

Global Technology / Internet Trends

Stanford Graduate School of Business – Version 2.0

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Outline

- Global Internet Data Points
- General Technology / Internet Trends
- What About Revenue?
- Attributes of Winning Technology Companies

Global Internet Data Points

Internet Data Points - Global

Global → N. America = 23% of Internet users in 2005; was 66% in 1995

S. Korea → Broadband penetration of 70%+ - No. 1 in world

China → More Internet users < age of 30 than anywhere

Internet Data Points - Communications

Broadband	→	179MM global subscribers (+45% Y/Y, CQ2); 57MM in Asia; 45MM in N. America
Mobile Messaging	→	1.1T SMSs sent with \$50B in revenue in 2004 (Informa 5/05); more emails sent in Japan via mobile than PC (DoCoMo 2005)
VoIP	→	61MM registered Skype users (10/05) - fastest product ramp?
Denmark	→	VoIP minutes > landline voice minutes
Tencent	→	16MM peak simultaneous Instant Message users, China, CQ2

Internet Data Points - Content

Google	→	7.6B global searches (+74% Y/Y, 5/05); 384MM global unique visitors (+36%, 5/05) per comScore
Personalization	→	40MM+ estimated My Yahoo! users
Blogging	→	27% of US Internet users read blogs, 11/04
Yahoo!	→	~1.6B streaming video (music...) sessions (+100% Y/Y, CQ3)
Digital Media	→	565MM cumulative iTunes as of 9/05; 7MM iPods sold in CQ3:05 (+220% Y/Y); 1MM videos sold in 20 days (10/05)
Ringtones	→	\$3B annual ringtone sales (Informa 5/05) - vs. \$559MM+ cumulative iTunes sales (9/05)

Internet Data Points - Payments

PayPal → 87MM accounts (+53% Y/Y, CQ3); 25MM users (+41% Y/Y)

Mobile Payments → 4MM+ NTT DoCoMo wallet phone users (CQ1) in Japan

Global Technology / Internet Trends

What We Lived Through

Pattern

Company Creation

Boom

Bust

Boom-let

Wealth Creation

Boom-let

Bust

Boom

Top 5 Global Internet Market Cap Leaders

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
- \$262B = market value - 11/11/05

For Google we include \$100MM in post-money valuation

Significant Infrastructure Builds...

Capital Expenditures

(US\$ in Millions)	C2003	C2004	C2005E
Google	\$177	\$319	\$797
Y/Y	375%	80%	150%
Yahoo!	\$117	\$246	\$405
Y/Y	128%	109%	65%
eBay ⁽¹⁾	\$365	\$293	\$381
Y/Y	163%	(20%)	30%
Amazon.com	\$46	\$89	\$200
Y/Y	17%	94%	124%

Source: Company filings, Morgan Stanley Research. Figures exclude capital expenditures from acquired companies.

(1) C2003 includes \$125.1MM purchase of additional office space.

E = Morgan Stanley Research estimates.

...Significant Infrastructure Builds

To organize all the world's information and make it universally accessible and useful.

- Google's Mission

In / Entering Major Computing Cycles

4 major computing cycles over past 50 years

Mainframe → Minicomputer → PC → PC Internet (Narrowband)

In / entering 2 most profound cycles ever

PC Internet (Broadband) → Mobile Internet

Why now?

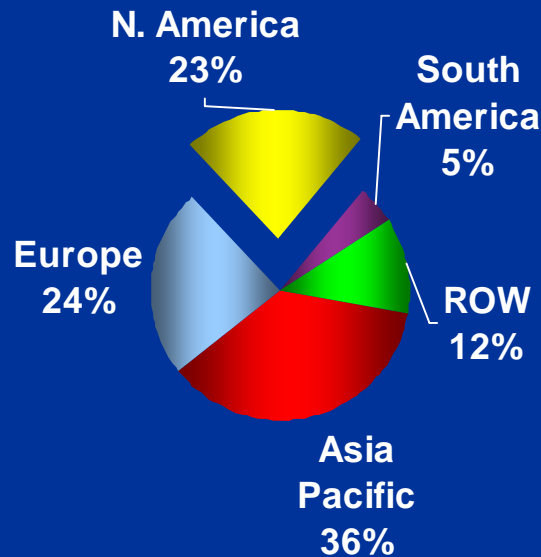
- 1) Broadband becoming pervasive
- 2) Internet-enabled mobile devices becoming pervasive small / functional computers
- 3) Global technology innovation may be at all time high

Shift to Consumer vs. Enterprise as Demand Driver

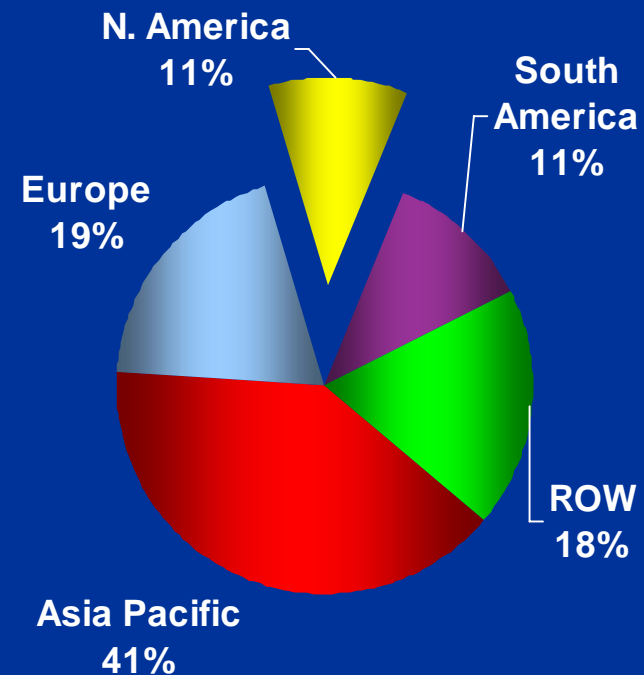
- In CQ3, Microsoft indicated PC units grew a robust 15-17% while Client (PC-related) revenue rose only 7%
- Disconnect between unit and revenue growth was attributed, in part, to relative strength in consumer market where products carry lower ASPs

US Share of Technology Usage / Innovation Falling

**Internet Users – 1B
C2005E ⁽¹⁾**



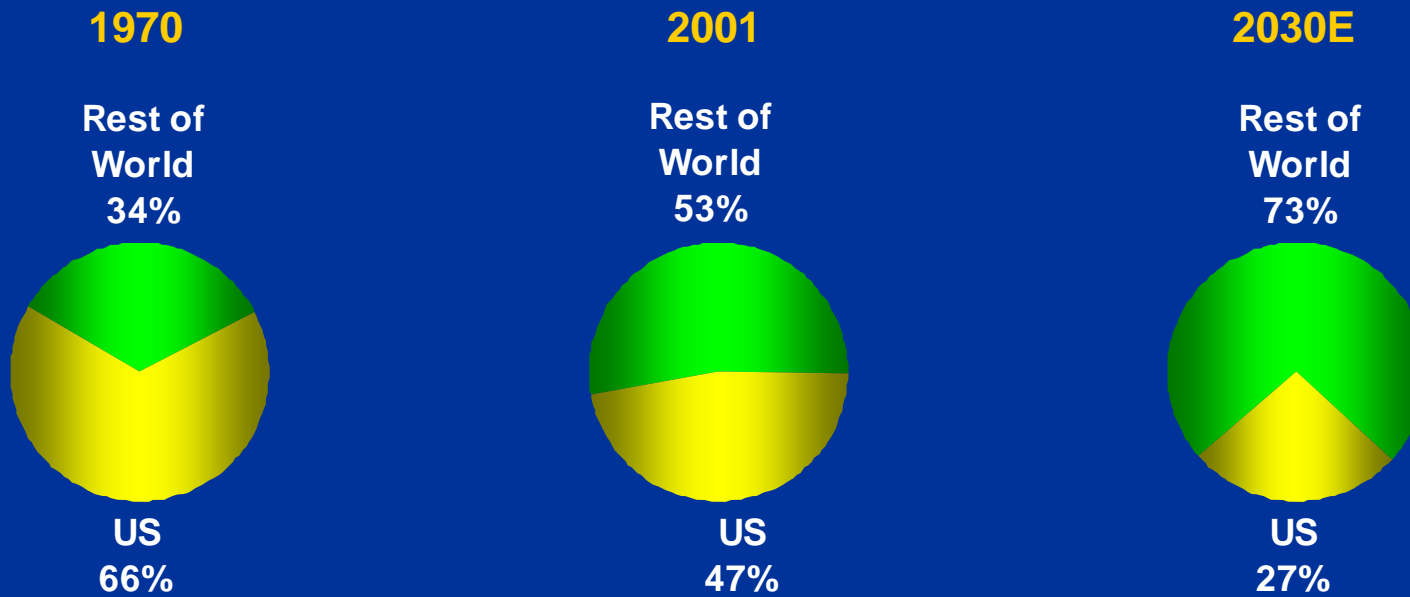
**Mobile Subscribers – 2B
C2005E ⁽²⁾**



(1) Source: Morgan Stanley Research.

(2) Source: Morgan Stanley Communications Equipment Research - Scott Coleman, John Marchetti.

US Share of Global Market Value Falling



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

US Share of Technology Financings Falling

Geographic Distribution of Technology Equity and Equity-Linked Transaction Volume (\$B)



Source: SDC, DealLogic, Morgan Stanley. 2005 data Year-to-Date as of 11/11/05.

US Share of Engineers Falling

	Annual Engineering Graduates (K)	Opex (\$K) per Employee ⁽⁵⁾
US	76 ⁽¹⁾	\$88
India	184 ⁽²⁾	16
China	352 ⁽³⁾	13
Rest of World	1,007 ⁽⁴⁾	--

(1) Source: Engineering Workforce Commission, Bachelor degrees awarded, 2003-2004 academic year.

