The Future of Web Search

Chorus. Advancing Search Technology for Audio Visual Content
May 26-27, 2009
Brussels, Belgium

Dr. Ramon Compano. JRC IPTS. Challenges beyond Technology
Institute for Prospective Technological Studies of the European Commission.
Vision of Search
There is No Future for Web Search. Star Trek Communicator. 1966.

Search Engine Markets
Search Engine Market
WebHits. July 2001 (Germany)

Search Engine Market
WebHits. February 2002 (Germany)

Search Engine Market
WebHits. February 2003 (Germany)

Search Engine Market
WebHits. February 2004 (Germany)

Search Engine Market
WebHits. February 2005 (Germany)

Search Engine Market
WebHits. March 2006 (Germany)

Search Engine Market
WebHits. February 2007 (Germany)

Search Engine Market
WebHits. March 2008 (Germany)

Google: 89.2%

Others:
- AOL: 0.8%
- ask.com: 0.4%
- arcor.de: 0.2%
- WEB.DE: 0.2%
- suche.freenet.de: 0.2%
- Lycos: 0.2%
- AllesKlar: 0.2%
- Altavista: 0.2%
- Meta.Ger: 0.1%
- search.com: 0.1%
- Flix.de: 0.1%
- Fireball.de: 0.1%
- DMOZ: 0.1%

T-online: 2.3%

Yahoo!: 3.2%

# Search Engine Market

**Click Share Percentage. AOL and WebHits. July 2006 (Germany)**

<table>
<thead>
<tr>
<th></th>
<th>Google</th>
<th>Yahoo!</th>
<th>MSN</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>36.20%</td>
<td>1.73%</td>
<td>1.56%</td>
<td>2.79%</td>
<td>42.29%</td>
</tr>
<tr>
<td>2.</td>
<td>10.20%</td>
<td>0.49%</td>
<td>0.44%</td>
<td>0.79%</td>
<td>11.92%</td>
</tr>
<tr>
<td>3.</td>
<td>7.22%</td>
<td>0.35%</td>
<td>0.31%</td>
<td>0.56%</td>
<td>8.44%</td>
</tr>
<tr>
<td>4.</td>
<td>5.15%</td>
<td>0.25%</td>
<td>0.22%</td>
<td>0.40%</td>
<td>6.02%</td>
</tr>
<tr>
<td>5.</td>
<td>4.15%</td>
<td>0.20%</td>
<td>0.18%</td>
<td>0.32%</td>
<td>4.85%</td>
</tr>
<tr>
<td>6.</td>
<td>3.41%</td>
<td>0.16%</td>
<td>0.15%</td>
<td>0.26%</td>
<td>3.98%</td>
</tr>
<tr>
<td>7.</td>
<td>2.88%</td>
<td>0.14%</td>
<td>0.12%</td>
<td>0.22%</td>
<td>3.37%</td>
</tr>
<tr>
<td>8.</td>
<td>2.55%</td>
<td>0.12%</td>
<td>0.11%</td>
<td>0.20%</td>
<td>2.98%</td>
</tr>
<tr>
<td>9.</td>
<td>2.41%</td>
<td>0.12%</td>
<td>0.10%</td>
<td>0.19%</td>
<td>2.82%</td>
</tr>
<tr>
<td>10.</td>
<td>2.54%</td>
<td>0.12%</td>
<td>0.11%</td>
<td>0.20%</td>
<td>2.97%</td>
</tr>
<tr>
<td>&gt;10.</td>
<td>8.87%</td>
<td>0.42%</td>
<td>0.38%</td>
<td>0.68%</td>
<td>10.36%</td>
</tr>
</tbody>
</table>

### Search Engine Market

Clicks per Month for “Hotel Berlin”. AOL and WebHits. July 2006 (Germany)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Google</th>
<th>Yahoo</th>
<th>msn</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>66,812</td>
<td>3,200</td>
<td>2,888</td>
<td>5,151</td>
<td>78,051</td>
</tr>
<tr>
<td>2.</td>
<td>18,832</td>
<td>902</td>
<td>814</td>
<td>1,452</td>
<td>22,000</td>
</tr>
<tr>
<td>3.</td>
<td>13,334</td>
<td>639</td>
<td>576</td>
<td>1,028</td>
<td>15,577</td>
</tr>
<tr>
<td>4.</td>
<td>9,511</td>
<td>456</td>
<td>411</td>
<td>733</td>
<td>11,111</td>
</tr>
<tr>
<td>5.</td>
<td>7,662</td>
<td>367</td>
<td>331</td>
<td>591</td>
<td>8,951</td>
</tr>
<tr>
<td>6.</td>
<td>6,288</td>
<td>301</td>
<td>272</td>
<td>485</td>
<td>7,346</td>
</tr>
<tr>
<td>7.</td>
<td>5,324</td>
<td>255</td>
<td>230</td>
<td>411</td>
<td>6,220</td>
</tr>
<tr>
<td>8.</td>
<td>4,708</td>
<td>225</td>
<td>203</td>
<td>363</td>
<td>5,500</td>
</tr>
<tr>
<td>9.</td>
<td>4,455</td>
<td>213</td>
<td>193</td>
<td>344</td>
<td>5,205</td>
</tr>
<tr>
<td>10.</td>
<td>4,692</td>
<td>225</td>
<td>203</td>
<td>362</td>
<td>5,481</td>
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<tr>
<td>&gt;10.</td>
<td>16,367</td>
<td>784</td>
<td>707</td>
<td>1,262</td>
<td>19,121</td>
</tr>
</tbody>
</table>

