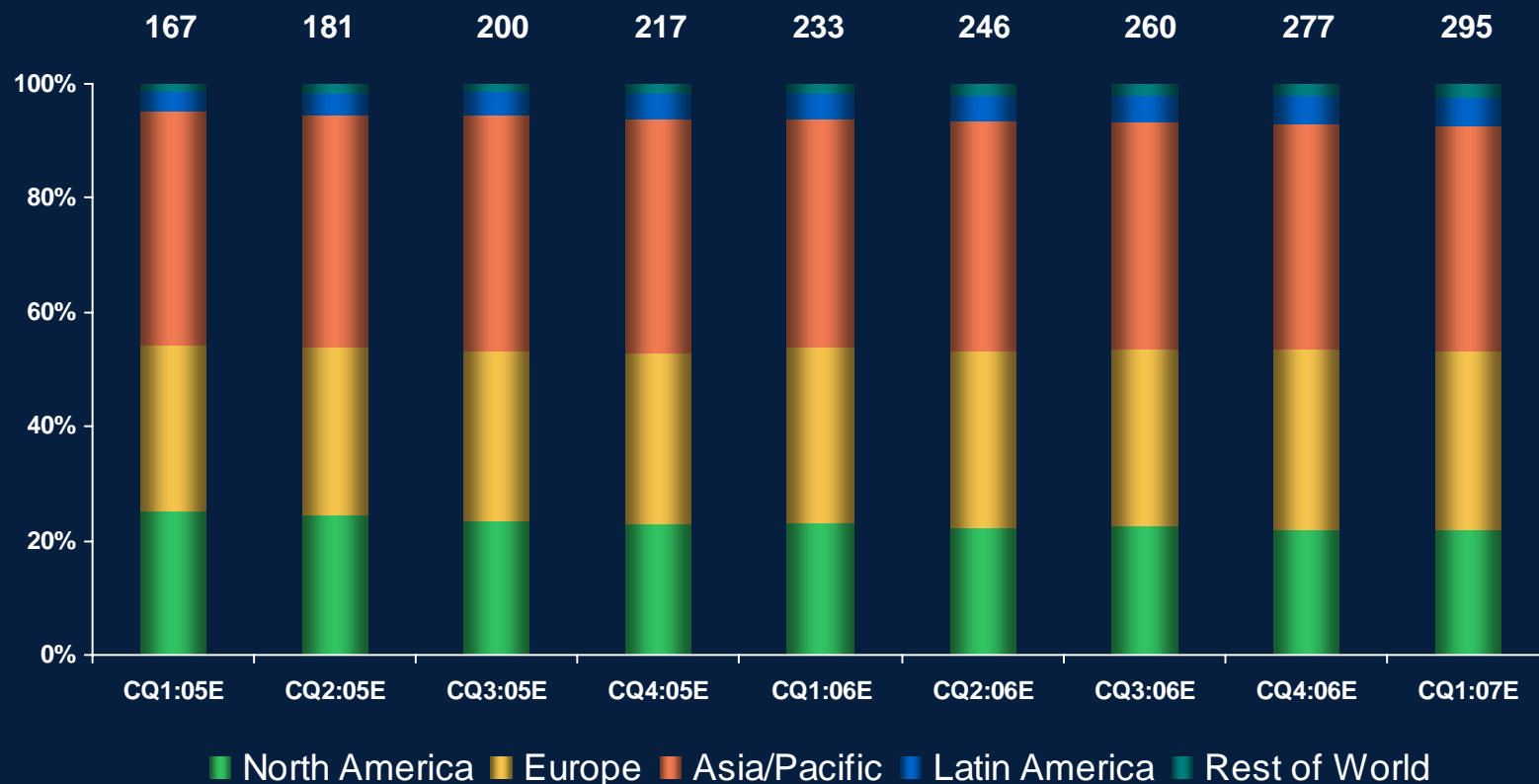
Includes: Sina, NetEase, Sohu, Ctrip, Shanda, 51job, Tencent, Tom Online, Baidu, China Digital TV, Perfect World, CDC Corp, The9, eLong, Kongzhong, China Finance Online, Linktone, Hurray!, New Oriental Education, Home Inns, Netsun, Xinhua Finance Media, Acorn, and Kingsoft