(2) Source: National Association of Software and Service Companies, 2003-2004 engineering graduates.
http://www.nasscom.org/artdisplay.asp?cat_id=303.

(3) Source: China Statistical Yearbook, 2004, <http://www.stats.gov.cn/english/statisticaldata/yearlydata/yb2004-e/indexeh.htm>, 21-11, "Regular College Course."

(4) Source: National Science Foundation, First University Science & Engineering Degrees,
<http://www.nsf.gov/statistics/seind04/append/c2/at02-33.pdf>.

(5) Source: Morgan Stanley Research based on FactSet 2004 operating expense, employee data. US data from S&P500 index (500 companies, 410 available). China data from Hang Seng China Enterprise Index (HSCEI) (40 companies, 31 available). India data from Bombay SENSEX Index (30 companies, 22 available).

US Litigation vs. R&D Spending

In 2001 (the most recent year for which data are available), US industry spent more on tort litigation [\$205B] than on R&D [\$184B].

-National Academy of Sciences ⁽¹⁾

(1) Rising Above The Gathering Storm: Energizing and Employing America for a Brighter Economic Future (<http://www.nap.edu/catalog/11463.html>). As quoted in the report "US research and development spending in 2001 was \$274B, of which industry performed \$194B, and funded about \$184B. (National Science Board Science and Engineering Indicators 2004). One estimate of tort litigation costs in the United States was \$205B in 2001. (Leonard, Jeremy A. 2003. How Structural Costs Imposed on U.S. Manufacturers Harm Workers and Threaten Competitiveness. Prepared for the Manufacturing Institute of the National Association of Manufacturers. http://www.nam.org/s_nam/bin.asp?CID=216&DID=227525&DOC=FILE.PDF."

US Interest in Non-US Created Technologies Rising

- eBay / Skype combination is best example (along with VeriSign / Jamba) of leading US-based technology company purchasing a leading non-US technology that had leadership in foreign markets with intent, in part, to bring technology into US market
- More - potentially a lot more - to come...

Communications Changing / Being Changed

1975



Landline Phone

2005

Mobile



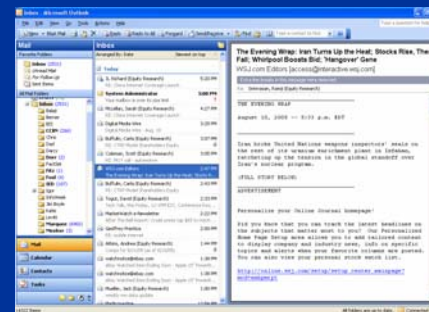
VoIP



IM



Pace of innovation across communication devices, services and networks continues to rise

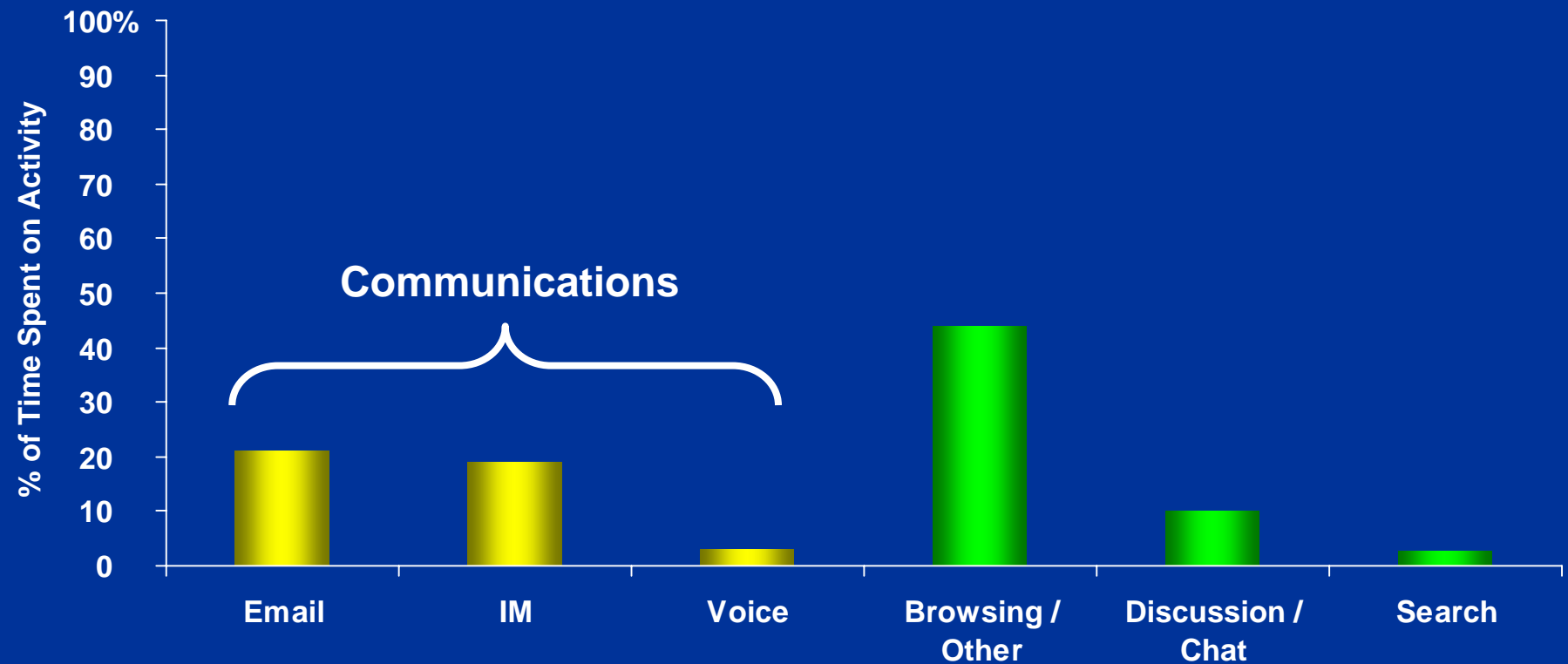


Email



Blogs

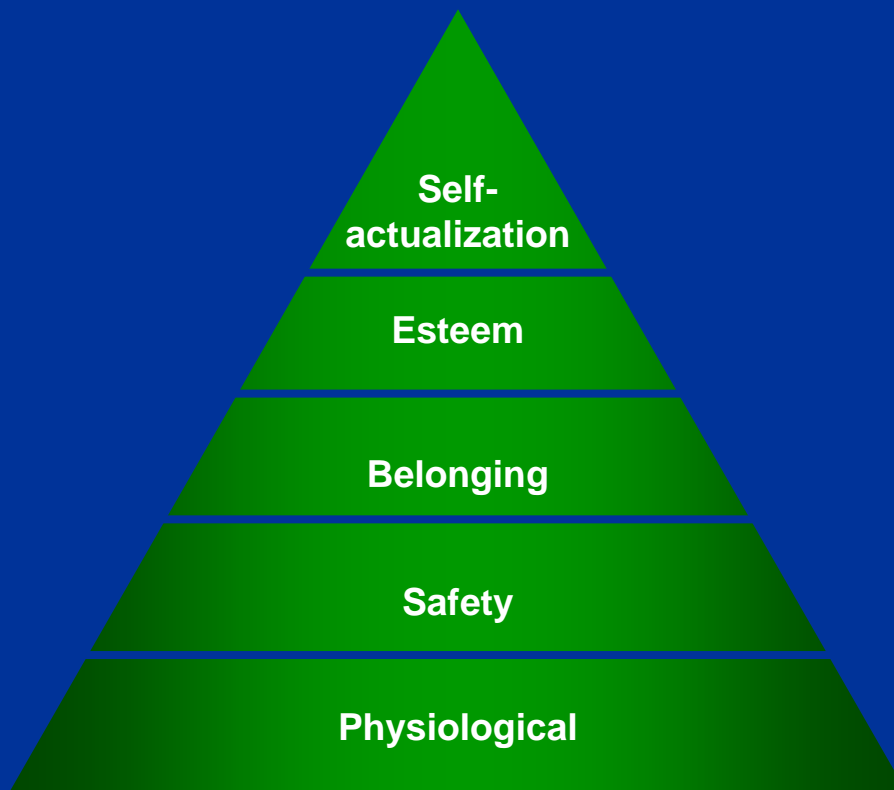
Communications = 44% of US Online Usage & Rising



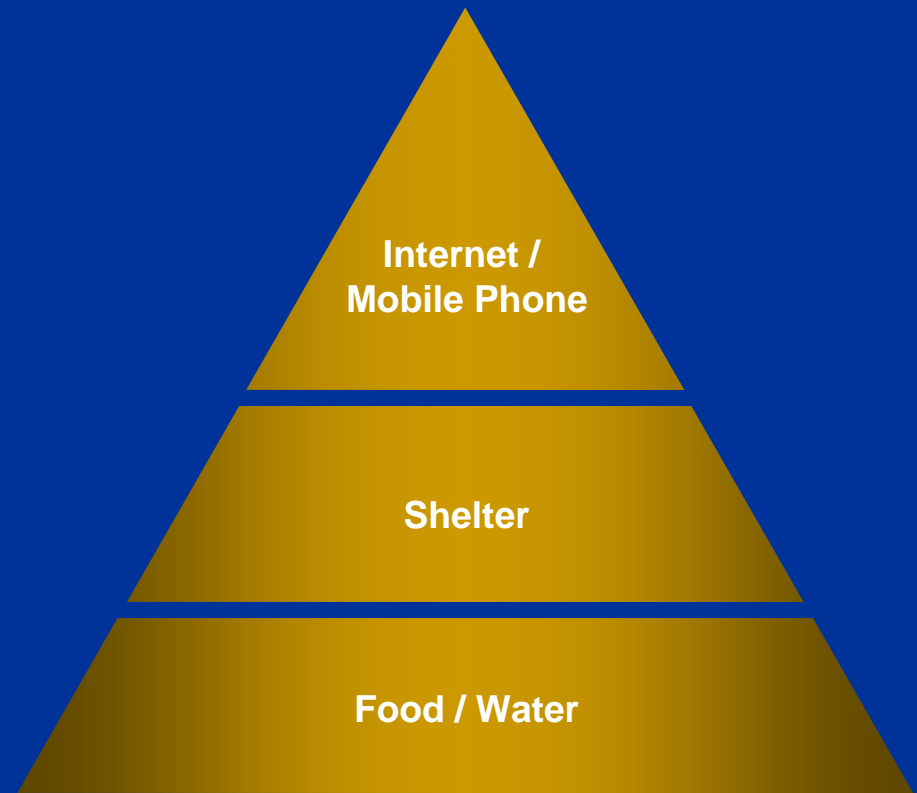
Source: comScore Media Metrix, based on average minutes per visitor by category (8/05). Browsing / Other includes general web-surfing activity not listed in other categories, including anything from news sites (cnn.com) to retail (Amazon.com) to job sites.