## Search Engine Industry

### Search Engine Business Models. I/II

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Subscription/Fee</td>
</tr>
<tr>
<td>2</td>
<td>Direct Placement</td>
</tr>
<tr>
<td>3</td>
<td>Pay for Inclusion (PFI)</td>
</tr>
<tr>
<td>4</td>
<td>Merchandising</td>
</tr>
<tr>
<td>5</td>
<td>Advertisement (PPV/PPC/PPP)</td>
</tr>
<tr>
<td>6</td>
<td>Product Placement</td>
</tr>
<tr>
<td>7</td>
<td>Advertising/Partner Networks</td>
</tr>
<tr>
<td></td>
<td>Search Engine Industry</td>
</tr>
<tr>
<td>---</td>
<td>------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Affiliate Partnerships</td>
</tr>
<tr>
<td>9</td>
<td>Value Added Services (Audio/Video)</td>
</tr>
<tr>
<td>10</td>
<td>User Data</td>
</tr>
<tr>
<td>11</td>
<td>User Generated Content/Web 2.0</td>
</tr>
<tr>
<td>12</td>
<td>Premium Services</td>
</tr>
<tr>
<td>13</td>
<td>Consulting/Research</td>
</tr>
<tr>
<td>14</td>
<td>Licenses/Search Appliances</td>
</tr>
</tbody>
</table>
# Search Engine Industry


<table>
<thead>
<tr>
<th>Year</th>
<th>Google Web</th>
<th>Network Sites</th>
<th>Advertising</th>
<th>Licensing</th>
<th>Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>792,063</td>
<td>628,600</td>
<td>1,420,663</td>
<td>45,271</td>
<td>1,465,934</td>
</tr>
<tr>
<td>2004</td>
<td>1,589,032</td>
<td>1,554,256</td>
<td>3,143,288</td>
<td>45,935</td>
<td>3,189,223</td>
</tr>
<tr>
<td>2005</td>
<td>3,377,060</td>
<td>2,687,942</td>
<td>6,065,002</td>
<td>73,558</td>
<td>6,138,560</td>
</tr>
<tr>
<td>2006</td>
<td>6,332,797</td>
<td>4,159,831</td>
<td>10,492,628</td>
<td>112,289</td>
<td>10,604,917</td>
</tr>
<tr>
<td>2007</td>
<td>10,624,700</td>
<td>5,787,900</td>
<td>16,412,600</td>
<td>181,400</td>
<td>16,594,000</td>
</tr>
<tr>
<td>2008</td>
<td>14,413,800</td>
<td>6,714,000</td>
<td>21,128,500</td>
<td>667,100</td>
<td>21,795,600</td>
</tr>
</tbody>
</table>

# Search Engine Industry


<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Web</td>
<td>54%</td>
<td>50%</td>
<td>55%</td>
<td>60%</td>
<td>64%</td>
<td>66%</td>
</tr>
<tr>
<td>Network Sites</td>
<td>43%</td>
<td>49%</td>
<td>44%</td>
<td>39%</td>
<td>35%</td>
<td>31%</td>
</tr>
<tr>
<td>Advertising Total</td>
<td>97%</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td>97%</td>
</tr>
<tr>
<td>Licensing</td>
<td>3%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>3%</td>
</tr>
</tbody>
</table>

## Search Engine Industry

### Google: Growth Rates per Section, 2003 – 2008

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Web</td>
<td>-</td>
<td>+100.6%</td>
<td>+112.5%</td>
<td>+87.5%</td>
<td>+67.8%</td>
<td>+35.7%</td>
</tr>
<tr>
<td>Network Sites</td>
<td>-</td>
<td>+147.3%</td>
<td>+72.9%</td>
<td>+54.8%</td>
<td>+39.1%</td>
<td>+16.0%</td>
</tr>
<tr>
<td>Advertising</td>
<td>-</td>
<td>+121.3%</td>
<td>+93.0%</td>
<td>+73.0%</td>
<td>+56.4%</td>
<td>+28.7%</td>
</tr>
<tr>
<td>Licensing</td>
<td>-</td>
<td>+1.5%</td>
<td>+60.1%</td>
<td>+52.7%</td>
<td>+61.5%</td>
<td>+267.8%</td>
</tr>
<tr>
<td>Revenues</td>
<td>-</td>
<td>+117.6%</td>
<td>+92.5%</td>
<td>+72.8%</td>
<td>+56.5%</td>
<td>+31.3%</td>
</tr>
</tbody>
</table>

Search Engine Industry
Growth Rates Change vs. Year Ago. comScore. February 2006 (United States)

Source: comScore. Search Query Annual Growth Rates. February 2006, Available:
Search Engine Industry

Search Engine Industry
Growth Rate of Daily Search Queries. iResearch. 2002 to 2010. (China)

We're trying to make Google a place where people live online.