(1) Market Capitalization as of 10/15/2007
Source: Morgan Stanley Research

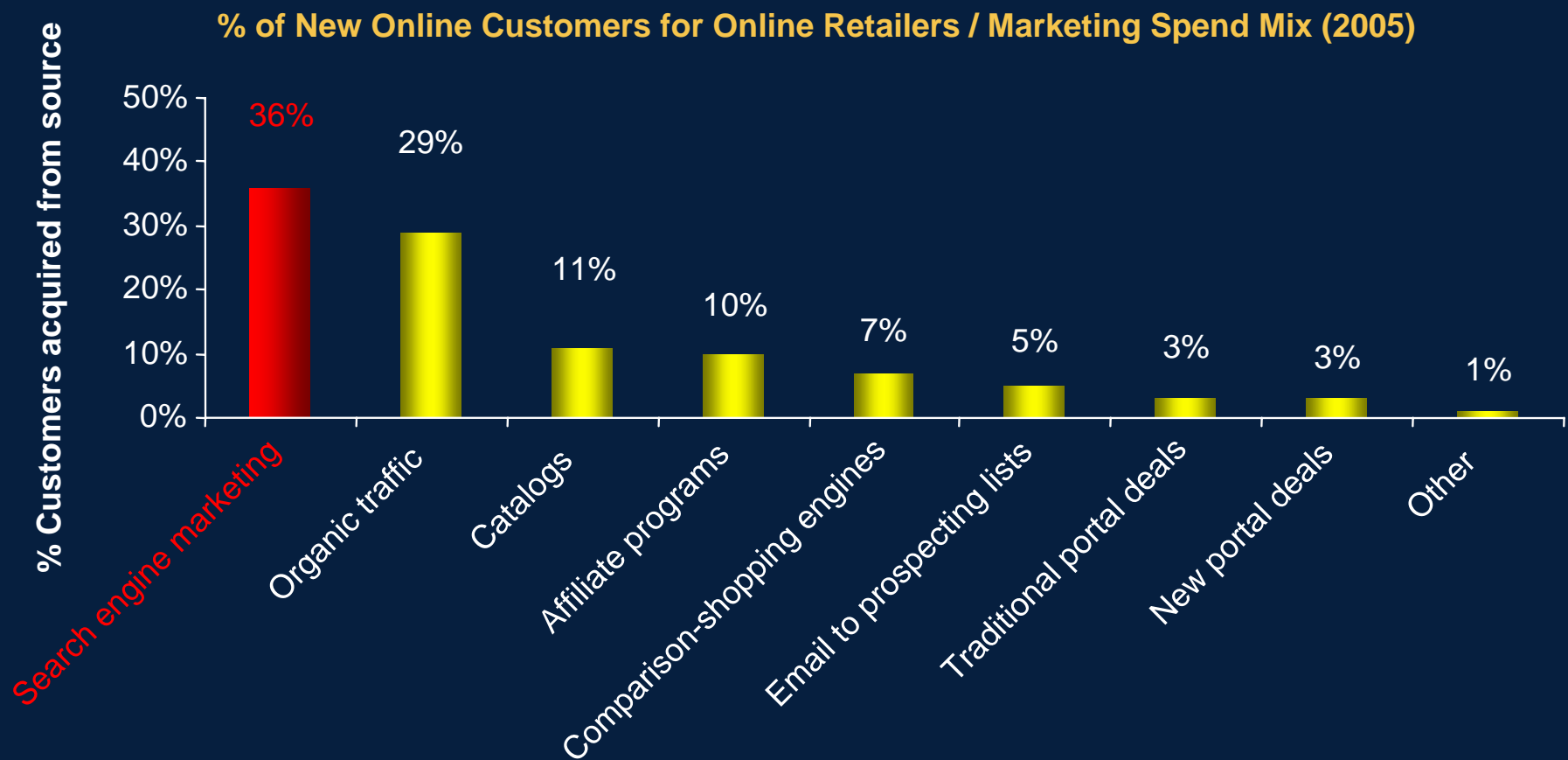
Broadband +28% in C2007E to 17% of WW Households vs. 53% of Households with 1+ Telephone

Asia (116MM BB subs, +24% Y/Y, CQ1E); **Europe** (92MM, +29%);
N. America (64MM, +20%); **LatAm** (15MM, +50%); **ROW** (7MM, +68%)

Geographic Distribution of Broadband Subscribers (MM)



Search Impact – Still Early Stage & 70% Y/Y Google Query Growth (CQ2)



Personalization + Targeting Continue to Improve – Amazon.com's Revenue per Customer Growth Accelerating

Amazon.com recommendation engine:
Leveraging data

Google ads:
Improvements in relevance

Customers who bought this item also bought

[Santa Barbara Style](#) by Kathryn Masson

[Insiders' Guide to Santa Barbara, 3rd: Including Channel Islands National Park](#)

Editorial Reviews

Book Description
Experience one of the gl... ia. SA...

Customer Reviews

Average Customer Review: ★★★★★

1 of 1 people found the following review

★★★★★ **Beautiful book!**, February 2, ...

By [Jessica M. Carter](#) (Newport Beach, CA) - [See all my reviews](#)

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New! Receive e-mail when new posts are made. Click the "Track i..."

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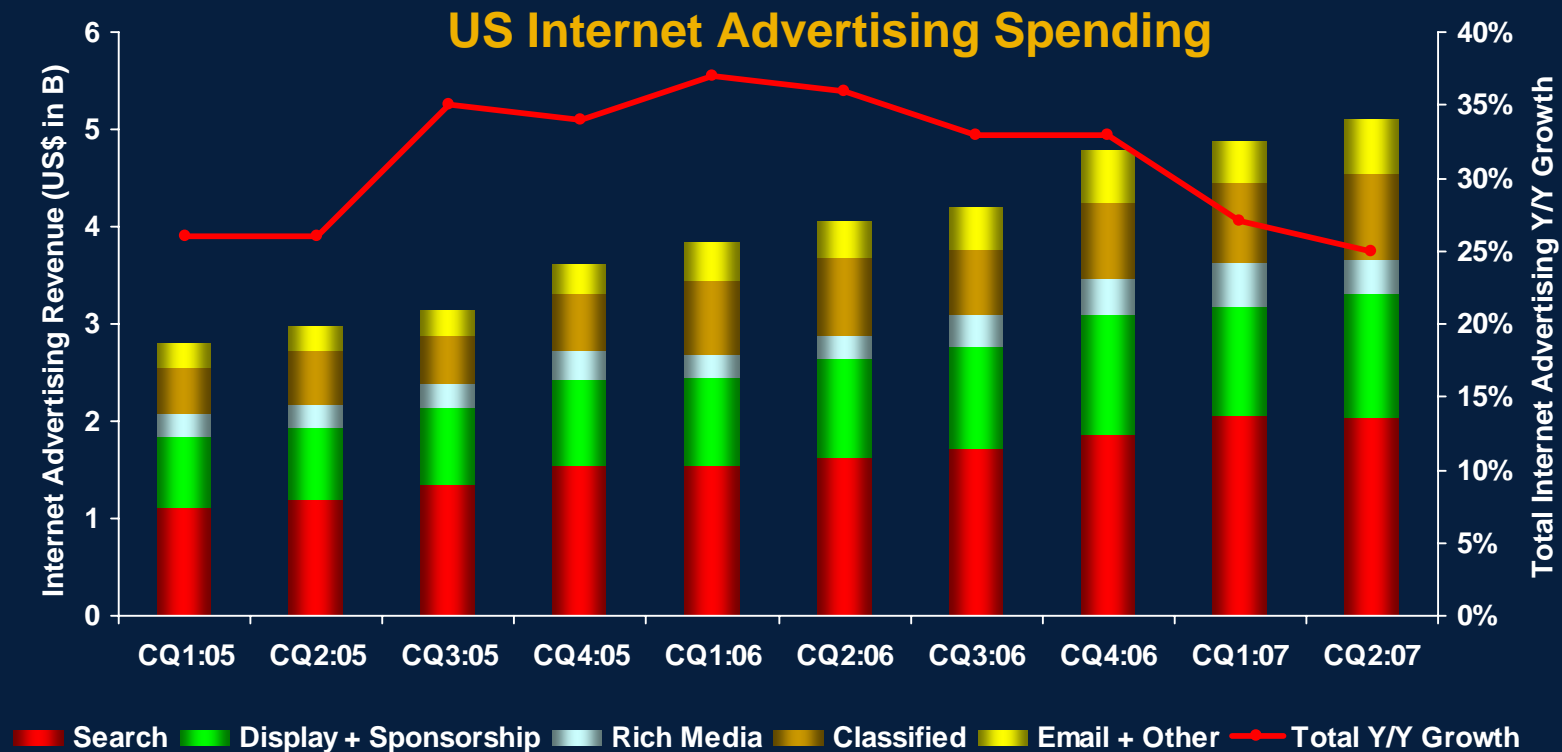
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Online Advertising – +26% Y/Y in C2007E – Only 10% of Total

