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University of Applied Sciences Kaiserslautern

# 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.

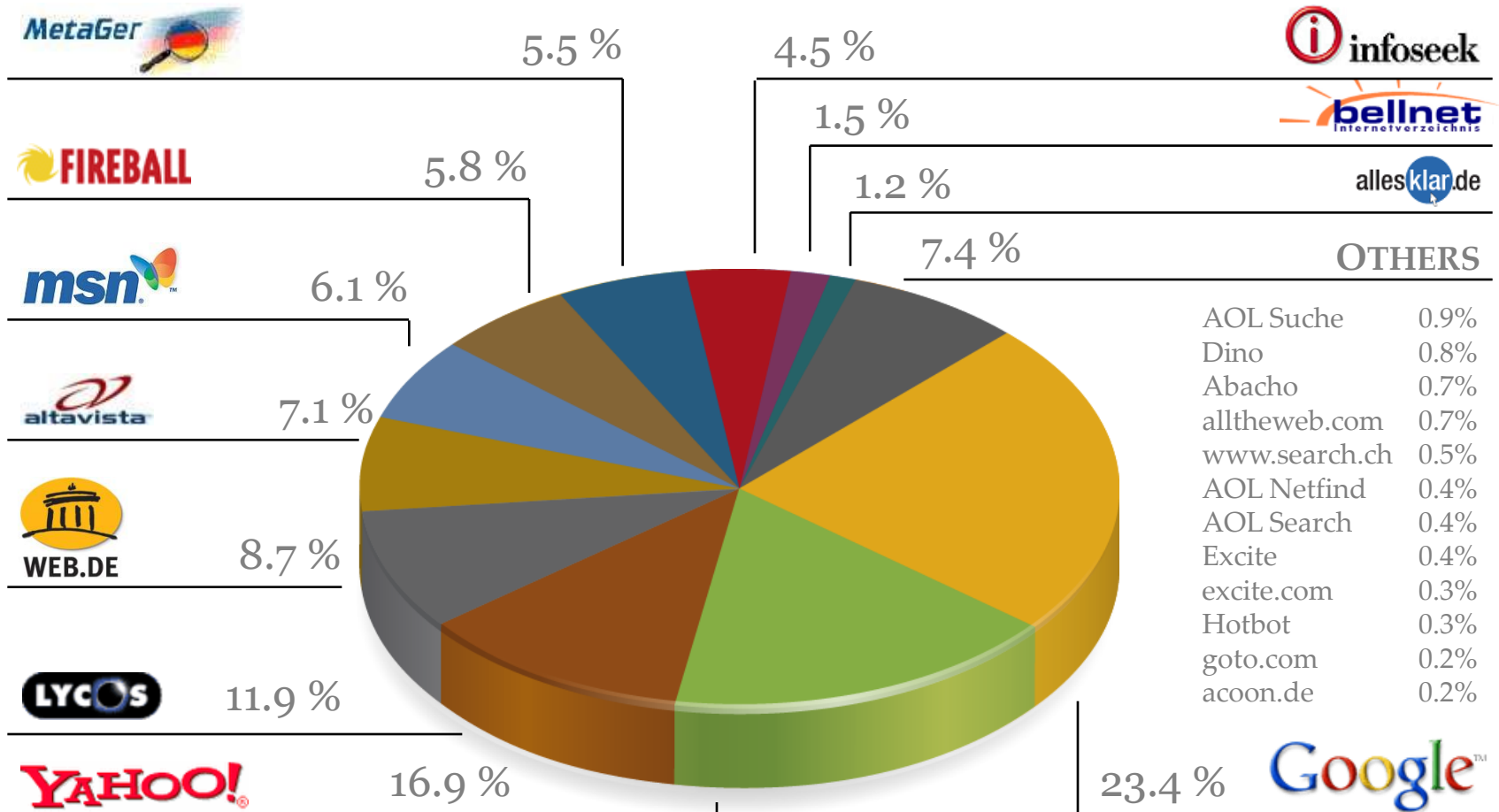


# Search Engine Markets



# Search Engine Market

WebHits. July 2001 (Germany)