Hierarchy of Needs?

1943 - Maslow



2005 - ? ;)



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.

Next Generation Communications Hubs?

Internet Sites

MSN
Unique Visitors ⁽²⁾
(440MM)

Google ⁽¹⁾
(384MM)

Yahoo!
Unique Visitors ⁽²⁾
(411MM)

eBay
Total Registered Users ⁽²⁾
(168MM)

Amazon.com
Active Customers ⁽²⁾
(52MM)

AOL
Subscribers ⁽²⁾
(26MM)

MySpace.com ⁽¹⁾
(21MM)

Search Engines

Google Search ⁽¹⁾
(218MM)

Yahoo! Search ⁽¹⁾
(207MM)

Email Providers

Yahoo! Mail ⁽¹⁾
(219MM)

MSN Hotmail
Active Accounts ⁽²⁾
(215MM)

Google GMail ⁽¹⁾
(27MM)

IM Services

MSN Messenger Active
Accounts ⁽²⁾
(185MM)

Yahoo! Messenger ⁽¹⁾
(79MM)

AOL Instant Messenger
(AIM) ^(1, 3)
(64MM)

ICQ ⁽³⁾
(31MM)

VoIP Services

Skype / eBay
Registered Users ⁽²⁾
(61MM)

Payments

PayPal / eBay
Accounts ⁽²⁾
(87MM)

- **Convergence is happening (~10% of Yahoo! IM sessions end in phone call). Opportunities exist for non-mobile players to leverage existing subscribers.**
- **Who has the most valuable customer base as transition occurs? Who will have it when it is over?**

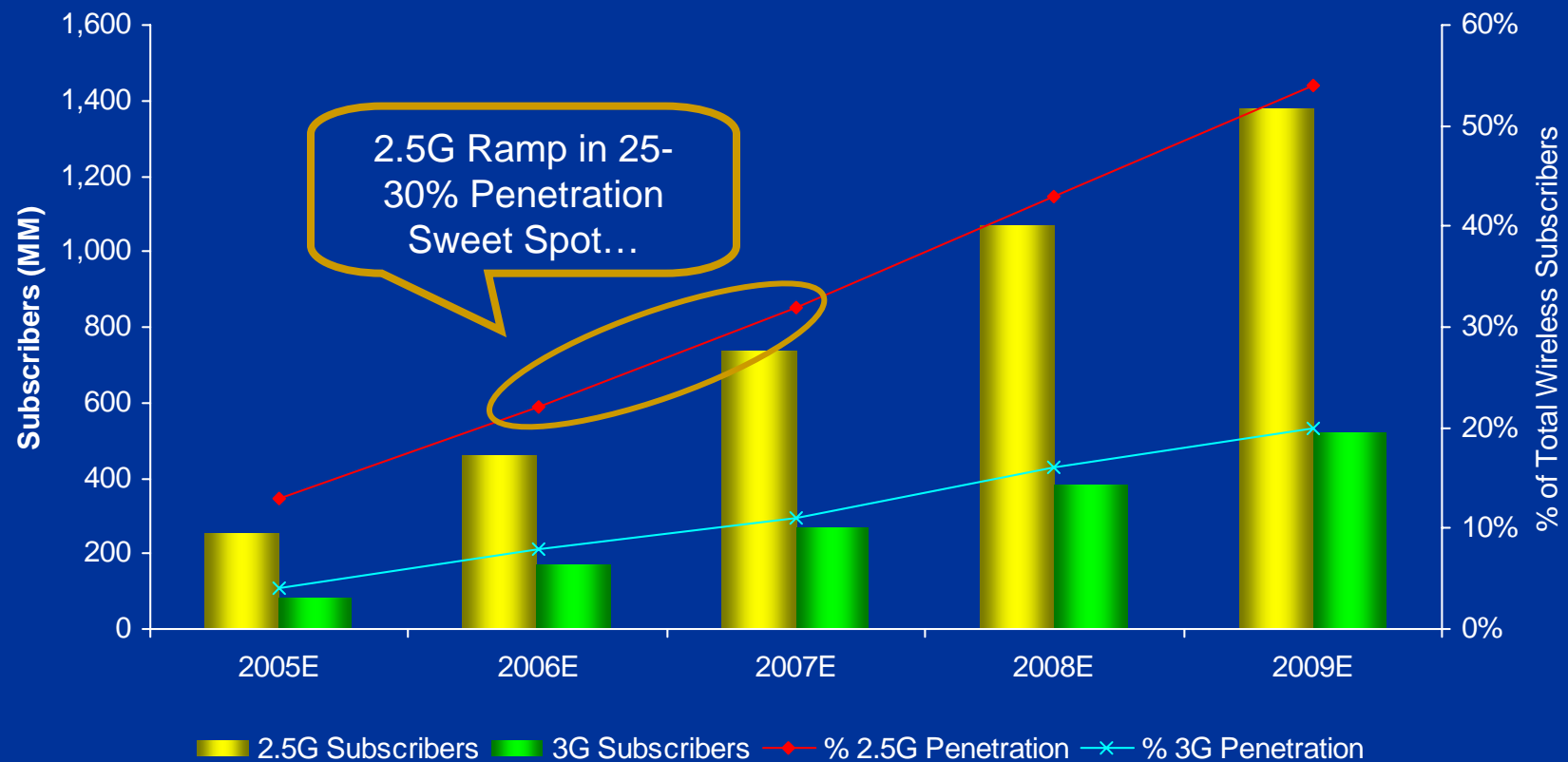
(1) Source: Unique Visitors, comScore Media Metrix (5/05).

(2) Source: Company Reports, as of CQ3:05. AOL subscribers based on sum of US and Europe AOL-branded subscribers. Skype data as of 10/25/05.

(3) Source: Company Web site, as of 4/04.

Wireless is Game Changer

Global 2.5G / 3G Penetration



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

Mobile Leads Internet in Most Markets

Country	Mobile Users (MM)	Internet Users (MM)	Mobile Phone to Internet User Ratio	Installed PCs (MM)
China	363	100	3.6:1	53
US	177	211	0.8:1	207
Japan	88	78	1.1:1	55
Germany	69	51	1.4:1	39
UK	54	37	1.5:1	26
Italy	54	32	1.7:1	16
S. Korea	37	32	1.2:1	27

Source: Euromonitor, CNNIC, World Bank, Morgan Stanley Research (July 2005)

When is a Phone Not a Phone? When It is a Remote Control Device!

Denso Wave Barcode
Reader in DoCoMo Phone



Barcode readers in phones can simply read product barcodes and automatically display order forms on the screen—and even make payments

Samsung 7 Megapixel Phone



Camera resolution higher than most existing digital cameras could make digital cameras redundant

Google Local Mobile



Mapping solutions allows users to find locations and get directions on the go

Storage is Game Changer

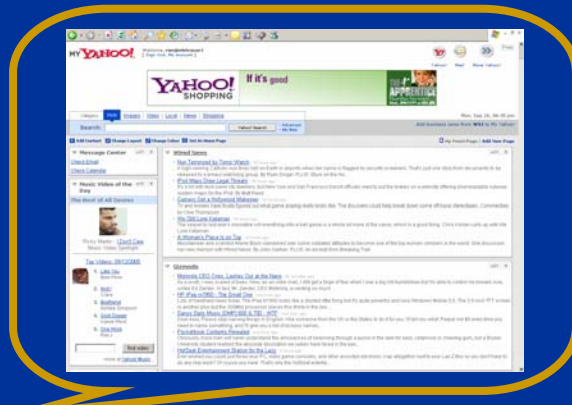
iPod Nano

- 4GB in < 1.5 cubic inches!