Global Ad Spending = \$630B in C2007E, +4% Y/Y

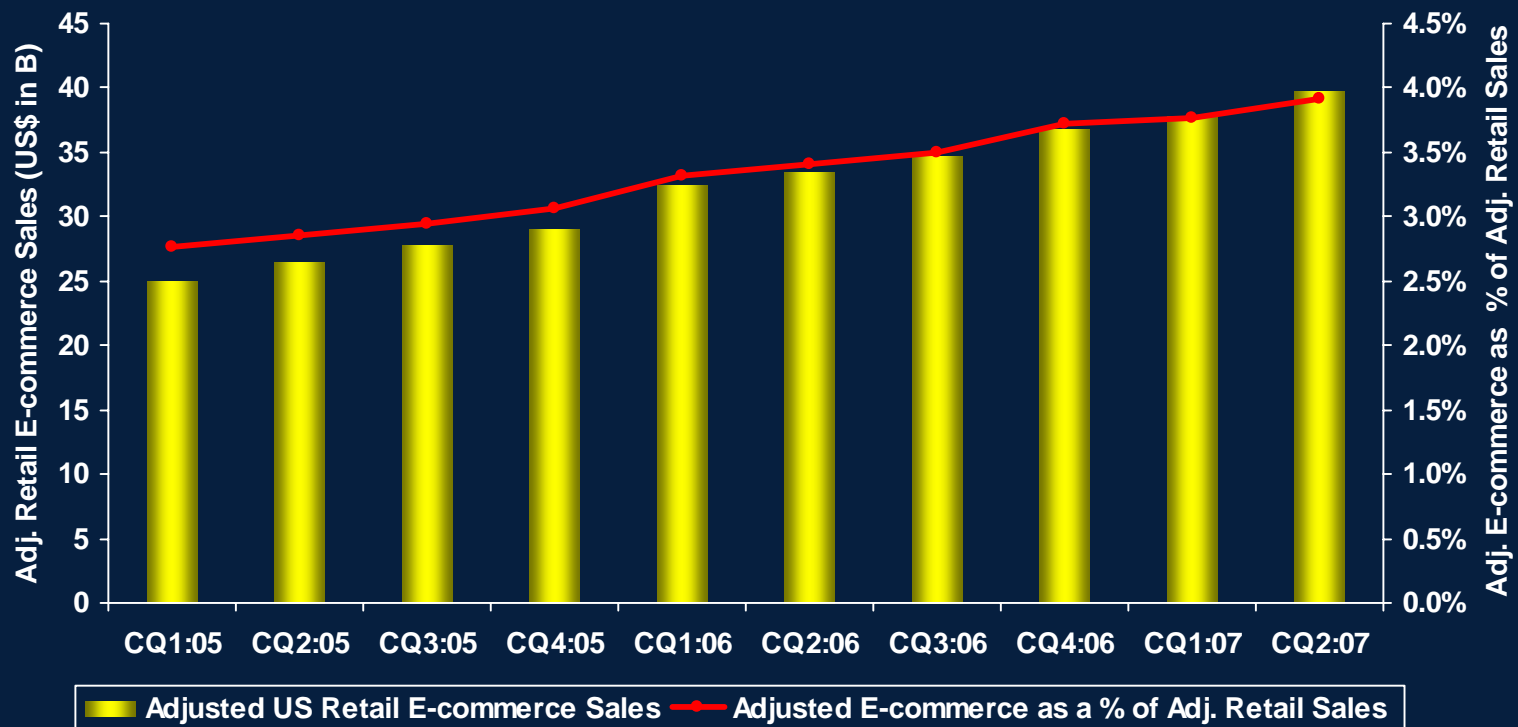
- 10% of US advertising online (\$21B) in C2007E vs. 4% in C2002 and 17% in C2012E
- US online advertising +26% Y/Y growth vs. industry growth of +4% in C2007E