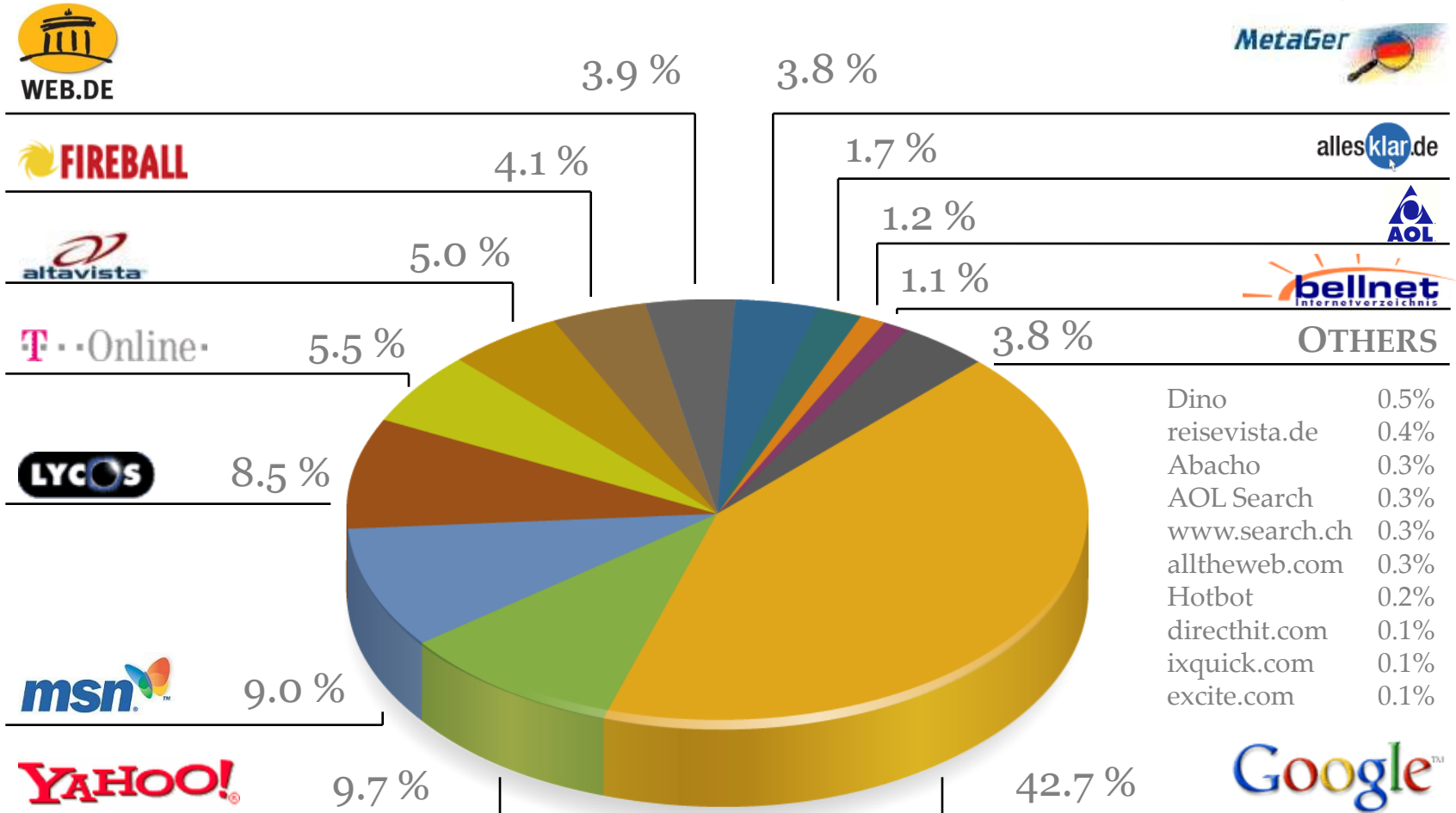


Source: WebHits.de. *Web Barometer*. July 2001, Available: <http://www.webhits.de/deutsch/webstats.html>



