Internet Trends

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Internet Trends Outline

• Stock Market Update
• State of the Internet…
  Mobile Will Be Bigger Than Desktop Internet in 5 Years
• Mobile Internet Deep Dive
Stock Market Update
Stock Market = Often a Leading Indicator of Economic Growth
Russia +225% vs. 36-Month Low / India +120% / China +85% / USA (S&P500) +76%

Note: all indices start at a value of 100 on 4/5/07; data as of 4/5/10; Source: FactSet.
State of the Internet…Mobile Will Be Bigger

Than Desktop Internet in 5 Years
State of the Internet –
Usage Growth Remains Robust – 5 Countries = 48% of Users

Global Internet Stats in 2009E
1.8B Users, +13% Y/Y\(^{(1)}\); 18.8T Minutes Spent, +21% Y/Y\(^{(2)}\)

- **USA**
  - 238MM users
  - +4% Y/Y

- **Brazil**
  - 67MM users
  - +14% Y/Y

- **Russia**
  - 39MM users
  - +13% Y/Y

- **China**
  - 384MM users
  - +29% Y/Y\(^{(3)}\)

- **India**
  - 130MM users
  - +23% Y/Y

Source: 1) Internet user stats are estimates by Morgan Stanley Research; 2) time spent data per comScore global 12/09; 3) China Internet user stats per CNNIC, 1/10.
Mobile Internet Ramping Faster than Desktop Internet Did – Apple Leading Charge

iPhone + iTouch vs. NTT docomo i-mode vs. AOL vs. Netscape Users
First 20 Quarters Since Launch

Note: *AOL subscribers data not available before Q3:94; Netscape users limited to US only. Morgan Stanley Research estimates ~50MM netbooks have shipped in first 10 quarters since launch (10/07). Source: Company Reports, Morgan Stanley Research.
Mobile Users > Desktop Internet Users
Within 5 Years


Internet Users (MM)

Source: Morgan Stanley Research.
Online Commerce Gaining Share vs. Offline –
Online at 4% of USA Retail, Mobile Should Get to Same Level Much Faster

USA eCommerce % Share\(^{(1)}\) of Total Retail Sales, CQ3:00 – CQ4:12E

- **eCommerce Penetration**
  - 4% in CQ3:09

**Note:** (1) Adjusted for eBay by adding eBay US gross merchandise volume and subtracting eBay US transaction revenue; Source: US Dept. of Commerce (CQ3:09), Morgan Stanley Research.
### E-Commerce - USA Online Penetration = 4-6% and Rising

**Categories’ Online Penetration of US Retail Market, 2007**

<table>
<thead>
<tr>
<th></th>
<th>&gt;20%</th>
<th>10 - 20%</th>
<th>&lt;10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer products</td>
<td>45%</td>
<td>Toys / video games</td>
<td>19%</td>
</tr>
<tr>
<td>Other event tickets</td>
<td>27%</td>
<td>Baby products</td>
<td>19%</td>
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<tr>
<td>Books</td>
<td>24%</td>
<td>Consumer electronics</td>
<td>18%</td>
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<tr>
<td>Music / video</td>
<td>24%</td>
<td>Office supplies</td>
<td>13%</td>
</tr>
<tr>
<td>Gift cards / certificates</td>
<td>21%</td>
<td>Flowers / cards</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jewelry</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apparel / footwear</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Movie tickets</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Note:** (1) Our proprietary adjusted e-Commerce sales & Census Bureau’s quarterly total retail sales data suggest ~4% penetration, Forrester claims 6%. Source: The State of Retailing Online 2008 (Forrester Research).
Mobile Commerce Outlook = Japan Shows Way –
19% (and Rising) of Rakuten’s CQ4:09 Online Commerce Revenue Derived from Mobile

Rakuten’s Online Commerce Revenue, Desktop vs. Mobile, 2004-2009

CQ4:09 Y/Y Growth

Total Rakuten Online Commerce
18%

Desktop
15%

Mobile
33%

Note: Rakuten Ichiba is Japan’s leading eCommerce company, eCommerce revenue excludes travel, includes books and auctions. Source: Company data, Nema Naoshi, Morgan Stanley Research.
Communications –
Social Networking > Email Usage…

Global Users, 11/06 – 12/09

- Social Networking Users Surpassed Email = 7/09

Global Time Spent, 11/06 – 12/09

- Social Networking Usage Surpassed Email = 11/07

Source: comScore global, Morgan Stanley Research.

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Connectivity = Cloud Computing
Consumers Expect to Get Their Stuff 24x7 from Palms of Their Hands

Music in the Cloud
- Amazon MP3
- Rhapsody
- Pandora
- Facebook

Video in the Cloud
- Amazon Video on Demand
- Netflix
- Hulu
- Spotify
- YouTube

Photos in the Cloud
- Photobucket
- Shutterfly
- Picasa
- Facebook

Apps / Documents in the Cloud
- Scribd
- Salesforce.com
- Google Apps

Shopping / Stuff in the Cloud
- Yelp
- Fandango
- eBay
- Zipcar

User Generated Content
Facebook is the leading repository for user-generated photos / videos / comments / links to music / social games

Professional Content
Leading repository TBD

Unified Digital Locker

Note: Apple iTunes yet to offer full length media streaming. Source: Company websites.

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Mobile Internet Deep Dive
Mobile Internet - Overview

1. **Wealth Creation / Destruction is Material in New Computing Cycles – Now in Early Innings of Mobile Internet Cycle, the 5th Cycle of Last Half Century.**

2. **Mobile Ramping Faster than Desktop Internet Did and Will Be Bigger Than Most Think – 5 Trends Converging (3G + Social Networking + Video + VoIP + Impressive Mobile Devices).**

3. **Apple Leading in Mobile Innovation + Impact, for Now – Depth of App Ecosystems + User Experience + Pricing Will Determine Long-Term Winners.**

4. **Game-Changing Communications / Commerce Platforms (Social Networking + Mobile) Emerging Very Rapidly.**

5. **Massive Data Growth Driving Carrier / Equipment Transitions.**

6. **Growth / Monetization Roadmaps Provided by Japan Mobile + Desktop Internet.**

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Wealth Creation / Destruction is Material in New Computing Cycles – Now in Early Innings of Mobile Internet Cycle, the 5th Cycle of Last Half Century
Tech Cycles Tend to Last Ten Years
Entered Next Major Computing Cycle – Mobile Internet – 2 Years Ago

**Mainframe Computing**
- 1960s

**Mini Computing**
- 1970s

**Personal Computing**
- 1980s

**Desktop Internet Computing**
- 1990s

**Mobile Internet Computing**
- 2000s

New Computing Cycle Characteristics
Reduce Usage Friction Via Better Processing Power + Improved User Interface +
Smaller Form Factor + Lower Prices + Expanded Services = 10x More Devices

Increasing Integration

Computing Growth Drivers Over Time, 1960 – 2020E

1MM+ Units
10MM+ Units
100MM+ Units
1B+ Units / Users
10B+ Units???

Mainframe
Minicomputer
PC
Desktop Internet
Mobile Internet


Note: PC installed base reached 100MM in 1993, cellphone / Internet users reached 1B in 2002 / 2005 respectively;
Source: ITU, Mark Lipacis, Morgan Stanley Research.