Mobile-PC as New Client-Server Model

Server



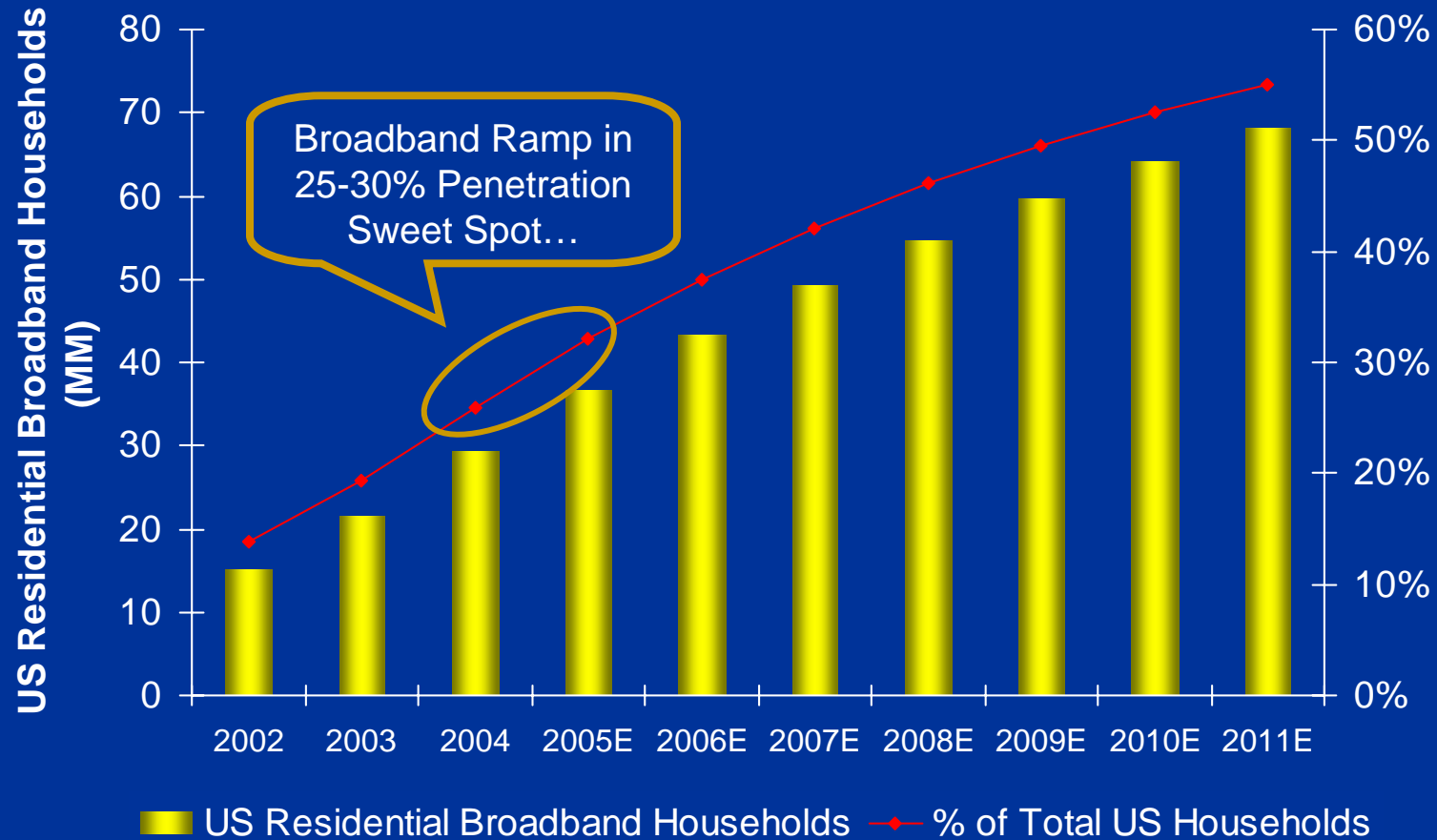
User programs
content on PC

Abbreviated
version of
content syncs
wirelessly with
mobile device

Client



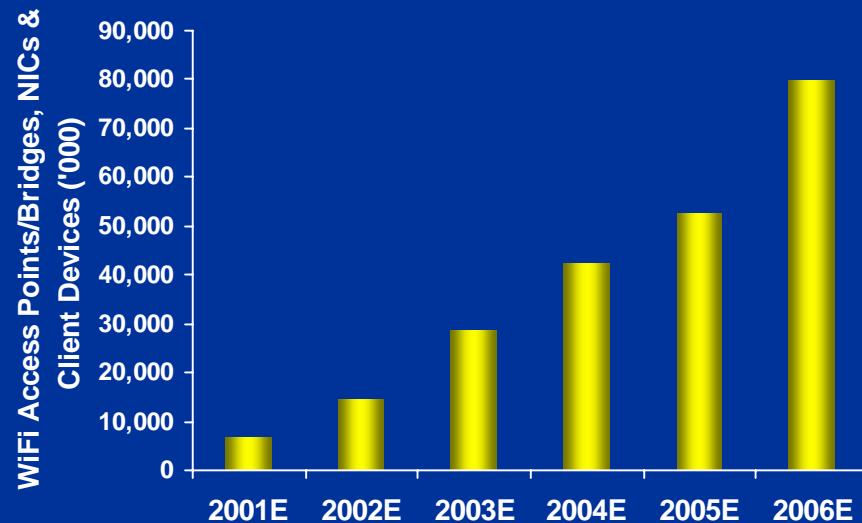
Broadband is Game Changer



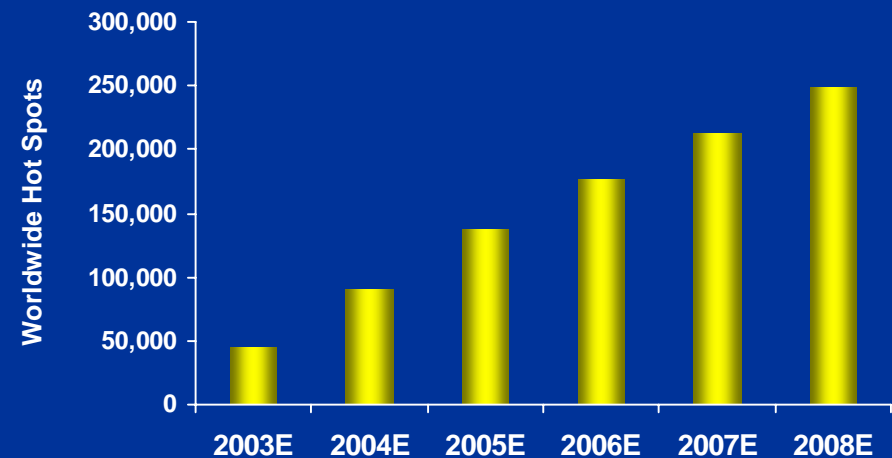
Morgan Stanley Research.

WiFi (or Equivalent) as Game Changer?

**US WiFi Access Points/Bridges,
NICs & Client Devices**



**Worldwide Available Hotspots
by Region, 2003E-2008E**

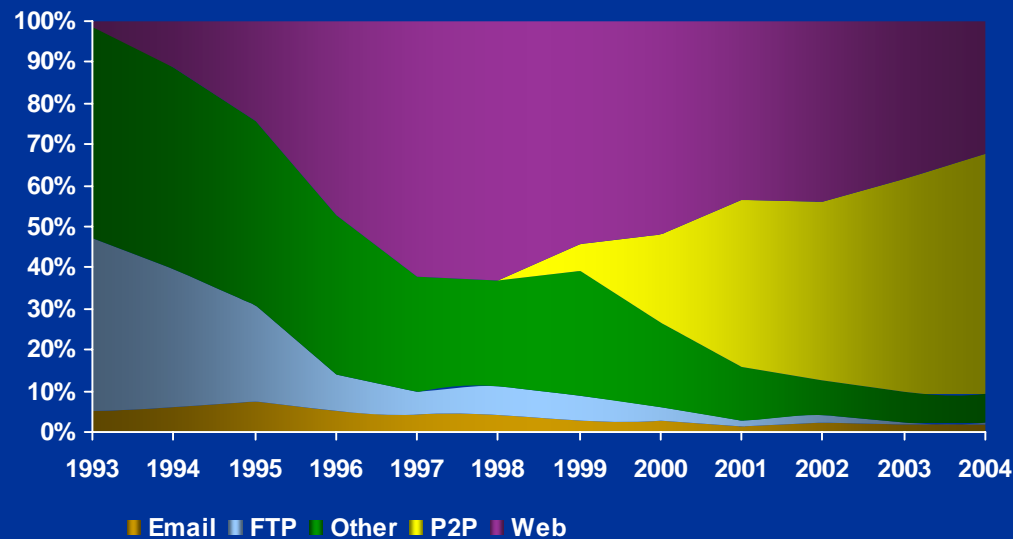


Left Chart Source: Morgan Stanley Research Estimates: S. Coleman, J. Marchetti. Right Chart Source: IDC (12/04)

Demands on Internet Continue to Rise

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

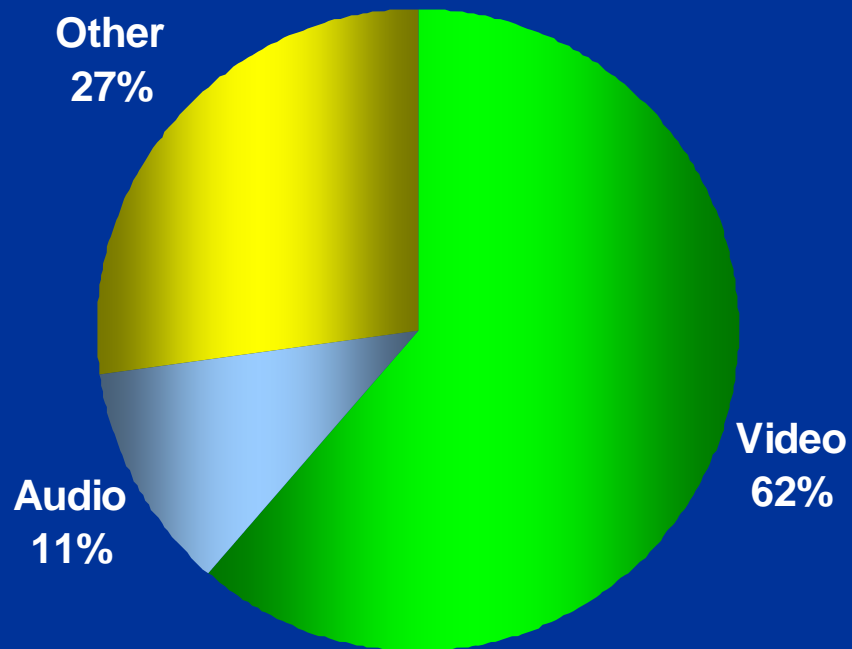
Internet Protocol Trends (1)



