Technology / Internet Trends

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Web 2.0 Summit - San Francisco

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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

Source: S&P 500 Information Technology Index and S&P 500 Index daily data from Bloomberg as of 10/15/07
...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

Source: (1) As of 10/15/07; Factset, Bloomberg, Morgan Stanley Research
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

Source: Cisco, Morgan Stanley Research
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

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Source: iSuppli, Cisco, China Mobile, Morgan Stanley Research
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)

Source: Morgan Stanley Research
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)

Global PC Shipment Units (MM)

Source: Morgan Stanley Research, Informa, IDC
## TMT Update = China / India / Russia / Brazil Gaining Ground

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, 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

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Morgan Stanley
• 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

Jan 1980
PC Introduction – 28%

Jun 1995
Commercial Internet – 42%

Jun 2007 – 51%

Tech Spending as a % of Business Capital Equip Spending

Extended Trend Line - \( y = 0.0021x + 0.1453; R^2 = 0.9584 \)

Source: Bureau of Economic Analysis (CQ2:07), Morgan Stanley Research
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

Note: US GDP based on PPP, World GDP based on current prices. Source: IMF, Morgan Stanley Research
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

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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)

Note: ROW denotes Rest of the World
Source: Morgan Stanley Research
Non-US Markets Lead Usage Penetration in Many Categories

E-commerce: Germany

Online Gaming: China

Broadband: S. Korea

Mobile Payments: Japan

Social Networking: Brazil / S. Korea

Microtransactions via SMS: Philippines

Online Advertising: UK

Source: Morgan Stanley Research
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)

Note: ROW denotes rest of the world
Source: Informa, Euromonitor, Morgan Stanley Research
Search Impact –
Still Early Stage & 70% Y/Y Google Query Growth (CQ2)

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

- Search engine marketing: 36%
- Organic traffic: 29%
- Catalogs: 11%
- Affiliate programs: 10%
- Comparison-shopping engines: 7%
- Email to prospecting lists: 5%
- Traditional portal deals: 3%
- New portal deals: 3%
- Other: 1%

Source: The State of Retailing Online 2006 (Forrester Research), comScore 8/07, Morgan Stanley Research
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 by Carole Geary

Editorial Reviews

Book Description

Experience one of the glitziest and most glamorous cities in the world.サンタバーバラの魅力をたっぷりと楽しむためのガイドブック。

Average Customer Review: ★★★★★

1 of 1 people found the following review helpful.

Beautiful book!, February 2, 2012

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

Customer Reviews

What other customers are thinking

What other customers are buying

What other customers are doing

What other customers are saying

Customer Discussions Beta (What's this?)

New! Receive e-mail when new posts are made. Click the "Track this discussion" button to socialize with the discussion participants.

Ask questions, Share opinions, Gain insight

Grayson Smith

Source: Amazon.com, Google
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

US Internet Advertising Spending

Source: Universal McCann, Internet Advertising Bureau (IAB), Morgan Stanley Research
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

Adjusted US Retail E-commerce Sales
Adjusted E-commerce as a % of Adj. Retail Sales

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.

Source: US Department of Commerce, eBay, Morgan Stanley Research
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

Total Cumulative iPod Units Sold (MM) vs Total Cumulative iTunes Songs/Videos Downloaded (B)

Source: Apple, IFPI, Morgan Stanley Research
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…

Source: comScore global 8/07, Datamonitor, Morgan Stanley Research
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

Source: Gartner, iSuppli, International Telecommunications Union (ITU), eBay, Morgan Stanley Research
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?
### Alexa Global Traffic Rankings

#### 2005

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#### 2007

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<td>wikipedia.org</td>
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<td>hi5.com</td>
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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).

(1) Rankings as of 12/31/05, excludes Microsoft Passport; (2) Rankings as of 10/15/07

Source: Alexa Global Traffic Rankings, Morgan Stanley Research
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

Source: Google, YouTube
• 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!
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

Source: comScore global 8/07, Demand | Media
• 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
• 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

**Source:** Joost
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)

Morgan Stanley

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

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<thead>
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<th>Huge Market</th>
<th>Simple, Focused Mission</th>
<th>Active, Missionary Founders</th>
<th>Great Management Team, Culture</th>
<th>Constant Improvement</th>
<th>Insane Customer Focus</th>
<th>Big Gross Margin (1)</th>
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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

Morgan Stanley
Appendix + Disclosure Section
Business IT Spending Growth Compelling vs. Non-IT Spending

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

Note: Growth rates are calculated from nominal values
Source: Bureau of Economic Analysis (CQ2:07), Morgan Stanley Research
### 2006 TMT Update

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Source: Morgan Stanley Research

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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Data include common stock and ADRs currently assigned ratings. An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations. Investment Banking Clients are companies from whom Morgan Stanley or an affiliate received investment banking compensation in the last 12 months.

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