More than Just Phones
iPad
Smartphone
Kindle
Tablet
MP3
Cell phone / PDA
Car Electronics
GPS, ABS, A/V
Mobile Video
Home Entertainment
Games
Wireless Home Appliances

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User Interface + Device Usage Evolution Over Past 30 Years

Text
Graphical
Touch

User Interface
Input Device
Device Usage

Keyboard
Mouse
Fingers

Content Creation
Communication
Content Consumption

Morgan Stanley
## Technology Wealth Creation / Destruction Cycles

New Companies Often Win Big in New Cycles While Incumbents Often Falter

<table>
<thead>
<tr>
<th><strong>Mainframe Computing</strong></th>
<th><strong>Mini Computing</strong></th>
<th><strong>Personal Computing</strong></th>
<th><strong>Desktop Internet Computing</strong></th>
<th><strong>Mobile Internet Computing</strong></th>
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</thead>
<tbody>
<tr>
<td>1960s</td>
<td>1970s</td>
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<td>1990s</td>
<td>2000s</td>
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<tr>
<td><strong>New Winners</strong></td>
<td><strong>New Winners</strong></td>
<td><strong>New Winners</strong></td>
<td><strong>New Winners</strong></td>
<td><strong>New Winners</strong></td>
</tr>
<tr>
<td>IBM</td>
<td>Digital Equipment</td>
<td>Microsoft</td>
<td>Google</td>
<td></td>
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<tr>
<td>NCR</td>
<td>Data General</td>
<td>Cisco</td>
<td>AOL</td>
<td></td>
</tr>
<tr>
<td>Control Data</td>
<td>HP</td>
<td>Intel</td>
<td>eBay</td>
<td></td>
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<td>Sperry</td>
<td>Prime</td>
<td>Apple</td>
<td>Yahoo!</td>
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<tr>
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<td>Computervision</td>
<td>Oracle</td>
<td>Yahoo! Japan</td>
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<td>Wang Labs</td>
<td>EMC</td>
<td>Amazon.com</td>
<td>Alibaba</td>
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<td></td>
<td>Dell</td>
<td>Tencent</td>
<td>Baidu</td>
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<td></td>
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<td>Compaq</td>
<td>Tencent</td>
<td>Baidu</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tencent</td>
<td>Alibaba</td>
</tr>
</tbody>
</table>

**Note:** Winners from 1950s to 1980s based on Fortune 500 rankings (revenue-based), desktop Internet winners based on wealth created from 1995 to respective peak market capitalizations. Source: Factset, Fortune, Morgan Stanley Research.
Mobile Internet Likely to Follow Timing & Development Patterns of Desktop Internet Market

Timing & Development of Internet Market Segment – From Our 1996 Internet Retailing Report

Path of Growth/Digestion/Growth...
- New Phases/Segments Drive New Growth

2005 2011E

2011E Mobile Internet Timeline (ex. Japan)

Source: Morgan Stanley Research.
Mobile Ramping Faster than Desktop Internet Did and Will Be Bigger Than Most Think – 5 Trends Converging (3G + Social Networking + Video + VoIP + Impressive Mobile Devices)

Regarding pace of change, we believe more users will likely connect to the Internet via mobile devices than desktop PCs within 5 years
iPhone + iTouch Users = 11x AOL Users 11 Quarters After Launch

Mobile Internet Outpaces Desktop Internet Adoption

iPhone + iTouch vs. NTT docomo i-mode vs. AOL vs. Netscape Users
First 20 Quarters Since Launch

Desktop Internet
- NTT docomo i-mode
  - Launched 6/99
  - ~85MM

Mobile Internet
- iPhone + iTouch
  - Launched 6/07
  - ~8MM
- NTT docomo i-mode
  - ~31MM
- AOL*
  - v 2.0 Launched 9/94
  - ~18MM
- Netscape*
  - Launched 12/94
  - ~8MM

Quarters Since Launch
- Q1
- Q3
- Q5
- Q7
- Q9
- Q11
- Q13
- Q15
- Q17
- Q19

Subscribers (MM)
- 100
- 80
- 60
- 40
- 20
- 0

Note: *AOL subscribers data not available before Q3:94; Netscape users limited to US only. Morgan Stanley Research estimates ~50MM netbooks have shipped in first 10 quarters since launch (10/07). Source: Company Reports, Morgan Stanley Research.
3G Adoption =
Hitting Inflection Points
Global 3G Subscribers = 2010E ‘Mainstream’ Inflection Point, Penetration >20%

Global 3G+ Subscribers & Penetration, 2007 – 2014E

2010E: Inflection Point
3G+ Penetration Reaches Sweet Spot

Global 3G+ Subscribers & Penetration, 2007 – 2014E

Note: 3G+ technologies include WCDMA, HSPA, TD-SCDMA, 1xEV-DO, LTE and WiMax.
Source: Ovum Estimates, Morgan Stanley Research.
## 3G Penetration Inflection Points Vary by Region


### 3G Connections & Penetration by Region, 2007 – 2014E

(All connection numbers in 000s)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>79,617</td>
<td>126,724</td>
<td>205,962</td>
<td>299,220</td>
<td>381,422</td>
<td>448,691</td>
<td>499,686</td>
<td>549,615</td>
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<tr>
<td>3G Penetration</td>
<td>17%</td>
<td>25%</td>
<td>39%</td>
<td>54%</td>
<td>67%</td>
<td>77%</td>
<td>85%</td>
<td>92%</td>
</tr>
<tr>
<td>Japan</td>
<td>72,690</td>
<td>88,434</td>
<td>101,320</td>
<td>110,823</td>
<td>116,581</td>
<td>120,463</td>
<td>123,217</td>
<td>124,770</td>
</tr>
<tr>
<td>3G Penetration</td>
<td>72%</td>
<td>84%</td>
<td>91%</td>
<td>96%</td>
<td>98%</td>
<td>99%</td>
<td>99%</td>
<td>100%</td>
</tr>
<tr>
<td>Asia / Pacific (ex. Japan)</td>
<td>50,163</td>
<td>83,514</td>
<td>151,192</td>
<td>295,230</td>
<td>482,981</td>
<td>693,995</td>
<td>918,063</td>
<td>1,135,626</td>
</tr>
<tr>
<td>3G Penetration</td>
<td>4%</td>
<td>5%</td>
<td>7%</td>
<td>13%</td>
<td>19%</td>
<td>25%</td>
<td>31%</td>
<td>37%</td>
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<tr>
<td>3G Penetration</td>
<td>20%</td>
<td>29%</td>
<td>38%</td>
<td>46%</td>
<td>54%</td>
<td>61%</td>
<td>67%</td>
<td>74%</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>8,785</td>
<td>19,918</td>
<td>40,944</td>
<td>72,321</td>
<td>120,291</td>
<td>139,960</td>
<td>166,288</td>
<td>199,977</td>
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<tr>
<td>3G Penetration</td>
<td>2%</td>
<td>5%</td>
<td>9%</td>
<td>16%</td>
<td>26%</td>
<td>29%</td>
<td>34%</td>
<td>40%</td>
</tr>
<tr>
<td>Middle East &amp; Africa</td>
<td>5,781</td>
<td>18,424</td>
<td>50,409</td>
<td>91,085</td>
<td>165,564</td>
<td>239,805</td>
<td>309,251</td>
<td>383,238</td>
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<tr>
<td>3G Penetration</td>
<td>1%</td>
<td>3%</td>
<td>7%</td>
<td>12%</td>
<td>19%</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
</tr>
<tr>
<td>South &amp; Central America</td>
<td>3,126</td>
<td>9,265</td>
<td>21,875</td>
<td>40,448</td>
<td>59,107</td>
<td>80,087</td>
<td>100,027</td>
<td>122,258</td>
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<tr>
<td>3G Penetration</td>
<td>1%</td>
<td>2%</td>
<td>4%</td>
<td>7%</td>
<td>10%</td>
<td>12%</td>
<td>15%</td>
<td>17%</td>
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<tr>
<td>Total</td>
<td>273,469</td>
<td>429,739</td>
<td>688,278</td>
<td>1,054,810</td>
<td>1,503,397</td>
<td>1,927,837</td>
<td>2,347,804</td>
<td>2,776,058</td>
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<tr>
<td>3G Penetration</td>
<td>8%</td>
<td>11%</td>
<td>15%</td>
<td>21%</td>
<td>27%</td>
<td>33%</td>
<td>38%</td>
<td>43%</td>
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</tbody>
</table>