Online Commerce – +19% Y/Y in CQ2 – 4% of Total

US Total Retail Sales = \$3.9T in C2006, +6% Y/Y

US E-Commerce Sales / Penetration



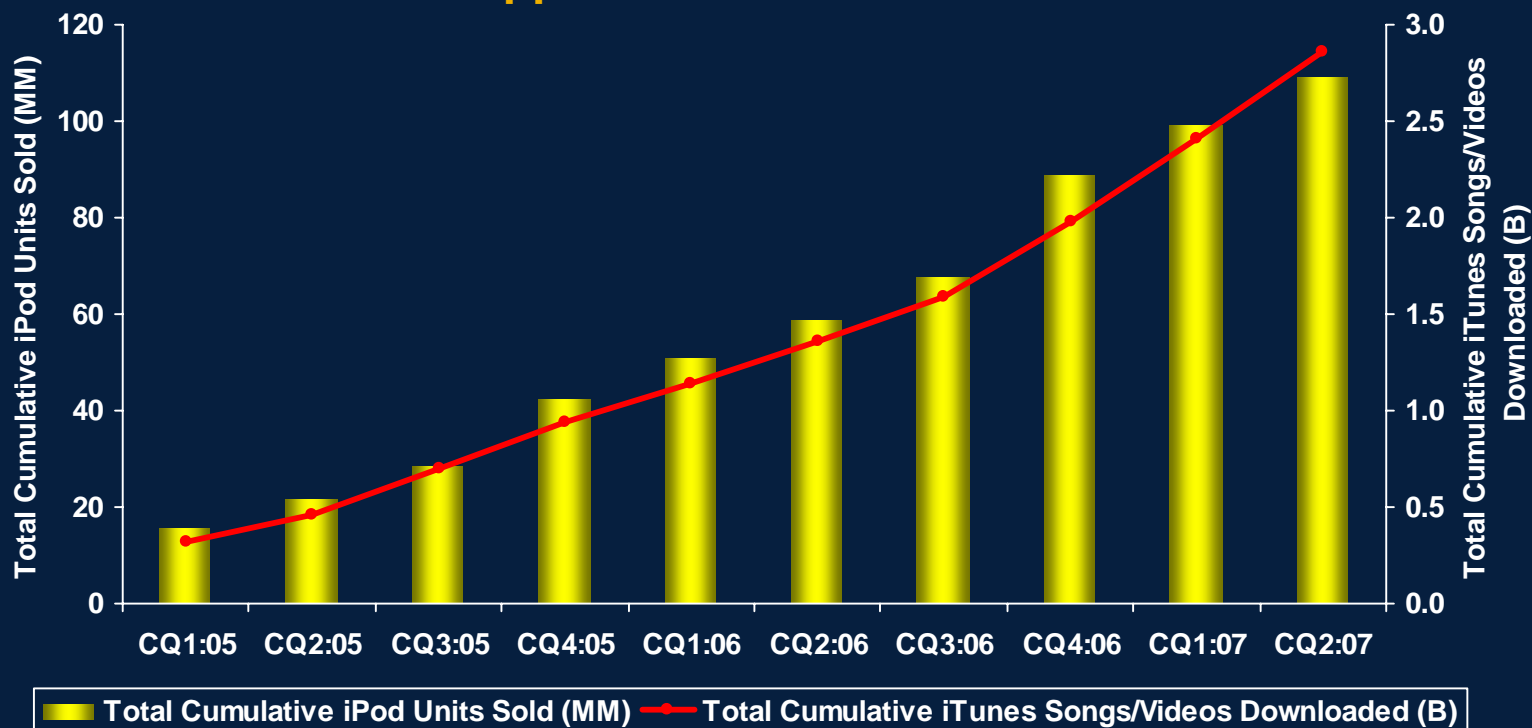
Note: Total Retail does not include travel, financial services, or event ticket sales. E-commerce sales are goods and services where an order is placed by the buyer or price and terms of sale are negotiated over an Internet, extranet, EDI network, e-mail, or other online system. Payment may or may not be made online. Adjusted by adding eBay US Gross Merchandise Volume (GMV) and subtracting eBay US Transaction Revenue.

Online Music – +107% Y/Y in C2006 - 11% of Total

Global Total Music Sales = \$20B in C2006, -6% Y/Y

- 109MM cumulative iPods sold (+86% Y/Y, CQ2); 2.9B cumulative iTunes songs / videos downloaded (+110% Y/Y, CQ2E)

Apple iPod / iTunes Growth



Online Video – YouTube Growth Speaks for Itself

Global broadcasting + cable TV revenue = \$284B in C2007E, +5% Y/Y

- YouTube - 206MM unique global visitors, +185% Y/Y, 21B minutes, +332% Y/Y; other video distribution models: veoh, Joost, Sling Media, VUDU...