# Search Engine Market

WebHits. February 2002 (Germany)

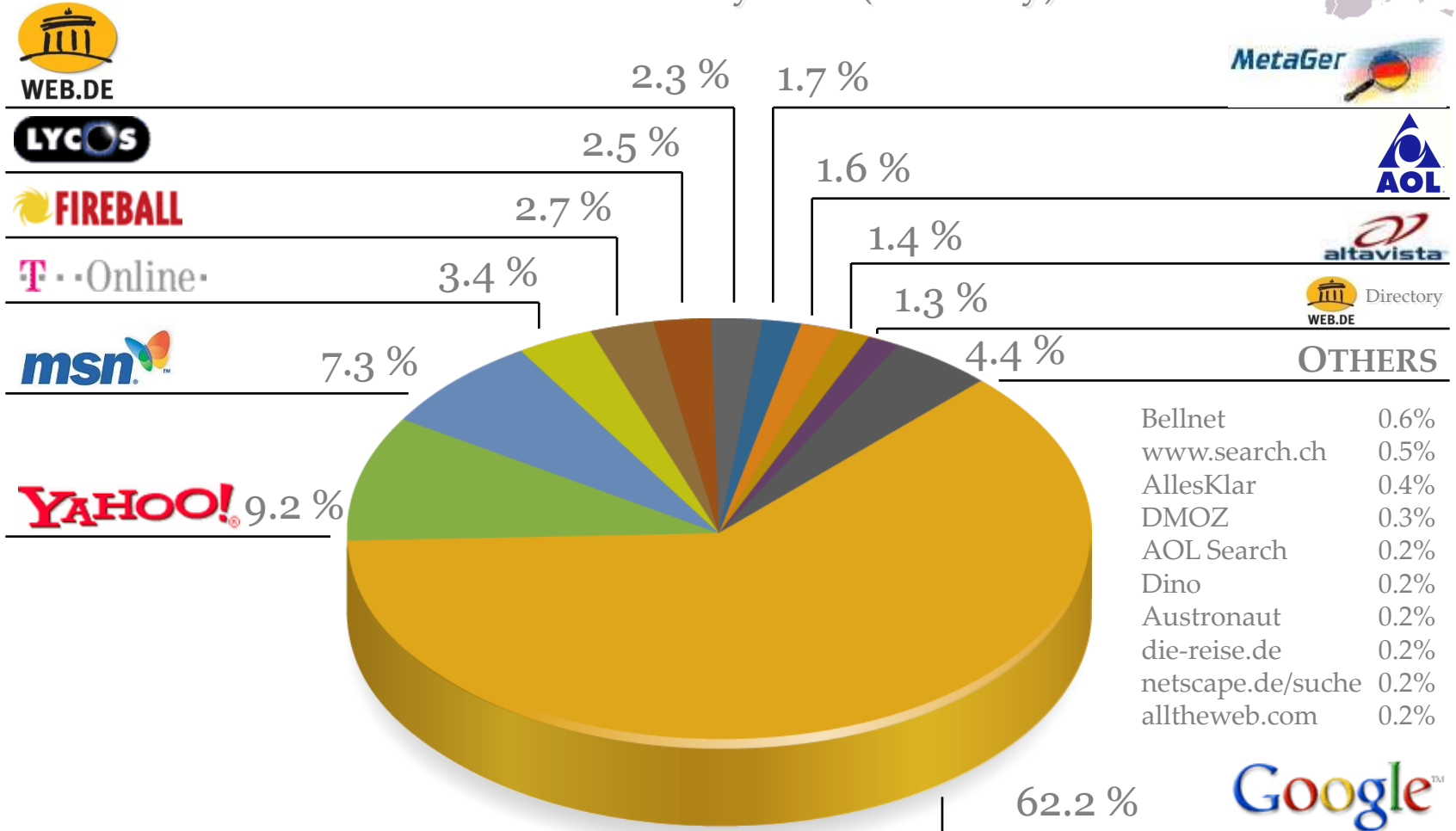


Source: WebHits.de. *Web Barometer*. February 2002, Available: <http://www.webhits.de/deutsch/webstats.html>