*Note: Regions ranked by 2008 absolute numbers of 3G connections. 3G technologies include WCDMA, HSPA, TD-SCDMA, 1xEV-DO, LTE and WiMax. Source: Ovum Estimates, Morgan Stanley Research.*
### 3G Growth Concentrated in Developed Markets –
### USA Now Leading in Users + Innovation (Surpassed Japan Users in CQ1:09)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>CQ3:09 3G Subs (000)</th>
<th>3G Penetration</th>
<th>CQ3 3G Net Adds</th>
<th>3G Sub Growth</th>
<th>3G Net Adds</th>
<th>% of Global 3G Subs</th>
<th>2G + 3G Net Adds (000)</th>
<th>Implied 2G Net Adds (Losses) (000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USA</td>
<td>112,090</td>
<td>41%</td>
<td>8,994</td>
<td>50%</td>
<td>9%</td>
<td>11%</td>
<td>8%</td>
<td>22%</td>
</tr>
<tr>
<td>2</td>
<td>Japan</td>
<td>97,548</td>
<td>30%</td>
<td>7,653</td>
<td>45%</td>
<td>5%</td>
<td>9%</td>
<td>3%</td>
<td>7%</td>
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<tr>
<td>3</td>
<td>Korea</td>
<td>35,570</td>
<td>25%</td>
<td>1,281</td>
<td>36%</td>
<td>5%</td>
<td>8%</td>
<td>3%</td>
<td>5%</td>
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<tr>
<td>4</td>
<td>Italy</td>
<td>27,817</td>
<td>34%</td>
<td>1,944</td>
<td>63%</td>
<td>7%</td>
<td>11%</td>
<td>8%</td>
<td>22%</td>
</tr>
<tr>
<td>5</td>
<td>UK</td>
<td>23,674</td>
<td>31%</td>
<td>1,165</td>
<td>49%</td>
<td>14%</td>
<td>8%</td>
<td>7%</td>
<td>5%</td>
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<tr>
<td>6</td>
<td>Germany</td>
<td>22,260</td>
<td>28%</td>
<td>1,242</td>
<td>45%</td>
<td>5%</td>
<td>8%</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>7</td>
<td>Spain</td>
<td>22,014</td>
<td>38%</td>
<td>1,822</td>
<td>40%</td>
<td>9%</td>
<td>6%</td>
<td>5%</td>
<td>3%</td>
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<tr>
<td>8</td>
<td>France</td>
<td>15,669</td>
<td>27%</td>
<td>1,832</td>
<td>40%</td>
<td>9%</td>
<td>8%</td>
<td>4%</td>
<td>5%</td>
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<tr>
<td>9</td>
<td>Australia</td>
<td>13,678</td>
<td>56%</td>
<td>989</td>
<td>37%</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
<td>2%</td>
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<tr>
<td>10</td>
<td>Indonesia</td>
<td>13,644</td>
<td>10%</td>
<td>1,401</td>
<td>61%</td>
<td>4%</td>
<td>10%</td>
<td>3%</td>
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<td>11</td>
<td>Poland</td>
<td>12,300</td>
<td>28%</td>
<td>176</td>
<td>66%</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
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<td>12</td>
<td>Taiwan</td>
<td>8,318</td>
<td>33%</td>
<td>1,600</td>
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<td>4%</td>
<td>1%</td>
<td>0%</td>
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<td>13</td>
<td>Malaysia</td>
<td>7,222</td>
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<td>942</td>
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<td>14</td>
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<td>7,084</td>
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<td>60%</td>
<td>19%</td>
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<td>15</td>
<td>Russia</td>
<td>6,183</td>
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<td>959</td>
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<td>18%</td>
<td>-9%</td>
<td>16%</td>
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<td>16</td>
<td>South Africa</td>
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<td>355</td>
<td>86%</td>
<td>7%</td>
<td>-13%</td>
<td>6%</td>
<td>1%</td>
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<td>17</td>
<td>Portugal</td>
<td>5,259</td>
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<td>6%</td>
<td>-18%</td>
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<td>1%</td>
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<tr>
<td>18</td>
<td>Saudi Arabia</td>
<td>4,991</td>
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<td>10%</td>
<td>1%</td>
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<td>19</td>
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<td>447</td>
<td>62%</td>
<td>10%</td>
<td>-6%</td>
<td>9%</td>
<td>1%</td>
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<tr>
<td>20</td>
<td>Sweden</td>
<td>4,683</td>
<td>40%</td>
<td>271</td>
<td>30%</td>
<td>6%</td>
<td>-23%</td>
<td>6%</td>
<td>1%</td>
</tr>
<tr>
<td>21</td>
<td>Netherlands</td>
<td>4,612</td>
<td>24%</td>
<td>479</td>
<td>42%</td>
<td>12%</td>
<td>84%</td>
<td>10%</td>
<td>1%</td>
</tr>
<tr>
<td>22</td>
<td>Austria</td>
<td>4,340</td>
<td>40%</td>
<td>390</td>
<td>49%</td>
<td>10%</td>
<td>17%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td>23</td>
<td>Israel</td>
<td>4,279</td>
<td>46%</td>
<td>650</td>
<td>61%</td>
<td>18%</td>
<td>182%</td>
<td>15%</td>
<td>2%</td>
</tr>
<tr>
<td>24</td>
<td>Romania</td>
<td>4,207</td>
<td>15%</td>
<td>292</td>
<td>63%</td>
<td>7%</td>
<td>33%</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td>25</td>
<td>Greece</td>
<td>3,245</td>
<td>17%</td>
<td>90</td>
<td>101%</td>
<td>3%</td>
<td>66%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>26</td>
<td>Egypt</td>
<td>3,229</td>
<td>7%</td>
<td>325</td>
<td>86%</td>
<td>11%</td>
<td>6%</td>
<td>10%</td>
<td>1%</td>
</tr>
<tr>
<td>27</td>
<td>Hong Kong</td>
<td>2,909</td>
<td>30%</td>
<td>132</td>
<td>19%</td>
<td>5%</td>
<td>-27%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>28</td>
<td>Singapore</td>
<td>2,896</td>
<td>44%</td>
<td>157</td>
<td>24%</td>
<td>6%</td>
<td>-21%</td>
<td>5%</td>
<td>0%</td>
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<tr>
<td>29</td>
<td>Philippines</td>
<td>2,870</td>
<td>4%</td>
<td>246</td>
<td>46%</td>
<td>9%</td>
<td>-23%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td>30</td>
<td>China</td>
<td>2,850</td>
<td>0%</td>
<td>1,460</td>
<td>--</td>
<td>105%</td>
<td>--</td>
<td>51%</td>
<td>4%</td>
</tr>
</tbody>
</table>

| Top 30 | 485,967 | 20%        | 34,958 | 41% | 8% | 9% | 7% | 86% | 57,827 | 22,869 |
| Global | 528,301 | 12%        | 40,426 | 43 | 8% | 14 | 8 | 100 | 163,785 | 123,360 |

Note: *Informa reports a lower global 3G subscription # vs. Ovum due to the exclusion of 4G and the use of different sources.
3G includes CDMA 1x EV-DO and Rev. A / B, WCDMA, HSPA; Source: Informa WCIS+, Morgan Stanley Research.

Morgan Stanley
3G is Key to Success of Mobile Internet
But Wireless Options – Across-the-Board – are Growing Rapidly

- **GPS** – 421MM+ chipsets sold in 2008E, +57% Y/Y; Cell Phones / PDAs = 60% of GPS shipments.

- **3G** – 485MM global users, +46% Y/Y in CQ2, >11% mobile user penetration, rising to 44% by 2013E…Japan / W. Europe / USA already >30% penetration.