YouTube Global Traffic

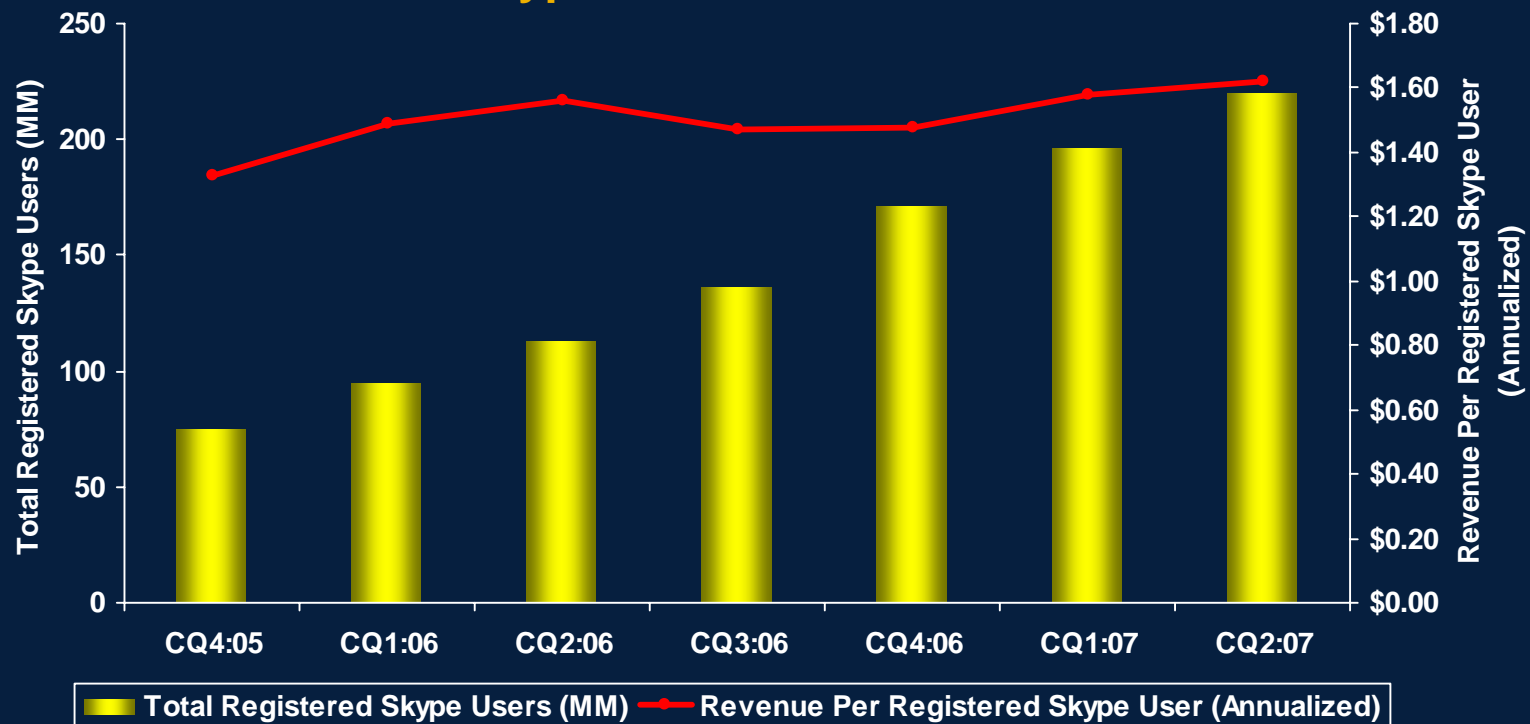


VoIP –

Skype Growth +94% Y/Y to 220MM Users (CQ2) –
~7% of Wireless Users / ~5% of Wireline Users

Global Telecom Services Revenue of \$1.5T in C2007E, +8% Y/Y

Skype Users / Monetization



Turf Wars Increasing - Battles for Platforms

- **Advertising** – Google vs. Yahoo! vs. Microsoft vs. attackers (exchanges / networks, performance-based vs. CPM, behavioral vs. contextual, 'social graph,' tools - widgets...)
- **Commerce** – Amazon.com vs. eBay vs. Wal-Mart vs. attackers
- **Payments** – PayPal vs. Amazon.com vs. Google vs. mobile
- **Social Networks** – Facebook vs. MySpace vs. Yahoo! vs. Google / Orkut vs. Skype vs. attackers
- **'Traffic'** - As monetization tools improve, value of good traffic should rise
- **Mobile Devices** – Rugby scrum?

Strong Web 2.0 Metrics – The Times They are a-Changin’ – Hello Social Networking

Alexa Global Traffic Rankings

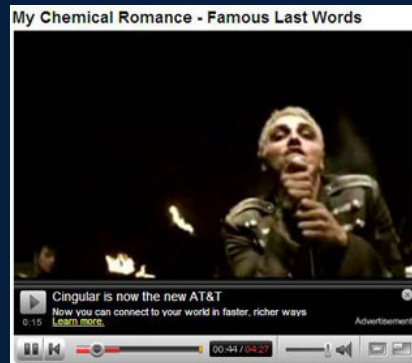
Rank	2005 ⁽¹⁾ Web site
1	yahoo.com
2	msn.com
3	google.com
4	ebay.com
5	amazon.com
6	microsoft.com
7	myspace.com
8	google.co.uk
9	aol.com
10	go.com

Rank	2007 ⁽²⁾ Web site
1	yahoo.com
2	google.com
3	msn.com
4	youtube.com
5	live.com
6	myspace.com
7	facebook.com
8	orkut.com
9	wikipedia.org
10	hi5.com

Traffic rank is based on three months of aggregated historical traffic data from Alexa Toolbar users and is a combined measure of page views / users (geometric mean of the two quantities averaged over time).

YouTube

- 206MM unique global visitors +185% Y/Y, 21B minutes +332% Y/Y (comScore 8/07)
- Added additional site features to encourage community + increase accessibility - users can post video 'responses,' subscribe to video content feeds, edit videos online, watch via mobile device
- Partnered with media content providers including Warner Music, CBS, Universal Music, Sony BMG, NBC + launched YouTube Partnership program with popular YouTube uploaders such as 'lonelygirl15'
- Expanding YouTube videos within Google network - 100 media companies in AdSense network running YouTube videos with text / graphical ads to match website content
- InVideo Ads: 50 partners will run ads at the bottom 20% of YouTube videos, appearing 15 seconds into the spot



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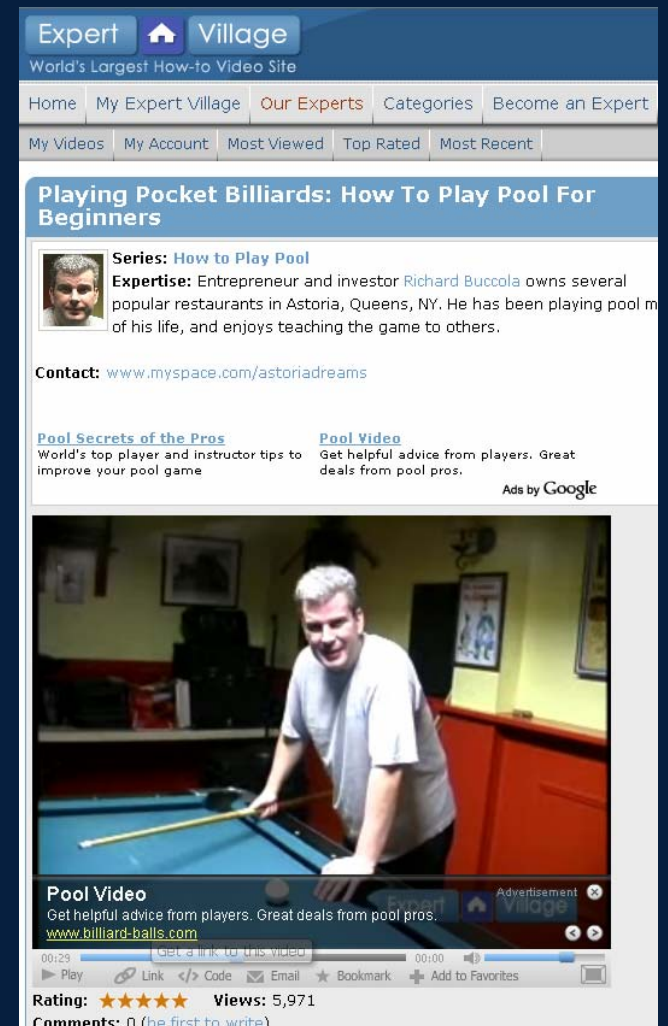
Wikipedia

- 211MM unique visitors, +52% Y/Y, 3B minutes, +92% Y/Y (comScore, 8/07)
- 8.3MM+ total articles (9/07), mainly from 75K+ active contributors, in 250+ languages with 2.0MM+ articles in English, 649K+ in German, 149K+ articles in Chinese
- Go back 20 years – imagine what the cost would have been to compile the data / info that exists (for free) on Wikipedia!