Eric Schmidt, Google CEO

Technological Trends
Search Engine History
Google Inc. 1999

Search the web using Google

Google Search  I'm feeling lucky

More Google!

Copyright ©1999 Google Inc.
Privacy
The Eric Schmidt Story

"We are moving to a Google that knows more about you."

Eric Schmidt,
Chief Executive Officer Google

# Search Engine Industry

## Search Functionality. Google Web Search I/II

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Search/Advanced Search</td>
</tr>
<tr>
<td>2</td>
<td>Spell Checker</td>
</tr>
<tr>
<td>3</td>
<td>Translation</td>
</tr>
<tr>
<td>4</td>
<td>Stock Quotes</td>
</tr>
<tr>
<td>5</td>
<td>Street Maps</td>
</tr>
<tr>
<td>6</td>
<td>Calculator</td>
</tr>
<tr>
<td>7</td>
<td>Currency Conversion</td>
</tr>
<tr>
<td>8</td>
<td>Definitions</td>
</tr>
</tbody>
</table>
Search Engine Industry
Search Functionality. Google Web Search II/II

9  Phone Book
10 Travel Information
11 Cached Links
12 Movie Information
13 Music Information
14 Weather
15 Questions and Answers
16 Search by Number
Google Matrix
Google Privacy Guidelines

“We may share the information submitted under your account among all of our services in order to provide you with a seamless experience and to improve the quality of our services.”

Google Privacy Guidelines

Anatomy of a Business Model
Product Diversification of Google Inc.
Anatomy of a Business Model

Strategic Objectives

Google

Web
Images, News, Products, Blogs, Movies
IGoogle, Toolbar, Notebook, Health, Video, Picasa, Book, Scholar
Blog, Talk, Groups, Orkut, Finance, RSS, Youtube, Book, Scholar
Earth, Maps, Sketchup
Mobile, Local, SMS
Checkout
Chrome, Pack, Android
Summer of Code

Search
Advanced Search
Personalisation, Communication and Social Graph
Mapping
Mobile and Localisation
Payment
Browser, Applications, Phones, Interfaces, Standardisation
Recruitment and Standardisation

Fachhochschule Kaiserslautern – University of Applied Sciences
Anatomy of a Business Model

Implications

Google™

Web
- Images, News, Products, Blogs, Movies
- IGoogle, Toolbar, Notebook, Health, Finance, RSS, Docs, Cal

Blog, Talk, Groups, Orkut, Video, Picasa, Book, Scholar

Earth, Maps, Sketchup

Mobile, Local, SMS

Checkout

Chrome, Pack, Android

Summer of Code

Profile, Search History
- Interests, Habits, Shopping, Affiliations
- Profile, Surf History, Health, Finance

Friends, Social Graph, Communication, Conversation, Interests

Localisation

Mobile, Social, Local, Ubiquitous

Payment, Ecommerce, Finances, E-Bank

Surf History, Desktop Search, Standardization

Recruitment and Standardization

Web Images, News, Products, Blogs, Movies
- IGoogle, Toolbar, Notebook, Health, Finance, RSS, Docs, Cal

Blog, Talk, Groups, Orkut, Video, Picasa, Book, Scholar

Earth, Maps, Sketchup

Mobile, Local, SMS

Checkout

Chrome, Pack, Android

Summer of Code

Profile, Search History
- Interests, Habits, Shopping, Affiliations
- Profile, Surf History, Health, Finance

Friends, Social Graph, Communication, Conversation, Interests

Localisation

Mobile, Social, Local, Ubiquitous

Payment, Ecommerce, Finances, E-Bank

Surf History, Desktop Search, Standardization

Recruitment and Standardization
Vision of Search
Privacy vs. Anonymity

Vision of Search

Unanswered Questions: Data, Social, Politics, and Law.

1. Data Ownership. MySpace or Yourspace?
2. Data Visibility. Privacy / Youth Protection
3. Data Aggregation. Who can link?
4. Data Access. Who can change and delete?
5. Data Expiration. Forgetting and Forgiving.
6. Data Protection. Who guards and mediates?
7. Who controls and monitors?
8. Who rules and governs?
Vision of Search
What Would a Perfect Search Engine Look Like?

“It would be the mind of God. It would know exactly what you want and give you back exactly what you need.”

Larry Page
Google Founder

End
Professor Hendrik Speck

contact (at) hendrikspeck [dot] com

University of Applied Sciences Kaiserslautern
Information Architecture Lab
Amerikastrasse 1
66482 Zweibrücken

Tel: +49 6332 914 360
Skype: hendrikspeck
Conclusion

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