- **Wi-Fi** – 319MM chipsets sold in 2008E, +42%Y/Y with 862MM installed base; estimate 60% of iPhone / iTouch usage may be on Wi-Fi, providing a crucial (and ~10x faster) offload to stressed 3G networks.

- **Bluetooth** – 1.3B Bluetooth-enabled units shipped in 2008, +45% Y/Y; 2B+ Bluetooth devices in use.

Source: 3G subscribers data per Informa, Wi-Fi usage estimates per AdMob, Wi-Fi shipments by Wi-Fi Alliance; installed base per iSuppli, assuming 4-yr replacement cycle; Bluetooth shipment per iSuppli, installed base per The Bluetooth Special Interest Group; GPS shipment per Future Horizons. Picture sources: Howstuffworks.com, Boy Genius Report, Cisco, Letsbuy.com.
Social Networking = Consumers Want to Connect via Wired + Wireless Internet
Note: *Global social networking websites exclude application-based networks such as IM networks. **Renren Y/Y data not available. Usage stats are ‘unique visitors’; per comScore global 12/09, may differ materially from company-disclosed ‘registered accounts’ stats. Other notable social networks include Windows Live Profiles, 56.com, DeviantArt, Digg, Buzz Media, and Bebo. Source: comScore 1/10, Morgan Stanley Research.
Facebook (+ YouTube) =
Largest Share Gainers of Global Online Usage Over Past 3+ Years

Share of Global Online Time Spent, 6/06 – 1/10

Source: comScore global, 1/10.
Facebook = Garnering Rising Share of Communications
Unified Communications + Multimedia Creation Tool / Repository in Your Pocket

- Messages
- VoIP Calls
- Chat
- Play Games
- Wall Posts
- Status Updates
- Share Videos / Music / Photos / Stories

Connectivity / Presence provided by Mobile Phone

Source: Facebook, how-to-travel-the-world.com.
## Companies / Brands Leveraging Facebook – Social Influence Marketing With Millions of Fans

<table>
<thead>
<tr>
<th>Rank</th>
<th>Top 20 Brands / Products</th>
<th># of Facebook Fans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Texas Hold’em Poker (Zynga)</td>
<td>16.5MM</td>
</tr>
<tr>
<td>2</td>
<td>Mafia Wars (Zynga)</td>
<td>11.4MM</td>
</tr>
<tr>
<td>3</td>
<td>Facebook</td>
<td>8.0MM</td>
</tr>
<tr>
<td>4</td>
<td>Starbucks</td>
<td>6.5MM</td>
</tr>
<tr>
<td>5</td>
<td>Coca-Cola</td>
<td>5.1MM</td>
</tr>
<tr>
<td>6</td>
<td>YouTube (Google)</td>
<td>4.7MM</td>
</tr>
<tr>
<td>7</td>
<td>Oreo (Kraft)</td>
<td>4.4MM</td>
</tr>
<tr>
<td>8</td>
<td>Skittles (Mars)</td>
<td>4.2MM</td>
</tr>
<tr>
<td>9</td>
<td>iTunes (Apple)</td>
<td>3.9MM</td>
</tr>
<tr>
<td>10</td>
<td>Nutella (Ferrero)</td>
<td>3.8MM</td>
</tr>
<tr>
<td>11</td>
<td>Disney</td>
<td>3.4MM</td>
</tr>
<tr>
<td>12</td>
<td>Victoria’s Secret (Limited Brands)</td>
<td>3.2MM</td>
</tr>
<tr>
<td>13</td>
<td>Pringles (P&amp;G)</td>
<td>3.1MM</td>
</tr>
<tr>
<td>14</td>
<td>Kinder Surprise (Ferrero)</td>
<td>2.7MM</td>
</tr>
<tr>
<td>15</td>
<td>Adidas Originals (Adidas)</td>
<td>2.7MM</td>
</tr>
<tr>
<td>16</td>
<td>Live Messenger (Microsoft)</td>
<td>2.6MM</td>
</tr>
<tr>
<td>17</td>
<td>Ferrero Rocher (Ferrero)</td>
<td>2.6MM</td>
</tr>
<tr>
<td>18</td>
<td>Red Bull</td>
<td>2.5MM</td>
</tr>
<tr>
<td>19</td>
<td>Playfish</td>
<td>2.1MM</td>
</tr>
<tr>
<td>20</td>
<td>NBA</td>
<td>2.1MM</td>
</tr>
</tbody>
</table>

*Note: Top 20 fan pages ranked by # of fans, excludes ‘people’ (like Vin Diesel / Lady Gaga) and ‘activities’ (like ‘I ♥ Sleep’). Data as of 4/8/10. Source: Facebook.*
Salesforce.com =
Introducing Cloud + Social Networking to Enterprises

- Founded in 1999 with the goal of “making enterprise software as easy to use as websites like Amazon.com”; updated goal in 2010 to make enterprise software as easy as Facebook.com.
- Product portfolio includes Sales Cloud (centralized client database & analytics); Service Cloud (custom service application suite); Custom Cloud (platform for customized 3rd-party applications); Chatter (social platform for enterprise collaboration);
- 2MM paying subscribers in 1/10, +35% Y/Y; $1.3B revenue in FY2009, +21% Y/Y.
- 230K 3rd-party developers, +85% Y/Y; 145K custom applications, +45% Y/Y; 17B transactions in FQ4:09, +40% Y/Y.
Video =
Consumers Want to Find + Select + Watch Video via Wired + Wireless Internet
Video Driving Rapid Growth in Mobile Internet Traffic
Mobile Data Traffic to Rise 39x by 2014E (108% CAGR)

Global Mobile Data Traffic, by Type
2008 – 2014E

Total Mobile Data Traffic (Tetabyte per month)

2009-2014E CAGR
Total 108%
Web/Data/Other 83%
P2P 78%
Video 131%
VoIP 103%

VoIP =
Consumers Want to Chat
(via Voice + Messaging + Video)
via Wired + Wireless Internet
### If VoIP Leader Skype Were a Carrier, it Would be Largest ‘Carrier’ in World