The screenshot shows the Wikipedia article for "Web 2.0" from August 2007. The page layout includes a top navigation bar with links like "article", "discussion", "edit this page", and "history". The main content area starts with the title "Web 2.0" and a sub-header "From Wikipedia, the free encyclopedia". The article text discusses the term's origin, its popularity following the 2004 O'Reilly Media Web 2.0 conference, and its meaning as a new version of the World Wide Web. It mentions key figures like Tim Berners-Lee and Tim O'Reilly. A "Contents" table of contents is visible, listing sections from "Defining Web 2.0" to "References". The left sidebar contains navigation links (Main page, Contents, Featured content, etc.), interaction links (About Wikipedia, Community portal, etc.), a search box, and a toolbox. The bottom of the page shows the article's history and a list of other languages available for the article.

Demand | MEDIA

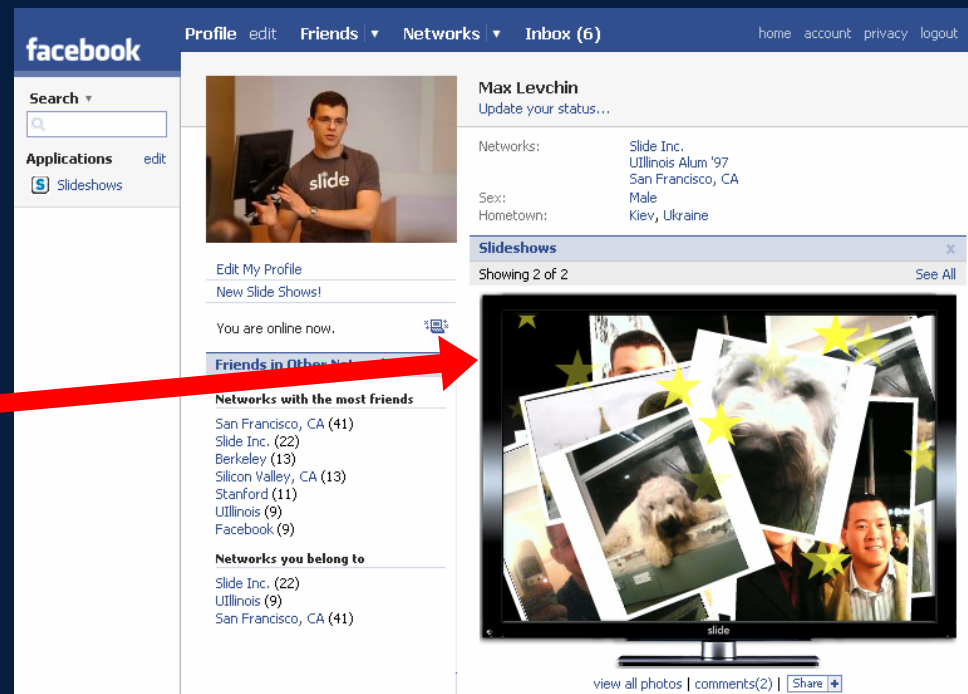
- 25MM unique visitors, +109% YTD, 429MM minutes, +316% YTD (comScore, 8/07)
- Assets include eNom, eHow, Expert Village, golf link, trails.com...
- Allows users to create / distribute / monetize content via 'social media creation platform' + owned verticals / domain names / SEO + Google AdSense. Income deposited in PayPal account
- Creates easy-to-use outlet for 'ProAm' content creators



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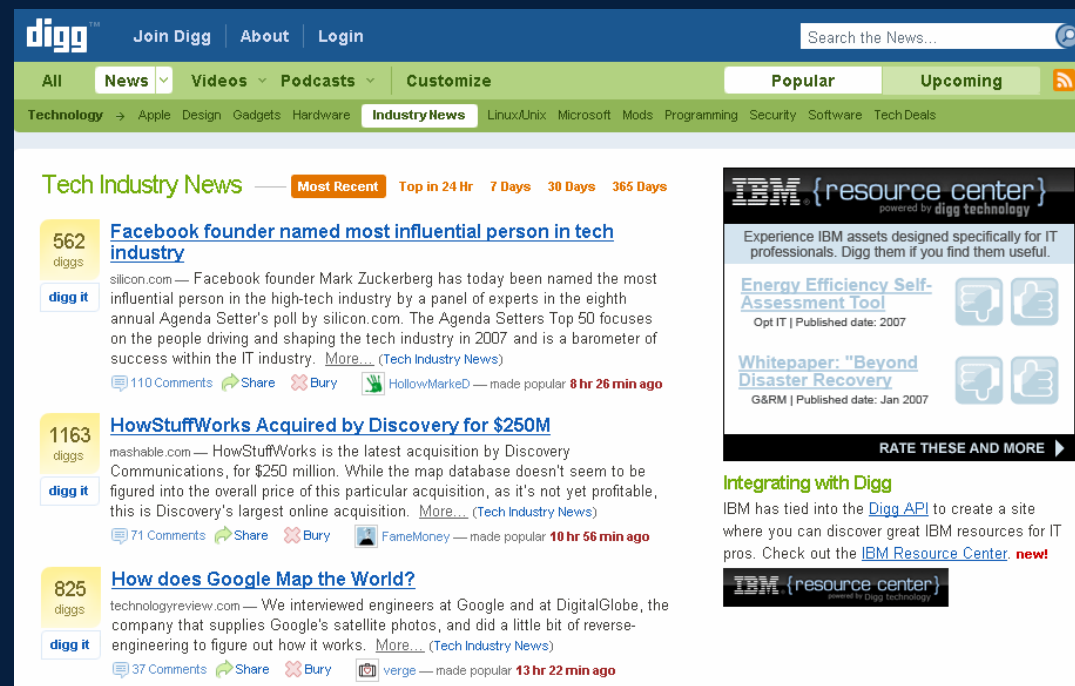
Slide