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

Video is Game Changer

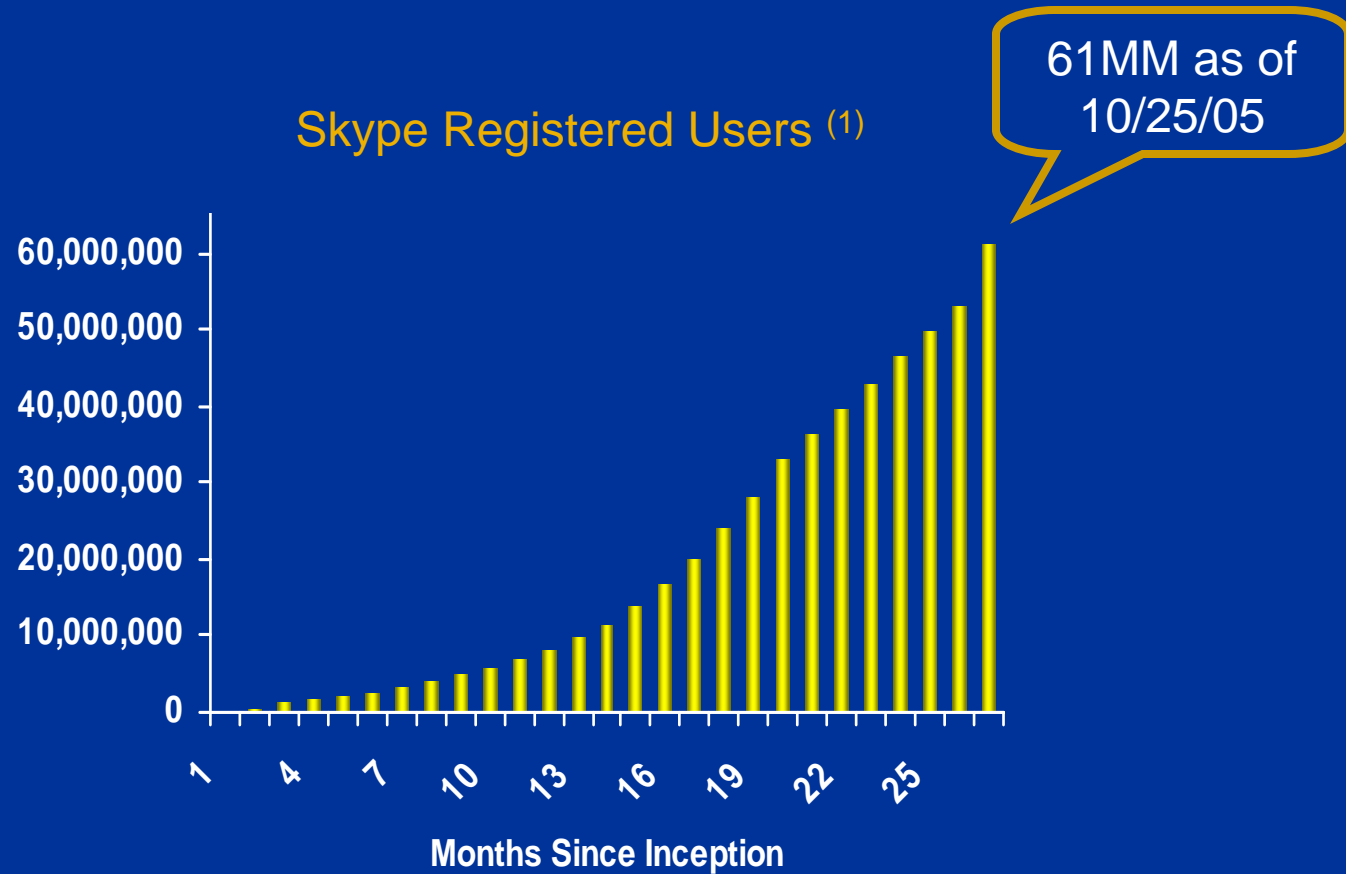
File Format Mix on 4 Major P2P Networks ⁽¹⁾



- Video is P2P bandwidth hog

(1) Source: CacheLogic "P2P in 2005," (9/05). Mix of file formats by volume of traffic generated over 4 main P2P networks: BitTorrent, eDonkey, FastTrack, and Gnutella. Weighted by volume of traffic on each network.

VoIP is Game Changer



(1) Source: Company Data, Morgan Stanley Research.

Email is 'Free' - What About Voice?




Image Source: www.pw-x.com/unified.htm.

Content / User Experience Continues to Improve


Music Video of the Day

The Best of All Genres




Rob Thomas - Lonely No More
Exclusive Live Performance


Top Videos: 04/11/2005




1. Oh - Featuring Ludacris
Clara




2. Wait
Ying Yang Twins



3. Obsession - Featuring Ba...
Frankie J



4. Do Somethin'
Britney Spears



5. Feel Good Inc
Gorillaz

find video

more at Yahoo! Music...

STAPLES

that was easy:

THE DESK APPRENTICE

ROTATING ORGANIZER

Find out more >

Search Type: Web Images Video Local News Products

Search: Yahoo! Search

Yahoo! Games Review - Jade Empire

My Front Page Add New Page

Message Center

Check Email New mail

Check Calendar

Music Video of the Day

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Britney Spears



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Gorillaz

find video

more at Yahoo! Music...

Lead Photo



Car Bomb Blast Kills 9 in Iraqi Mosque
Iraqis inspect the site where a car bomb exploded Friday, April 22, 2005 at a police said. The blast happened during midday prayers, in the capital's mosque. Khalid Mohammed

ESPN.com

Friend: The right stuff - 20 hours ago
Edwards' passion, work ethic make him No. 1 by Tom Friend

ESPN.com's mock draft - 1 day ago
ESPN.com's 2005 mock draft by ESPN.com

Sources: UNC's Felton, May to declare for draft - 12 hours ago
Both expected to sign with agents by ESPN.com news services

Chiefs acquire Surtain for second-round pick - 64 minutes ago
Former Dolphin to sign 7-year deal worth \$50.8M by Len Pasquarelli

Artest first up as Pacers get Aug. 1 trial date - one hour ago
Five players involved in brawl given trial date by Associated Press

Destination Spotlight



Escondido
Read more at Yahoo! Travel

Things to do

Shopping

Entertainment

More

Wired News

All the News That's Fit to Wiki - 8 hours ago
Six months after launching an experimental site that lets anyone become a reporter, organizers of the Wikipedia encyclopedia are finding the news business is a far cry from running a reference website. By Joanna Glasner.

Cave Farming Yields Big Crops - 8 hours ago
Crops are the new Midwest corn farmhands. A former limestone quarry and underground warehouse grows crops better than greenhouses or the outdoors, and could host pharmaceutical crops. By Kristen Philipkoski.

We'll Always Have I.Q. - 8 hours ago
The demise of a friendship has our columnist wishing it were harder to break up online. Commentary by Regina Lynn.

Vote Les Blog! - 8 hours ago
Blogging is huge in France, thanks to the country's cafe culture and penchants for writing and expressive democracy. By Robert Andrews.

Weather

New York, NY 50.58 F

Stanford, CA 49.72 F

Search

search by Zip Code or City

Inside My Yahoo!

General Health Tip

Gizmodo

User-Generated Content (UGC) is Game Changer

Yahoo! Movie Reviews



Batman Begins (2005)

The Critics:
B+
15 reviews

Yahoo! Users:
A-
15281 ratings

Tencent Instant Messaging (PC / Mobile)



Social Networking / Tagging



eBay Feedback Ratings



Seller information

[selling2u-half](#) (256 ★)