521MM Users (+41% Y/Y) & 12% of Cross-Border Calling Minutes (34% Video-Enabled)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>Type</th>
<th>Region</th>
<th>Subscribers (MM)</th>
<th>Y/Y Growth</th>
<th>Blended ARPU (US$)</th>
<th>Y/Y Growth</th>
<th>Market Cap ($B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>China Mobile</td>
<td>Wireless</td>
<td>China</td>
<td>493</td>
<td>19%</td>
<td>$11</td>
<td>-10%</td>
<td>$192</td>
</tr>
<tr>
<td>2</td>
<td>Telefonica Moviles / O2</td>
<td>Wireless</td>
<td>Europe / LatAm</td>
<td>206</td>
<td>9</td>
<td>41</td>
<td>-9</td>
<td>137</td>
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<tr>
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<td>China Telecom</td>
<td>Wireline</td>
<td>China</td>
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<td>11</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>4</td>
<td>America Movil</td>
<td>Wireless</td>
<td>LatAm</td>
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<td>13</td>
<td>4</td>
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<tr>
<td>5</td>
<td>T-Mobile</td>
<td>Wireless</td>
<td>Europe / Asia</td>
<td>172</td>
<td>8</td>
<td>20</td>
<td>-3</td>
<td>24</td>
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<tr>
<td>6</td>
<td>China Unicom</td>
<td>Wireless</td>
<td>China</td>
<td>150</td>
<td>6</td>
<td>37</td>
<td>-3</td>
<td>64</td>
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<tr>
<td>7</td>
<td>Orange</td>
<td>Wireless</td>
<td>Europe</td>
<td>129</td>
<td>9</td>
<td>50</td>
<td>0</td>
<td>69</td>
</tr>
<tr>
<td>8</td>
<td>China Unicom (1)</td>
<td>Wireline</td>
<td>China</td>
<td>108</td>
<td>10</td>
<td>9</td>
<td>-18</td>
<td>32</td>
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<tr>
<td>9</td>
<td>MTN Group</td>
<td>Wireless</td>
<td>Africa</td>
<td>108</td>
<td>34</td>
<td>15</td>
<td>-2</td>
<td>28</td>
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<tr>
<td>10</td>
<td>Mobile TeleSystems</td>
<td>Wireless</td>
<td>Europe</td>
<td>101</td>
<td>2</td>
<td>8</td>
<td>-28</td>
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<td>11</td>
<td>Orascom</td>
<td>Wireless</td>
<td>Africa / Asia</td>
<td>89</td>
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<td>6</td>
<td>-11</td>
<td>24</td>
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<td>12</td>
<td>Verizon Wireless</td>
<td>Wireless</td>
<td>USA</td>
<td>86</td>
<td>6</td>
<td>51</td>
<td>-2</td>
<td>86</td>
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<tr>
<td>13</td>
<td>AT&amp;T Mobility</td>
<td>Wireless</td>
<td>USA</td>
<td>82</td>
<td>9</td>
<td>51</td>
<td>1</td>
<td>155</td>
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<tr>
<td>14</td>
<td>Telkom Indonesia</td>
<td>Wireless</td>
<td>Asia</td>
<td>80</td>
<td>32</td>
<td>3</td>
<td>-13</td>
<td>19</td>
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<tr>
<td>15</td>
<td>Telecom Italia Mobile</td>
<td>Wireless</td>
<td>Europe / LatAm</td>
<td>72</td>
<td>2</td>
<td>37</td>
<td>2</td>
<td>30</td>
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<tr>
<td>16</td>
<td>VimpelCom</td>
<td>Wireless</td>
<td>Russia</td>
<td>61</td>
<td>20</td>
<td>13</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>17</td>
<td>NTT docomo</td>
<td>Wireless</td>
<td>Japan</td>
<td>55</td>
<td>2</td>
<td>61</td>
<td>-8</td>
<td>64</td>
</tr>
<tr>
<td>18</td>
<td>AT&amp;T (2)</td>
<td>Wireline</td>
<td>USA</td>
<td>54</td>
<td>-3</td>
<td>80</td>
<td>-1</td>
<td>155</td>
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<td>19</td>
<td>Deutsche Telekom</td>
<td>Wireline</td>
<td>Europe</td>
<td>54</td>
<td>-2</td>
<td>62</td>
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<td>64</td>
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<td>20</td>
<td>BSNL (3)</td>
<td>Wireless</td>
<td>India</td>
<td>52</td>
<td>44</td>
<td>3</td>
<td>-35</td>
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<td>Turkcell</td>
<td>Wireless</td>
<td>Europe</td>
<td>49</td>
<td>-4</td>
<td>13</td>
<td>-24</td>
<td>15</td>
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<tr>
<td>22</td>
<td>China Telecom</td>
<td>Wireless</td>
<td>China</td>
<td>47</td>
<td>--</td>
<td>8</td>
<td>--</td>
<td>38</td>
</tr>
</tbody>
</table>

| Total |                        |            |                | 3,195          | 10%        | $23               | 2%         | $1,520          |

* Ranking is based on subscribers. Subscribers / ARPU data as of latest quarter (CQ3:09 or CH1:09 for some carriers who report on semi-annual basis). Market Cap as of 11/17/09. Total market value excluding duplicates = $1,231MM; (1) China Netcom merged with China Unicom in 10/08; (2) AT&T / Verizon / DT’s wireline ARPU is revenue per RGU (revenue generating unit) and include business lines; (3) BSNL is owned by the Indian government. (5) Subscriber figure for Skype is registered user amount as of CQ3:09, cross-border calling minutes as of C2009, per Telegeography. Source: Company Reports, Telegeography, Morgan Stanley Research.
Google Voice
Putting User in Control of Voice Communications via IP Networks

- Google Voice – Launched in 3/09, gives user a universal address book + single telephone number, to which all calls to user’s home / office / cellphone can be forwarded
- Voicemail transcription + SMS + future integration with Gmail + $0.02 per minute International VoIP call(1)
- Google Voice mobile app launched for Android / BlackBerry in 7/09, offers full native contact / dialer / SMS integration

**Universal Address Book / Transcribed Voicemail / SMS on the Web**

**Fully Integrated w/ Android Dialer / Address Book**

Note: (1) $0.02 per minute rate apply to selected countries. Source: Google.
Impressive Mobile Devices = Apple’s iPhone + iTouch + App Store Launches Over Past ~3 Years Created the Spark for Mobile Internet Liftoff as Microsoft’s Launch of Windows 3.0 did for the PC in 1990 and the Netscape Browser (and its IPO) did for the Desktop Internet in 1995
Apple iPhone / iTouch = Fastest New Tech Device / Ecosystem Ramp in History
Great UI + Developer Tools + Hardware + Distribution + Powerful Connectivity (Wi-Fi + 3G)

iPhone / iTouch Ecosystem – Subscribers, Apps Available & Downloads, 6/07 – 3/10

Global iPhone Users
Global iPod Touch Users
Cumulative Application Downloads (000)
iPhone Applications Available (000)

Note: *Mobile related revenue include iPhone + iTouch + iTunes content revenue; Q1:10 revenue are estimates by Katy Huberty. Source: Apple, Morgan Stanley Research.
Apple Leading in Mobile Innovation + Impact, for Now – Depth of App Ecosystems + User Experience + Pricing Will Likely Determine Long-Term Winners
iPhone + Android Mobile Internet Usage Much Higher than Shipment Share =
Implies High Probability of On-Going Share Gains Based on Consumer Voting

Global Smartphone Share of HTML Mobile Page View / Mobile Internet + App Usage / Unit Shipments

Note: Net Applications collects data from ~160MM monthly visitors on mobile devices that render full HTML pages and JavaScript. Visits to WAP pages are excluded.

Source: AdMob Mobile Metrics Report (12/09), Net Applications (12/09), Gartner (CQ4:09).
iPhone + Android Gaining USA Mobile Internet Usage Share – While RIM + Windows Mobile + Palm Losing Share

Note: Usage share represents % of total ad requests coming from the operating system, data may not be representative.

Source: AdMob, 2/10.
Game-Changing Communications / Commerce Platforms (Social Networking + Mobile) Emerging Very Rapidly
Facebook + Apple iPhone / iTouch =
Driving Independent / Overlapping Innovation / Usage in Social Networking + Mobile Platforms

Facebook
- 471MM users (+100% Y/Y)
- 500K+ Apps
- 500MM+ Downloads

Apple iPhone / iTouch
- 85MM users (+130% Y/Y)
- 185K+ Apps
- 4B+ Downloads

Social Networking

Mobile

Note: Data as of 4/10. Source: PC World, comScore, Facebook, Apple.
Facebook = 500MM+ App Downloads
Vibrant Developer / Application Platform Ecosystem = 500K Apps*, +10x Y/Y

<table>
<thead>
<tr>
<th>Category</th>
<th># of Applications</th>
<th>% of Total</th>
<th>Top 100 Apps' Monthly Active Users (MM)</th>
<th># of Apps w/ 1MM+ MAUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Games</td>
<td>13,537</td>
<td>23%</td>
<td>418</td>
<td>56</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>4,778</td>
<td>8</td>
<td>42</td>
<td>8</td>
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<tr>
<td>Utilities</td>
<td>4,604</td>
<td>8</td>
<td>59</td>
<td>8</td>
</tr>
<tr>
<td>Education</td>
<td>2,279</td>
<td>4</td>
<td>66</td>
<td>5</td>
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<tr>
<td>Entertainment</td>
<td>2,015</td>
<td>3</td>
<td>76</td>
<td>11</td>
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<tr>
<td>Business</td>
<td>1,981</td>
<td>3</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Sports</td>
<td>1,431</td>
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<td>5</td>
<td>0</td>
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<tr>
<td>Just For Fun</td>
<td>400</td>
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<td>44</td>
<td>10</td>
</tr>
<tr>
<td>Friends &amp; Family</td>
<td>61</td>
<td>0</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>Overall*</td>
<td>59,427</td>
<td></td>
<td>752</td>
<td>102</td>
</tr>
</tbody>
</table>