- 134MM unique viewers (6/07) with 30% reach in US (comScore, 6/07)
- 45MM+ applications and 5MM+ active users
- Allows users to create custom photo slide shows with images / animations; 1MM new flash widgets added to network each day – advertisers include AT&T Wireless, Activision, Paramount Pictures, Discovery Channel, Lionsgate Films



Digg

- 10MM unique visitors, +252% Y/Y, 18MM minutes, +230% Y/Y (comScore, 8/07)
- User-driven editorial / selection of content (news, videos, images, etc.) through sharing / discovery / democratization – compare to traditional media determining front-page / lead stories
- Site enhancements coming in C2007 include revamped user profiles / dedicated images section / customized alerts / story suggestions (recommendation engine)



Joost

- 1MM+ beta users while still invite-only; beta launched to public – 10/1
- Streams on-demand TV / video content to the PC – users can also chat with other users watching same program
- 15K+ shows, 250+ channels, including Viacom, CBS, Warner Music
- 30+ advertisers include Coca-Cola, HP, Procter & Gamble, L'Oreal

**IM / Chat
functionality**

**Add
interactive
apps /
plugins**



**Rate
watched
content**

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Facebook

- Accelerating Y/Y growth with 69MM visitors +348% Y/Y, 15B minutes, +631% Y/Y (comScore, 8/07)
- #7 in global minutes (and rising) behind Yahoo!, MSN, Hotmail, YouTube, MySpace, Google (comScore, 8/07)
- Self-controlled, flexible yet standardized social network seems to have the right formula for success at the right time
- Profiles yesterday...personalized home page today...mobile digital presence tomorrow?
- Mesh of communications + media
- 6K applications, 392MM installations, 29MM usages per day since APIs opened 5 months ago – may be unprecedented ramp (adonomics.com 10/07)
- Platform for applications - Top 3rd party apps largely from new companies - 'Top Friends' = 19MM users (16% active); 'Video' = 12MM (9% active); 'Super Wall' - 12MM (12% active) (adonomics.com 10/07)
- Opportunity to leverage social graph data to improve user experience (like Amazon.com recommendation engine, etc) + drive user satisfaction and improve monetization may prove compelling
- 192 sponsored groups - Apple = 422K members; Victoria's Secret = 348K; NBA = 115K members (Facebook 10/15)

Chart your travels

Tout music picks

Express yourself through graffiti



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Source: comScore global 8/07, adonomics.com, Facebook

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SaaS Momentum = Strong + Broad-Based

- **Customer Acquisition** – Google ads
- **Commerce** – Amazon.com, eBay, Blue Nile, Zappos, CafePress, HomeAway, OpenTable, smarter.com, Zillow
- **Payments** – PayPal, Bill Me Later
- **VoIP** – Skype
- **Customer Management** – salesforce.com, RightNow
- **Life Management** – MySpace, Facebook, orkut, hi5, Bebo, Cyworld, Skyrock
- **Information Management** – Wikipedia, Endeca
- **Content Management** – iTunes, YouTube, Yahoo! My Yahoo!, Facebook News Feed, iGoogle, veoh
- **Content Distribution** – Adobe, demand | MEDIA
- **Human Resources** – Taleo, Kanexa, Success Factors, WorkDay
- **Resource Management** – NetSuite, Intuit
- **Web Analytics** – Omniture, Visual Sciences, WebTrends, CoreMetrics
- **Merchandise / Marketing** – DemandTec, Aprimo

Emerging Internet-Enabled Devices Gaining Traction

- **Nintendo Wii** – 9.3MM consoles since 11/06 launch – raised bar with motion sensors + playability (Nintendo, CQ2)
- **Microsoft Xbox Live** – ~8MM members since 11/02 launch – raised bar with online playability
- **Apple iPhone** – 1MM units in < 3 months vs. ~2 years for 1MM iPods - raised bar with ease-of-use + functionality
- **3 Skype Phone** – Opportunity to leverage large / active Skype user base + create a true web-enabled VoIP, social networking, digital presence phone is compelling
- **Amazon Kindle** – Wireless book / data downloading – Amazon has loyal / active base of book lovers – we know what Apple did with tunes, could Amazon do same with books?
- **Google 'GPhone'** – Could the price be right with assist from ads?

2% of Public Tech Companies Create 100% of Wealth* – 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 ⁽¹⁾	Annuity -Like Model	Strong Board
Apple	X	X	X	X	XX	X	33	X	X
Cisco	X	X	O	X	X	X	65	X	X
Dell	X	X	X	X	X	X	19	X	X
eBay	X	X	X	X	X	X	79	X	X
Google	XX	XX	X	X	X	X	85	X	X
Intel	X	X	X	X	X	X	53	X	X
Microsoft	X	X	X	X	X	X	82	XX	X
Yahoo!	X	X	X	X	X	X	81	X	X