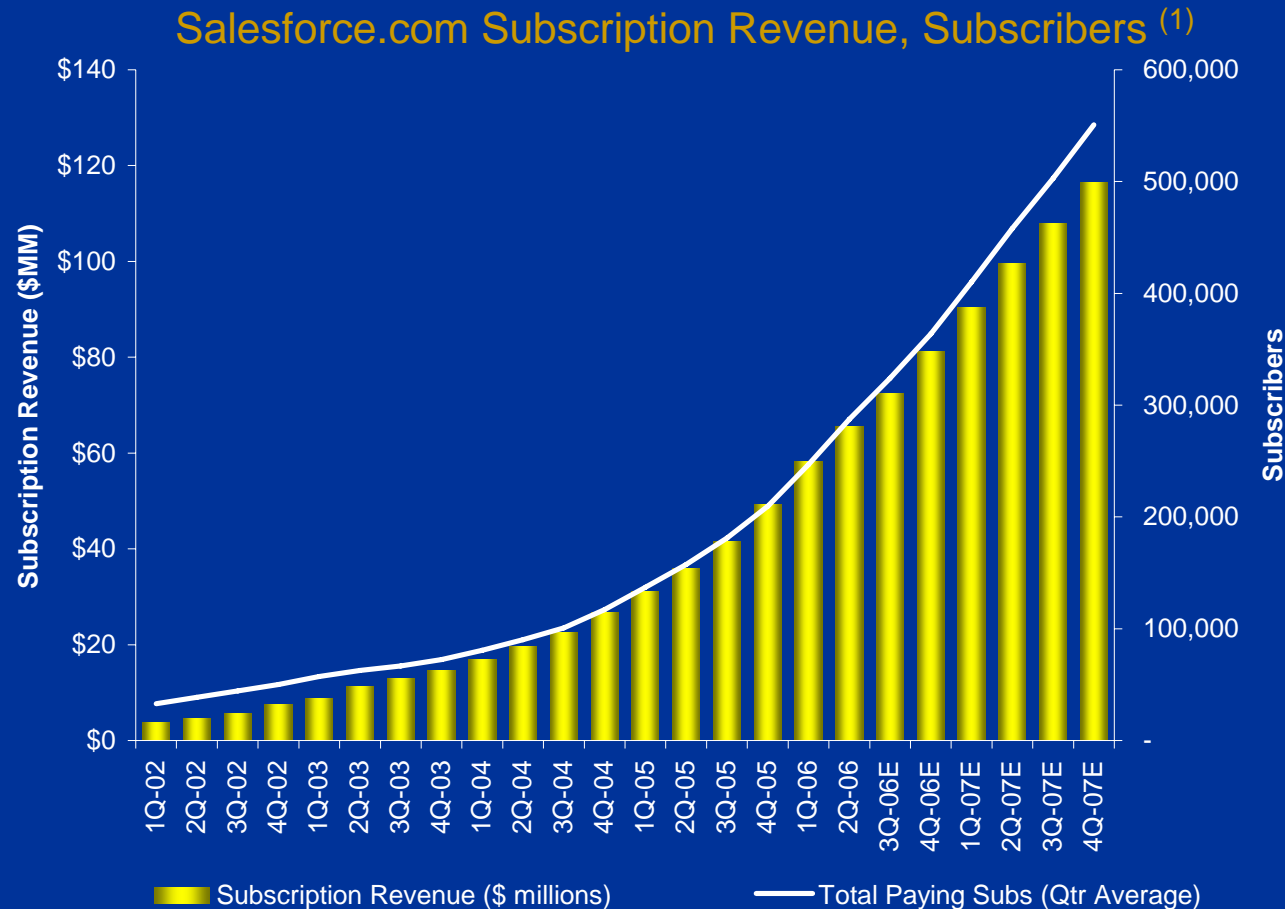
Feedback Score: 256
Positive Feedback: 96.0%
Member since Nov-15-01 in United States

Blogs



Google Video Search

On Demand Software is Game Changer...



(1) Source: Company Data, Morgan Stanley Research

...On Demand Software is Game Changer

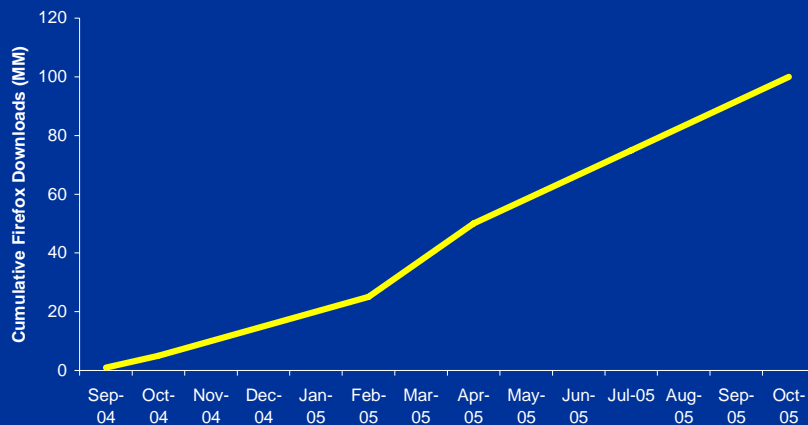
...The environment has changed yet again – this time around services. Computing and communications technologies have dramatically and progressively improved to enable the viability of a services-based model. The ubiquity of broadband and wireless networking has changed the nature of how people interact, and they're increasingly drawn toward the simplicity of services and service-enabled software that 'just works.' Businesses are increasingly considering what services-based economics of scale might do to help them reduce infrastructure costs or deploy solutions as-needed and on subscription basis...

-Ray Ozzie, Microsoft CTO, 10/28/05

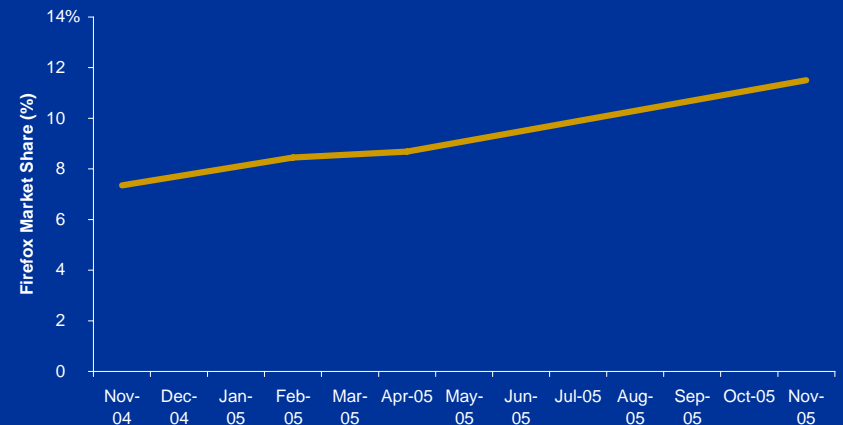
Source: <http://www.scripting.com/disruption/ozzie/TheInternetServicesDisruptio.htm>.

Open Source as Game Changer?

Firefox Web Browser Cumulative Downloads (1)



Firefox Web Browser Market Share (2)



(1) Source: <http://www.mozilla.org/news.html>, Morgan Stanley Research. (2) Source: OneStat.com, Morgan Stanley Research.

What About Revenue?

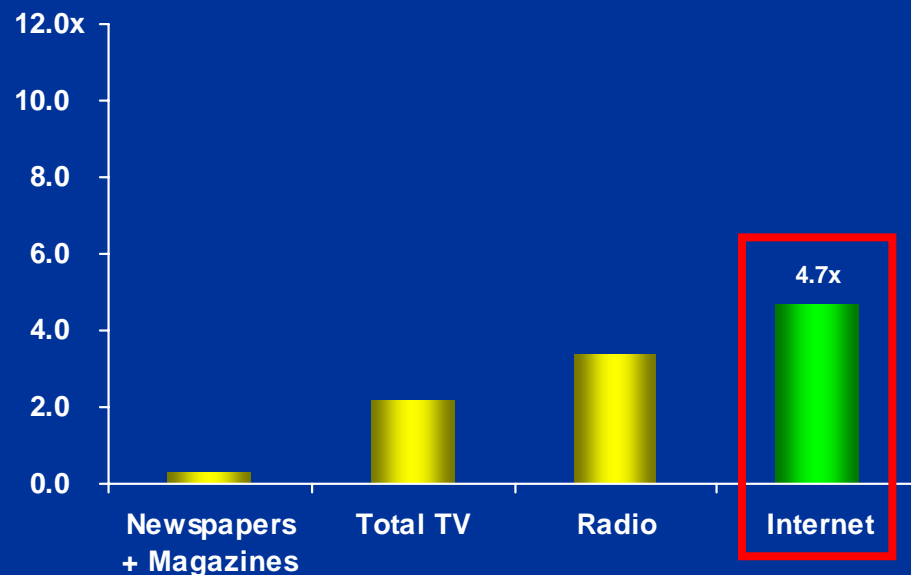
\$674 in US Ad Spend for Newspaper Home vs. \$145 for Internet?

Medium	2004E US Advertising Spending (\$B)	US Households (MM)	US Ad Spending / Household (\$)
Promotions	\$101	99	\$1,022
Direct Telephone	91	105	865
Newspapers	48	72	674
Classifieds	17	55	302
Direct Mail	51	99	514
Broadcast TV	45	108	416
Radio	20	60	334
Cable TV	18	74	240
Magazine	21	99	216
Yellow Pages	15	99	151
Internet / Online	10 ↑	66 ↑	145 ↑
Total	\$420	881	\$4,575
Average	42	88	458

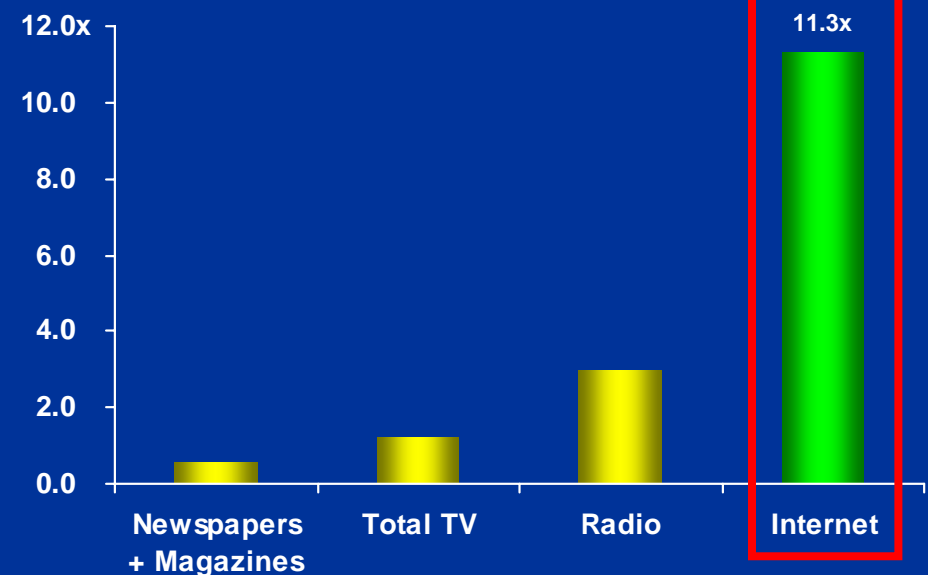
Morgan Stanley Research, PricewaterhouseCoopers, IAB, Jupiter Research, McCann-Erickson, RAB; Newspapers include Classifieds. Promotions (\$101B) include: incentives (\$27B), promotional products (\$22B), POS (\$17B), specialty printing (\$8B), coupons (\$7B), premiums (\$6B), promotional licensing (\$6B), promotional fulfillment (\$5B), product sampling (\$2B), and in-store marketing (\$1B). Households may use multiple advertising mediums.