Note: Category breakdown per Facebook, one application can belong to multiple categories or belong to no category; Overall* statistics per AppData, which reports a lower active apps count than Facebook’s reported 500,000+ apps “built to date”.
Source: Facebook, AppData as of 1/10, Morgan Stanley Research.
## Apple iPhone / iTouch = 4B+ App Downloads (+4x) – (~47 per User) – Games + Entertainment + Books Lead

<table>
<thead>
<tr>
<th>Category</th>
<th># of Apps</th>
<th>% of Total</th>
<th># of Paid Apps</th>
<th>Paid as % of Category Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Games</td>
<td>26,434</td>
<td>18%</td>
<td>17,935</td>
<td>68%</td>
</tr>
<tr>
<td>Entertainment</td>
<td>21,181</td>
<td>14</td>
<td>15,481</td>
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<tr>
<td>Books</td>
<td>20,931</td>
<td>14</td>
<td>19,159</td>
<td>92</td>
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<tr>
<td>Travel</td>
<td>9,300</td>
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<td>8,118</td>
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<td>8,964</td>
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<td>Education</td>
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<td>Lifestyle</td>
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<td>Reference</td>
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<td>2,712</td>
<td>80</td>
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<tr>
<td>Productivity</td>
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<td>2,513</td>
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<tr>
<td>Business</td>
<td>3,278</td>
<td>2</td>
<td>1,662</td>
<td>51</td>
</tr>
<tr>
<td>News</td>
<td>3,629</td>
<td>2</td>
<td>2,354</td>
<td>65</td>
</tr>
<tr>
<td>Health &amp; Fitness</td>
<td>3,020</td>
<td>2</td>
<td>2,347</td>
<td>78</td>
</tr>
<tr>
<td>Social Networking</td>
<td>2,542</td>
<td>2</td>
<td>1,285</td>
<td>51</td>
</tr>
<tr>
<td>Photography</td>
<td>2,417</td>
<td>2</td>
<td>1,698</td>
<td>70</td>
</tr>
<tr>
<td>Finance</td>
<td>2,008</td>
<td>1</td>
<td>1,261</td>
<td>63</td>
</tr>
<tr>
<td>Medical</td>
<td>1,799</td>
<td>1</td>
<td>1,366</td>
<td>76</td>
</tr>
<tr>
<td>Weather</td>
<td>622</td>
<td>0</td>
<td>490</td>
<td>79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>147,139</strong></td>
<td><strong>110,216</strong></td>
<td></td>
<td><strong>75%</strong></td>
</tr>
</tbody>
</table>

Note: Data as of 4/10.
Source: Mobclix, Apple iTunes, Morgan Stanley Research.

Morgan Stanley
### Apple iPhone / iTouch – Facebook is Most Downloaded of Top Free Apps

<table>
<thead>
<tr>
<th>Name</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>Social Networking</td>
<td>Mobile front-end of the online site, allows users to chat / send messages / share photos + interests</td>
</tr>
<tr>
<td>Google Earth</td>
<td>Travel</td>
<td>Users can view aerial maps of any available city / area, using touch screen to zoom in / out</td>
</tr>
<tr>
<td>Pandora Radio</td>
<td>Music</td>
<td>Creates customized internet radio stations that stream music based on songs / artists users like</td>
</tr>
<tr>
<td>Tap Tap Revenge</td>
<td>Games</td>
<td>Rhythmic music game in which user taps and shakes screen to create certain beats of a song - includes online play</td>
</tr>
<tr>
<td>Shazam</td>
<td>Music</td>
<td>Application identifies artist / song title / album for songs playing on other audio devices</td>
</tr>
<tr>
<td>PAC-MAN Lite</td>
<td>Games</td>
<td>3D remake of the classic game utilizes touch screen controls</td>
</tr>
<tr>
<td>Backgrounds</td>
<td>Entertainment</td>
<td>Large selection of iPhone backgrounds that can be uploaded into your phone background library</td>
</tr>
<tr>
<td>Touch Hockey: FS5</td>
<td>Games</td>
<td>Interactive air hockey game that allows users to play solo or online against friends</td>
</tr>
<tr>
<td>Labyrinth Lite Edition</td>
<td>Games</td>
<td>Users employ sensitive tilt controls to move ball to the end of the puzzle in this remake of the classic wooden puzzle game</td>
</tr>
<tr>
<td>Flashlight.</td>
<td>Utilities</td>
<td>Fills screen with bright white light to use as flash light</td>
</tr>
</tbody>
</table>

Source: Apple. 8/09.
Japan Social Networking Trends Show Importance of Mobile – Mixi Mobile Page Views = 72% vs. 17% 3 Years Ago

Mixi’s (Japan’s Leading Social Network) Monthly Page Views, Mobile vs. PC, CQ2:06 – CQ3:09

Monthly Page Views (MM)

Desktop
Mobile

2Q06 3Q06 4Q06 1Q07 2Q07 3Q07 4Q07 1Q08 2Q08 3Q08 4Q08 1Q09 2Q09 3Q09

Note: Mixi is one of Japan’s leading social networking sites on PC and mobile with 18MM registered users as of 9/30/09. It monetizes mobile usage via sales of avatars, customized homepages and other premium services. Source: Company reports, Morgan Stanley Research
Amazon.com Revolutionizing Commerce – With Constant Product Improvements

Amazon.com in 1995

Amazon.com in 2009

Search Suggestion  1-Click Purchase  Same Day Shipping...

...Or Free Shipping

Mobile Barcode Scan  Customer Review  Recommendation Engine  3rd-Party Selling

Source: Amazon.com, Morgan Stanley Research.
Mobile Revolutionizing Commerce – With Constant Product Improvements

- **Location-Based Services** – Enable real-time physical retail / service opportunities

- **Transparent Pricing** – Instant local + online price comparison could disrupt retailers

- **Deep Discounts** – Invitation-only time-based selective sales gaining traction

- **Immediate Gratification** – OTA (over-the-air) instant digital product + content delivery

Source: Company Reports, Morgan Stanley Research.
Location-Based Services – Zipcar Combines Mobile Internet + GPS to Disrupt Car Rental Business

- Free app allows users to find Zipcars / reserve Zipcars / unlock Zipcar and drive away on iPhone (25% of Zipcar members are also iPhone users, per Zipcar survey).
- App engages GPS and Google Maps to display available Zipcars near current location / near any location you search, making results more relevant.
- Make reservations online while on-the-go (uses payment information from Zipcar.com member profile) / unlock car using iPhone + 3G / Wi-Fi.

Find the Zipcar Closest to You
Sort Zipcars Based on Time Availability / Model
Review / Reserve the Zipcar You Want at the Right Price
Unlock the Zipcar Using Your iPhone

Note: In order to lock / unlock car with iPhone, user must scan ZipCard to unlock door at the start of the reservation.
Transparent Pricing - Likely to Disrupt Retail

- ShopSavvy app allows mobile users to scan product barcodes (using mobile digital camera) and retrieve best pricing information from web + local stores in <30 seconds.
- For web results, user can go to site or email link to friends…for local results (via GPS / cellular tower geo-locating), user can see store locations / get directions / call stores.
- Additional functions include price alerts (notifies user when price is cheaper / hit user’s preset price target) / wish lists / search history.