Summary

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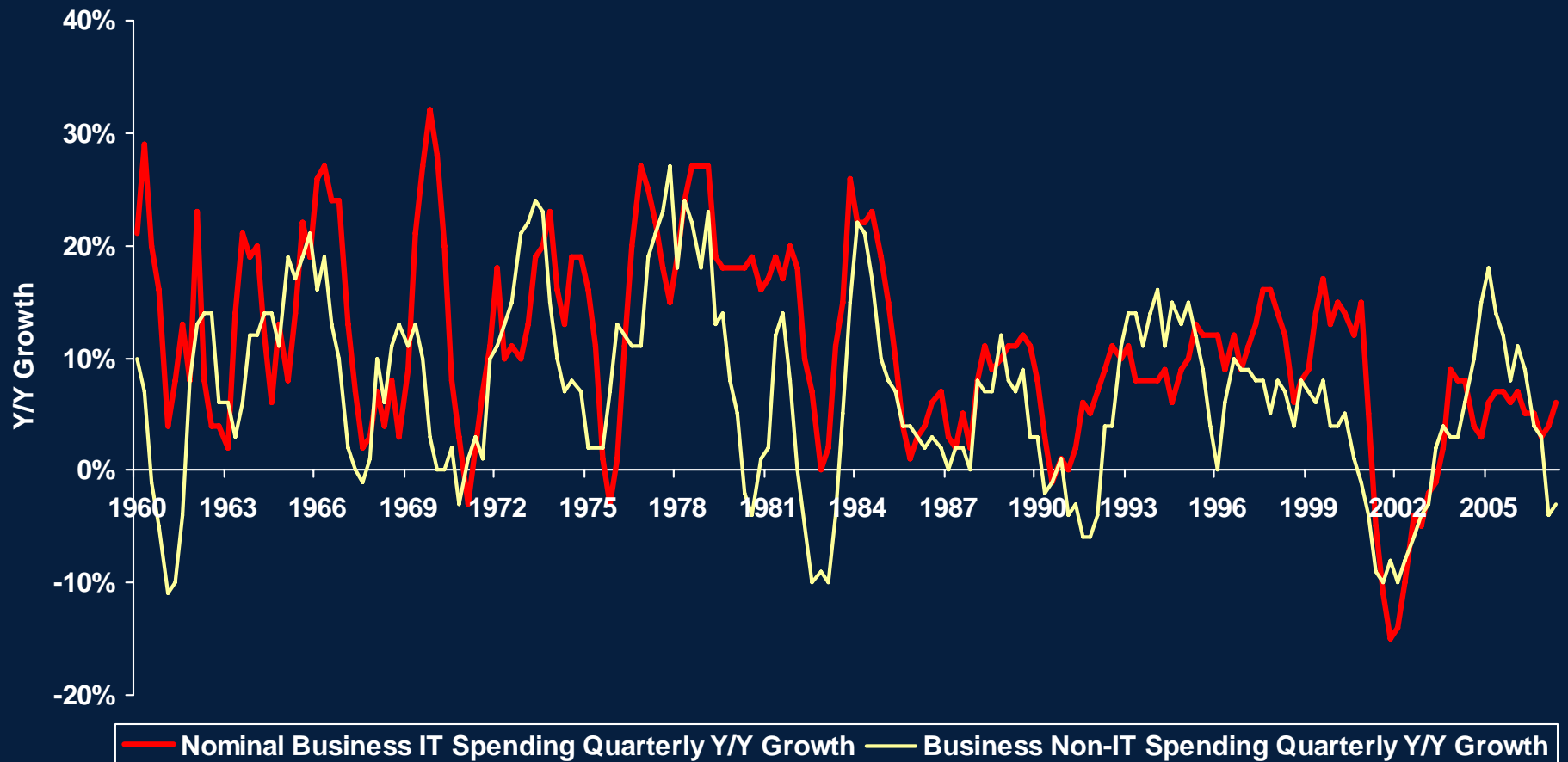
- Consumer pacing strong Internet growth
- Enterprise playing catch up
- Competition for 'platforms' intensifying – margin pressure?
- Personalization continues to ramp – Google / Amazon.com / Facebook...
- Mobiles entering inflection point for Internet usage
- Battles for mobile supremacy will be very intense
- Emerging markets (especially Asia) surprising on upside
- Recession(s) = very serious potential challenge

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***Appendix +
Disclosure Section***

Business IT Spending Growth Compelling vs. Non-IT Spending

Business IT vs. Business Non-IT Spending Quarterly Growth Rates (Y/Y)



2006 TMT Update

Rank	Country	Relative Weighting	Rank	Country	Relative Weighting
1	USA	8.7	26	Finland	4.8
2	China	8.7	27	Poland	4.8
3	Japan	6.3	28	Turkey	4.8
4	Germany	5.7	29	Singapore	4.7
5	India	5.5	30	Greece	4.7
6	United Kingdom	5.4	31	Hong Kong, China	4.7
7	France	5.3	32	New Zealand	4.7
8	Brazil	5.3	33	Argentina	4.7
9	Russia	5.3	34	Portugal	4.6
10	Italy	5.2	35	Israel	4.6
11	Canada	5.1	36	South Africa	4.6
12	South Korea	5.1	37	Saudi Arabia	4.6
13	Norway	5.0	38	Czech Republic	4.6
14	Australia	5.0	39	Malaysia	4.6
15	Spain	5.0	40	Thailand	4.6
16	Netherlands	4.9	41	Colombia	4.6
17	Switzerland	4.9	42	Philippines	4.6
18	Denmark	4.9	43	Hungary	4.6
19	Ireland	4.9	44	Iran	4.6
20	Sweden	4.9	45	Chile	4.6
21	Mexico	4.9	46	Venezuela	4.6
22	Belgium	4.8	47	Egypt	4.5
23	Austria	4.8	48	Vietnam	4.5
24	Taiwan	4.8	49	Nigeria	4.5
25	Indonesia	4.8	50	Algeria	4.5

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 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.

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(as of September 30, 2007)

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Stock Rating Category	Count	% of Total	Count	% of Total IBC	% of Rating Category
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Total	2,300		744		

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The Americas 1585 Broadway New York, NY 10036-8293 United States Tel: +1 (1) 212 761 4000	Europe 25 Cabot Square, Canary Wharf London E14 4QA United Kingdom Tel: +44 (0) 20 7 425 8000	Japan 4-20-3 Ebisu, Shibuya-ku Tokyo 150-6008 Japan Tel: +81 (0) 3 5424 5000	Asia/Pacific Three Exchange Square Central Hong Kong Tel: +852 2848 5200
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