Large Gap Between Internet Consumption / Ad Spending

US Media Usage ⁽¹⁾ to Ad Spending ⁽²⁾ Ratios



Youth Media Usage ⁽³⁾ to Ad Spending ⁽²⁾ Ratios

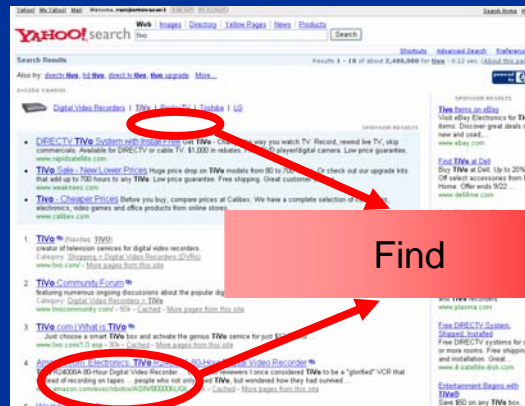


(1) Adapted from SRI-Knowledge Networks, Fall 2003. (2) Adapted from Universal McCann, (6/03); Internet Advertising Bureau (3/04). (3) Veronis Suhler Stevenson (2003), Yahoo! Analyst Day (5/04). Youth defined as age 17 and under. Ratios are calculated as percent of US media usage on a medium divided by percent of US ad spending on a medium.

Google = On Demand Customer Acquisition Tool

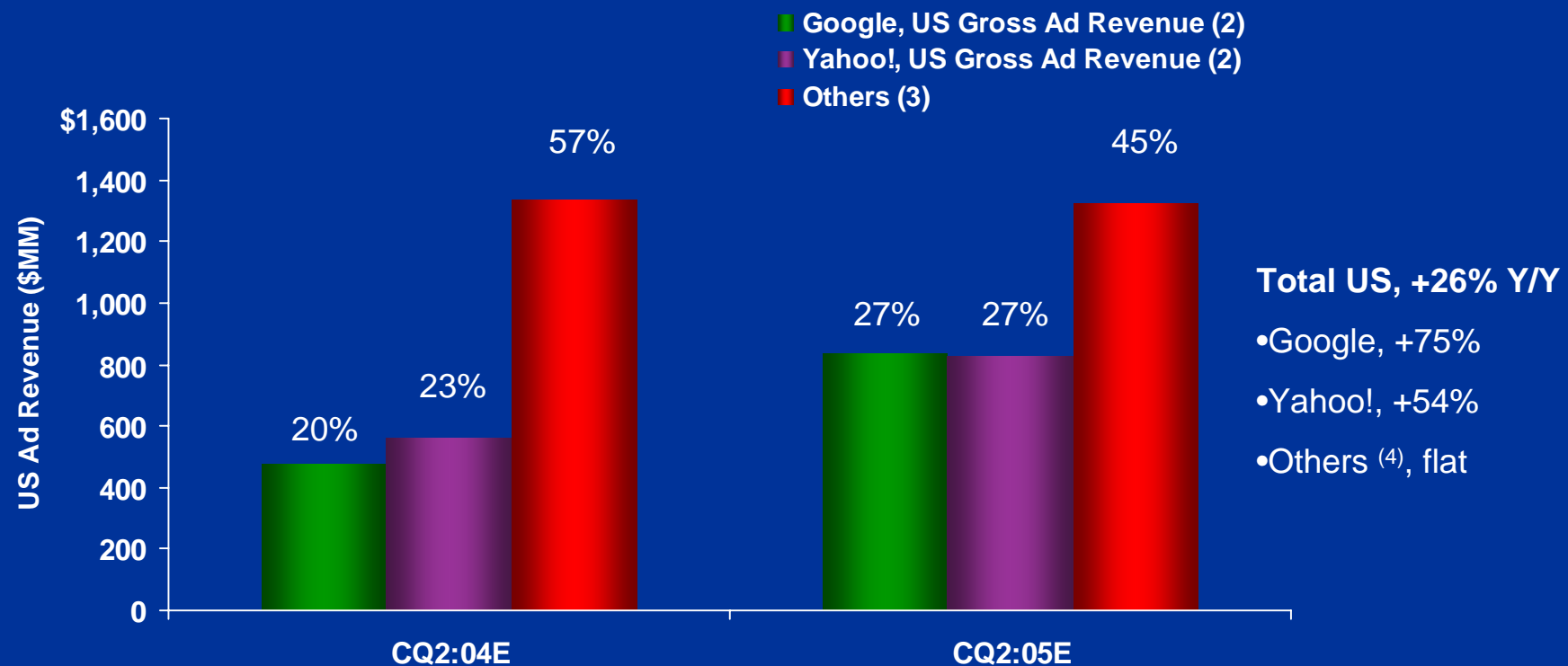
Google gives advertisers / vendors a toolset / dashboard to manage / measure customer acquisition through sponsored search

SFO - Will There Be a Difference Between Advertising / Marketing / Selling?



SFO – Importance of Google / Yahoo & Affiliates...

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.

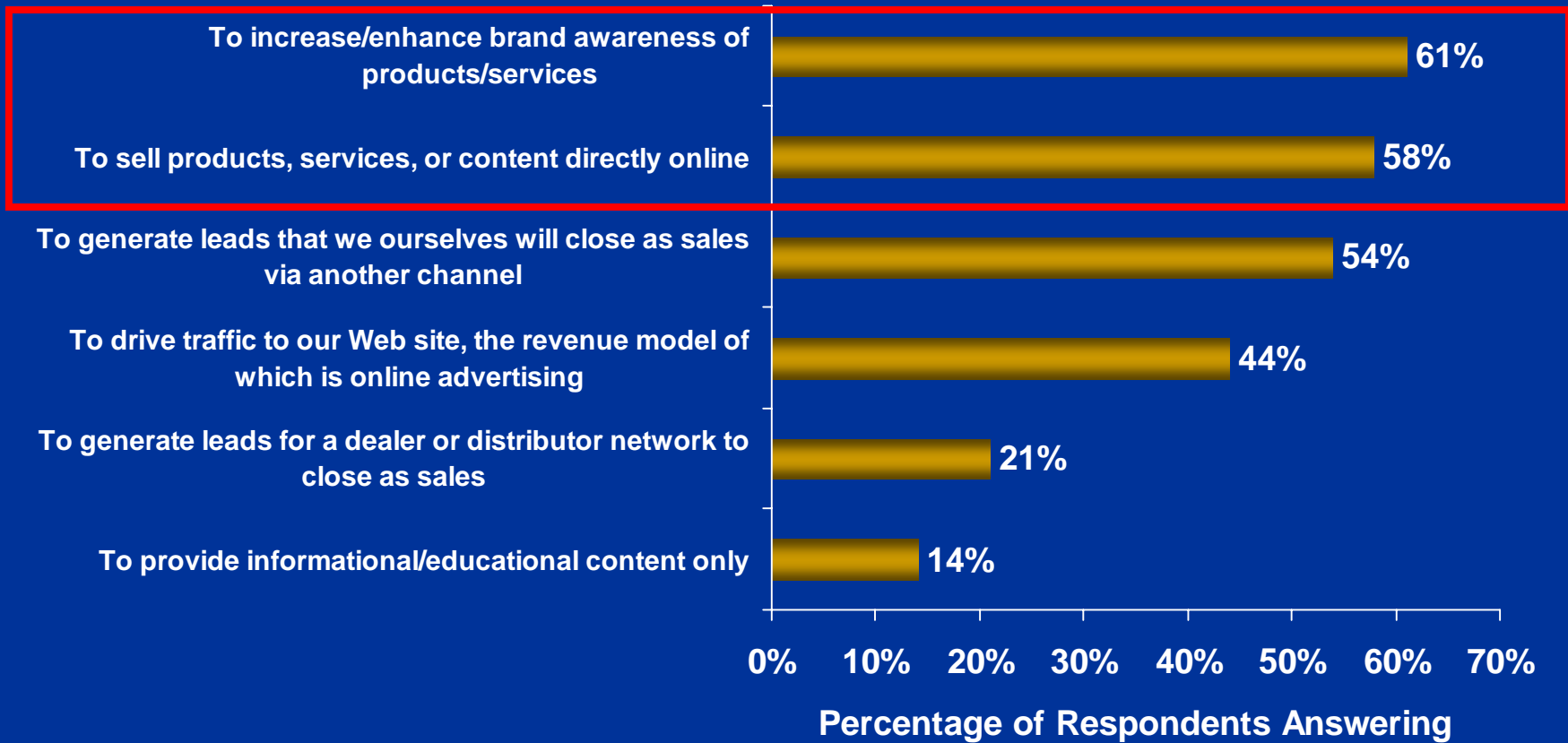
(3) Calculated as the difference between total IAB US revenue and the sum of Google, Yahoo! gross revenue.

(4) Assuming that TAC of Google and Yahoo! was included in others total, this segment would have been up 16% Y/Y.