Step 1: Tap Search
Step 2: Scan Barcode
Step 3: See Results
Step 4: Click to Buy

Source: Big In Japan, Morgan Stanley Research.
Deep Discounts –
Invitation-Only Time-Based Selective Sales Gaining Traction

- Gilt offers online ‘flash’ sales of designer apparel at deep discount prices for limited time frame.
- Launched in 2007, 1.2MM unique visitors in USA in 12/09, up 78% Y/Y, per Compete.
- Provides brands with more control over quantity / time-frame / pricing in online invite-only settings vs. offline discount chain stores.
- Incentives help drive viral growth – $25 credit when referral makes first purchase.
- Mobile application pushes the latest deal to the palm of consumers in real-time.

Source: Gilt Groupe, Compete.
Immediate Gratification –
OTA (Over-the-Air) Instant Digital Product + Content Delivery

Print Books
Physical Distribution
circa 200AD

Nintendo GameBoy
Physical Cartridge
circa 1989

Digital Games Purchase
Over 3G / Wi-Fi
circa 2008

Digital Audio
Streaming on
Mobile Phones
circa 2008

OTA (Over-the-Air) Instant Digital Product + Content Delivery

eBook on Phone / Kindle
Wireless Delivery in 60 sec
circa 2007

Digital Games Purchase
Over 3G / Wi-Fi
circa 2008

Digital Audio
Streaming on
Mobile Phones
circa 2008

Analog Cassette
circa 1970s

Analog VHS
circa 1970s

Source: Nintendo, Apple, Amazon.com, Google, Spotify, CBS Interactive.
Mobile Coupons – Potential to Generate Retail Store Traffic / Sales

**Coupon Sherpa –** Discounts Granted by Scanning Barcodes on Smartphones While at Store Checkout

**mobiQpons –** Coupons Displayed on Smartphones Based on Proximity to Stores

**Yowza!! –** Coupons Shared with Friends

Source: Company Data, Morgan Stanley Research.
Branded Mobile Apps – Could Drive Incremental Store Traffic / Purchases

**Chipotle iPhone App** – Locate, Order and Pay for Tacos / Burritos on Smartphone…and Skip the Line When You Pick Up

**Starbucks Card on iPhone** – Management of Starbucks Credits + Barcode Scanning for Easy Checkout (Limited Availability*)

*Note: *Barcode scanning for easy checkout currently only available in Seattle, WA, Cupertino, CA, and Mountain View, CA.

Source: Company Data, Morgan Stanley Research.
Mobile Push Notification – Enables Effortless Monitoring of Real-Time Transaction Process

**eBay iPhone App** – Manage Transactions on Smartphones

**eBay iPhone App** – ‘Auction Ending Soon’ Reminder Pushed to Smartphones

Source: Company Data, Morgan Stanley Research.
Lockerz – Social Rewards Program

- Free invitation-only social network / eCommerce / content discovery site where members earn reward points they can redeem for free products (including consumer electronics / apparel) and events...by logging in / watching ‘promotional’ videos / playing games / completing surveys / inviting friends.

- 8MM registered users as of 1/10 (still in beta); 150MM+ page views per month.

- Targets 14-25 year olds; launched in private beta in 3/09, expected to open to public in CH1:10E; backed by Liberty Media.
Massive Data Growth Driving Carrier / Equipment Transitions
Increasingly, Mobile Phone Usage is About Data, Not Voice =
Average Cell Phone = 70% Voice…iPhone = 45% Voice

Average US Cell Phone User
40 Minutes Per Day

Voice Call 70%
SMS 15%
Music 2%
Games 3%
E-Mail 4%
Internet 3%
Other 3%

iPhone User
60 Minutes Per Day

Voice Call 45%
SMS 14%
E-Mail 12%
Games 8%
Music 10%
Internet 9%
Other 3%

Note: CTIA estimates average voice call time per day is 27 minutes, assuming 70% of total time spent is on voice call, per iSuppli, total average time spent on cell phone is approx. 40 minutes per day. iPhone time spent per day is our estimates.

Source: iSuppli ConsumerTrak survey, 10/08, Morgan Stanley Research.
iPhone Users Use Data / Internet Far More than Average Mobile Users

Note: Percentages reflect share of users that accessed websites / applications in a given category at least once a month. Data was collected using a 3 month average for the period ending 9/09. Source: comScore MobiLens 9/09.
Data = Increasingly Dominating Network Traffic Share for Wireless Carriers in Developed Markets

NTT docomo Data Traffic = ~90% of Total Network Traffic

Vodafone Data Traffic = ~70% of Total Network Traffic

Note: Assumes voice calls = ~12 bits / second of traffic; Vodafone traffic data not available prior to CQ2:07.
Source: Company Reports, Morgan Stanley Research.
Growth / Monetization Roadmaps Provided from Japan Mobile + Desktop Internet
When Consumers are Empowered by the Internet, Usage Changes Can Occur Very Quickly
Carrier ‘Walled Gardens’ Collapsed Extremely Rapidly – UK Mobile Users Are Fleeing from Carriers’ Portal Sites

Mobile Web Sites’ Share of UK Mobile Internet Users

<table>
<thead>
<tr>
<th>Year</th>
<th>Carriers</th>
<th>Google</th>
<th>BBC</th>
<th>Nokia</th>
<th>Yahoo!</th>
<th>eBay</th>
<th>Microsoft</th>
<th>Webmails</th>
<th>Amazon.com</th>
<th>Wikipedia</th>
<th>Carriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>57%</td>
<td>44%</td>
<td>34%</td>
<td>24%</td>
<td>15%</td>
<td>11%</td>
<td>11%</td>
<td>10%</td>
<td>7%</td>
<td>7%</td>
<td>57%</td>
</tr>
<tr>
<td>2008</td>
<td>22%</td>
<td>82%</td>
<td>56%</td>
<td>56%</td>
<td>40%</td>
<td>31%</td>
<td>30%</td>
<td>28%</td>
<td>27%</td>
<td>25%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Note: Share of users refers to the percent of users who have accessed these sites on a mobile phone during each year; i.e. 82% of UK mobile Internet users accessed Google in 2008, up from 44% in 2007. Source: Nokia Siemens Networks, Nokia UK Smartphone Study.
Advertising Dollars Ultimately Follow Eyeballs
$46 in Annualized Ad Revenue per Internet User vs. $28 in 2005 vs. $0 in 1994

<table>
<thead>
<tr>
<th></th>
<th>1995E</th>
<th>2005E</th>
<th>2009E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Internet Ad Revenue</td>
<td>$55MM</td>
<td>$18B</td>
<td>$54B</td>
</tr>
<tr>
<td>Ad Revenue per User</td>
<td>$9</td>
<td>$28</td>
<td>$46</td>
</tr>
<tr>
<td>Global Internet Users</td>
<td>6MM</td>
<td>644MM</td>
<td>1.2B</td>
</tr>
</tbody>
</table>

Source: Global online ad revenue per Juniper Communications (1995), ZenithOptimedia (2005 & 2009). Internet users per MS estimate (1995) and comScore (2005 & 2009). We note that comScore reports a lower global Internet user # than International Telecommunications Union.
New Business Models are Often Created During Technology Changes
China (Owing in Part to Tencent’s Success) Shows ‘Virtual Goods’ Can be Big Business – $2.2B in 2009E Revenue & $24 Annual ARPU

### Virtual Goods Sales in China, 2006E – 2013E

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total virtual item sales ($MM)</strong></td>
<td>$547</td>
<td>$889</td>
<td>$1,464</td>
<td>$2,207</td>
<td>$3,132</td>
<td>$4,307</td>
<td>$5,763</td>
<td>$7,359</td>
</tr>
<tr>
<td><strong>Y/Y Growth</strong></td>
<td>--</td>
<td>62%</td>
<td>65%</td>
<td>51%</td>
<td>42%</td>
<td>38%</td>
<td>34%</td>
<td>28%</td>
</tr>
<tr>
<td><strong>Game virtual item sales ($MM)</strong></td>
<td>$296</td>
<td>$490</td>
<td>$841</td>
<td>$1,288</td>
<td>$1,858</td>
<td>$2,564</td>
<td>$3,418</td>
<td>$4,439</td>
</tr>
<tr>
<td><strong>Y/Y Growth</strong></td>
<td>--</td>
<td>66%</td>
<td>72%</td>
<td>53%</td>
<td>44%</td>
<td>38%</td>
<td>33%</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Paying gamers (MM)</strong></td>
<td>18</td>
<td>26</td>
<td>37</td>
<td>46</td>
<td>55</td>
<td>64</td>
<td>74</td>
<td>84</td>
</tr>
<tr>
<td><strong>Y/Y Growth</strong></td>
<td>--</td>
<td>44%</td>
<td>43%</td>
<td>25%</td>
<td>20%</td>
<td>17%</td>
<td>15%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>ARPU (US$ per Month)</strong></td>
<td>$1</td>
<td>$2</td>
<td>$2</td>
<td>$2</td>
<td>$3</td>
<td>$3</td>
<td>$4</td>
<td>$4</td>
</tr>
<tr>
<td><strong>Y/Y Growth</strong></td>
<td>--</td>
<td>15%</td>
<td>20%</td>
<td>23%</td>
<td>20%</td>
<td>18%</td>
<td>16%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Non-game virtual item sales ($MM)</strong></td>
<td>$252</td>
<td>$399</td>
<td>$623</td>
<td>$918</td>
<td>$1,274</td>
<td>$1,743</td>
<td>$2,346</td>
<td>$2,920</td>
</tr>
<tr>
<td><strong>Y/Y Growth</strong></td>
<td>--</td>
<td>58%</td>
<td>56%</td>
<td>47%</td>
<td>39%</td>
<td>37%</td>
<td>35%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Note: ARPU is average revenue per user. Non-game virtual items include virtual gifts / ringtones / wallpapers / avatars + accessories. Source: Richard Ji, Morgan Stanley Research estimates.
In-Place Billing Systems (with likes of Carriers + iTunes) Should Create Better Monetization Opportunities than Experienced on Desktop Internet
Advertising + eCommerce (Vendor + Advertiser Paid) = Dominate Desktop Internet Revenue...

Revenue Mix for Top 50 Global Internet (ex. Data Access) Companies
2008E – $91B

- Advertising 40%
- eCommerce 35%
- Paid Services 25%
- Digital Content (Music, Video...) 5%

30% - Users Pay for Instant Access

Note: eCommerce is limited to online retail goods sales; paid services include online banking, travel services...; top 50 global Internet companies ranked by 2008 revenue. Source: FactSet, company data, Morgan Stanley Research.
…While Premium Content Revenue (User Paid) = Dominate Mobile Internet Revenue

Revenue Mix (ex. Data Access) for Global Mobile Internet
2008E – $37B

76% - Users Pay for Instant Access

Digital Content (Wallpaper, Ringtone, Downloadable Game, Music, Video…) 54%

Advertising 5%
eCommerce 73%
Paid Services 22%

Note: eCommerce is limited to online retail goods sales; paid services include online banking, travel services; Source: IDC, eMarketer, Juniper Research, Morgan Stanley Research.
Why Are Users Willing to Pay So Much More for Content on Mobile Devices than on Desktop PCs?

Users Are Willing to Pay for Content On Mobile Internet Owing to…

• Easy-to-Use / Secure Payment Systems – ‘Embedded’ systems (like carrier billing + iTunes) allow real-time payments;
• Small Price Tags – Most content / subscriptions carry sub-$5 price tags
• Walled Gardens Reduce Piracy – Content exists in proprietary environments, difficult to get pirated content onto mobile devices
• Established Store Fronts – Carrier decks / iTunes store allow easy discovery / purchase
• Personalization – More important on mobiles than desktops

Users are LESS Willing to Pay for Content On Desktop Internet Owing to…

• Difficult-to-Use / Fragmented Payment Mechanisms That Are More Susceptible to Security Issues – Too many payment options for vendors / consumers + widespread fraud
• Often Expensive + Cumbersome to Purchase Legal Content – $15+ per movie / DRM protection limits usage
• Open Internet + Piracy – Most content in digital formats is available for free (newspaper / pictures) or for illegal download (music / video / applications)
• Lack of Centralized / Large-Scale Marketplace for Legal Content Discovery / Purchase – Few players beyond iTunes + Amazon.com

Morgan Stanley
Rapid Mobile Internet Growth in Japan Over Past Decade Sheds Light on How Internet Monetization May Develop in Rest of World (ROW)
ROW’s Mobile Internet Revenue Mix in 2008 = Japan’s in 2000 – Data Access = 66% in Japan vs. 88% in ROW in 2008

Mobile Internet Revenue Mix

World ex. Japan
ROW 2008E
$194B Revenue
9%
1%
2%
88%

Japan 2000E
$6B Revenue
1%
2%
4%
10%
86%

Japan 2008E
$43B Revenue
2%
11%
21%
66%

Déjà vu?

Note: Mobile online commerce includes retail sales of physical goods and digital / virtual goods such as ringtones / wallpapers / avatars; Source: Nema Naoshi / Hironori Tanaka for Japan data, Morgan Stanley Research.
Rapid Ramp of Mobile Internet Usage Will be a Boon to Consumers and Some Companies Will Likely Win Big (Potentially Very Big) While Many Will Wonder What Just Happened
Morgan Stanley is currently acting as exclusive financial advisor to AdMob, Inc ("AdMob") in relation to their acquisition by Google Inc, as announced on November 9, 2009. The proposed transaction is subject to customary closing conditions. AdMob has agreed to pay fees to Morgan Stanley for its services that are subject to the consummation of the proposed transaction. Please refer to the notes at the end of the report.

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MTN does a sizable and growing portion of its business, and has assets and investments, in Iran and Sudan, which are generally subject to comprehensive sanctions programs administered by the U.S. Department of the Treasury’s Office of Foreign Assets Control (“OFAC”) and by other countries and multi-national bodies. MTN also does business in Syria, which is subject to certain blocking restrictions administered by OFAC and to other sanctions administered by the U.S. Departments of Commerce and State.

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**Analyst Certification**

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<table>
<thead>
<tr>
<th>Stock Rating Category</th>
<th>Coverage Universe</th>
<th>Investment Banking Clients (IBC)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>% of Total</td>
</tr>
<tr>
<td>Overweight/Buy</td>
<td>1042</td>
<td>41%</td>
</tr>
<tr>
<td>Equal-weight/Hold</td>
<td>1095</td>
<td>43%</td>
</tr>
<tr>
<td>Not-Rated/Hold</td>
<td>15</td>
<td>1%</td>
</tr>
<tr>
<td>Underweight/Sell</td>
<td>373</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>2,525</td>
<td></td>
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</tbody>
</table>

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Volatility shading indicates "more volatile" (V) flag. As of Nov-14-2008 the V flag has been discontinued.

Source: Morgan Stanley Research  Date Format: MM/DD/YY  Price Target: No Price Target Assigned (NA)  
Stock Price (Not Covered by Current Analyst)  Stock Price (Covered by Current Analyst)  
Stock and Industry Ratings (abbreviations below) appear as: Stock Rating/Industry View  
Stock Ratings: Overweight (O)  Equal-weight (E)  Underweight (U)  Not-Rated (NR)  More Volatile (V)  No Rating Available (NA)  
Industry View: Attractive (A)  In-line (I)  Cautious (C)  No Rating (NR)
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