...SFO – Importance of Google / Yahoo & Affiliates

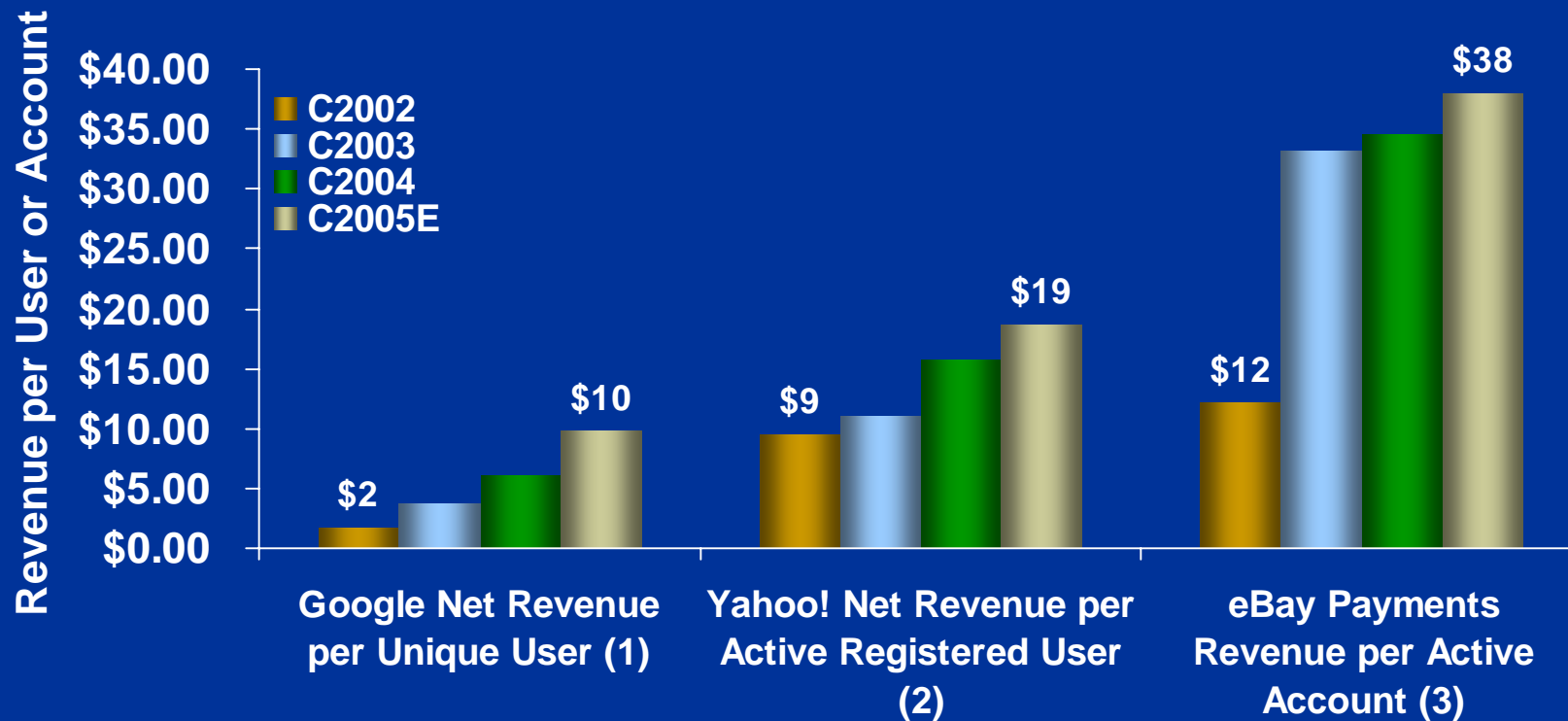
- While Google generated \$1.6B in gross revenue in CQ3 it **PAID OUT** \$530MM to thousands of partners like AOL, Ask Jeeves and EarthLink
- While Yahoo! generated \$1.3B in gross revenue in CQ3 it **PAID OUT** an estimated \$400MM to thousands of partners like MSN, ESPN and *The Wall Street Journal*

Search – Driving Branding & Sales (SEMPO)



SEMPO (12/04): Based on answer to the question, "What is your company using search engine marketing to accomplish?" Survey of 288 search engine advertisers and SEM agencies.

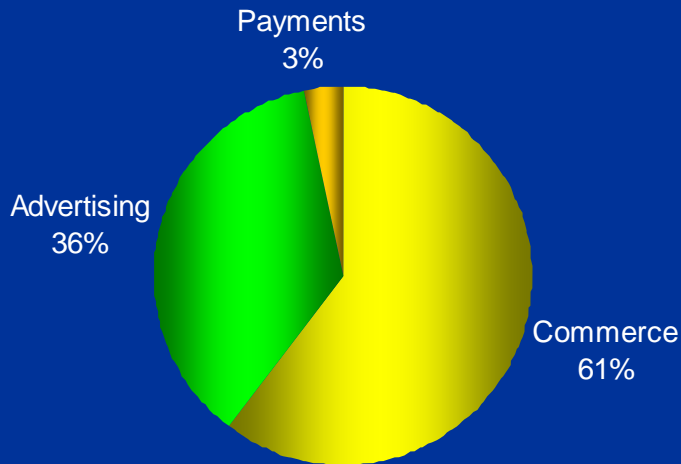
Online Monetization Continues to Rise



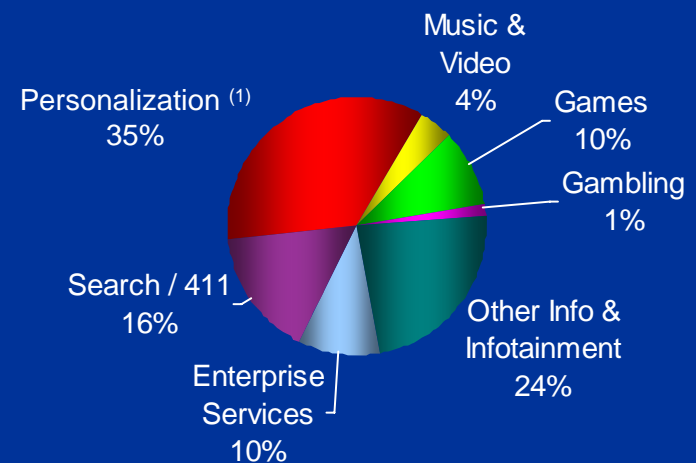
(1) Google unique user count from comScore and Morgan Stanley estimates of global users at year-end ('02 – 209MM, '03 – 251MM, '04 – 327MM, '05 – 409MM). (2) Yahoo! active registered users per company reports and Morgan Stanley estimates ('02 – 101MM, '03 – 133MM, '04 – 165MM, '05 – 199MM). (3) eBay Payments users per company reports and Morgan Stanley estimates ('02 – 8MM, '03 – 13MM, '04 – 20MM, '05 – 27MM). eBay figures not presented pro-forma for PayPal acquisition, acquired 10/02.

Broadband vs. Mobile Internet Revenue Composition

Top 10 Internet Companies - Revenue Composition
CQ2 Annualized - \$28B



Revenue Composition - Mobile Internet
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. Right Chart - Morgan Stanley Research estimates, Global Data. Informa (5/05), Ovum (5/05). (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.

Digital Paid-For Content – Developed on Mobile; Developing on Internet

Mobile Internet

Jamster



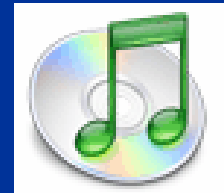
See Jamster Ad
for content

Text message
short code in ad
for content



Broadband Internet

iTunes Music + Video



+



Crazy Frog Ringtone

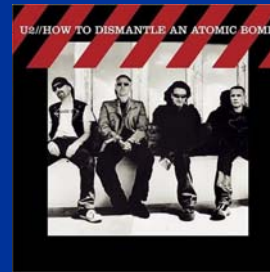
1 credit in 9 credit plan
for \$5.99 / month

+



Spy Hunter Game

1 credit in 2 credit plan
for \$5.99 / month



U2, Vertigo Song

\$0.99 per song

+



Desperate
Housewives



Lost

\$1.99 per video

Digital Content – Make it Up on Volume!?

- iTunes (\$0.99)...
- Video for iPod (\$1.99)...
- Micropayments (Internet / Mobile)...

Source: Company Reports.

Global Internet Thesis

10-15% user growth

20-30% usage growth

30%+ monetization growth

Source: Company Reports.

Innovation / Network Effects Drive Usage Growth

- Broadband
- Mobile
- User experience
- Search
- Personalization with more effective targeting
- User-generated content (RSS, blogs, reviews, video, images, audio...)
- Music
- Payments
- Short- and long-form video
- Interactive entertainment
- VoIP
- Local
- Pay per call
- Digital Rights Management (DRM)
- Ubiquitous connectivity

Changes Just Beginning

- We believe first ten years (1995-2005) of commercial Internet were a warm up act for what is about to happen
- Opportunities / dislocations will be significant
- Watch what the kids are doing—it is the future...

Attributes of Winning Technology Companies

Attributes of Winning Technology Companies...

1. Large market opportunities - it is better to have 10%, and rising, market share of a \$1 billion market than 100% of a \$100M market
2. Good technology/service that offers a significant value/service proposition to its customers
3. Simple, direct mission and strong culture
4. Missionary (not mercenary), passionate, maniacally-focused founder(s)
5. Technology magnets (never underestimate the power of great engineers)
6. Great management team / board of directors / committed partners
7. Ability to lead change and embrace chaos
8. Leading/sustainable market position with first-mover advantage
9. Brand leadership, leading reach and market share
10. Global presence

...Attributes of Winning Technology Companies

11. Insane customer focus and rapidly growing customer base
12. Stickiness and customer loyalty
13. Extensible product line(s) with focus on constant improvement and regeneration
14. Clear, broad distribution plans
15. Opportunity to increase customer “touch points”
16. Strong business and milestone momentum
17. Annuity-like business with sustainable operating leverage assisted by barriers-to-entry
18. High gross margins
19. Path to improving operating margins
20. Low-cost infrastructure and development efforts

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