# Search Engine Market

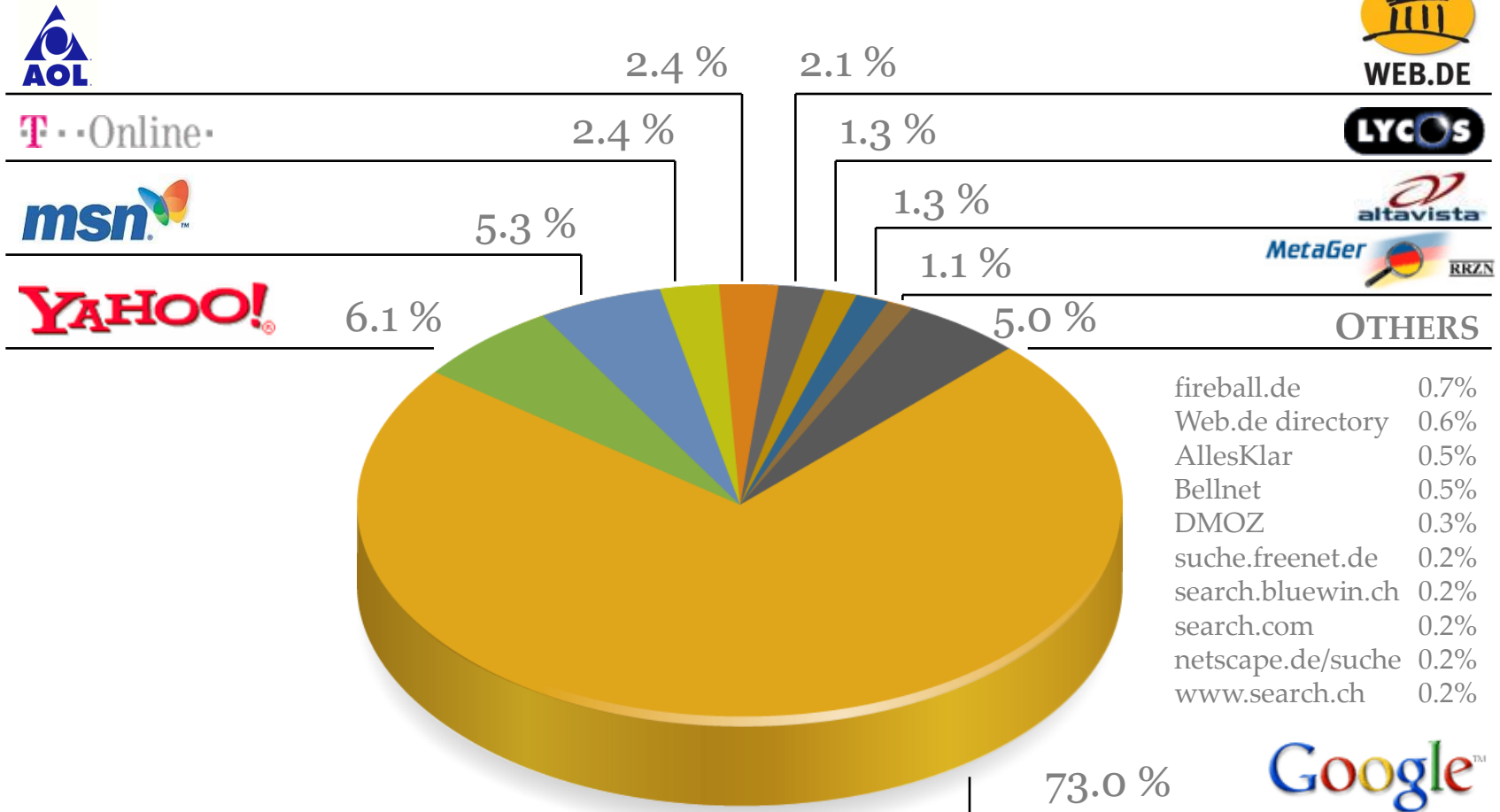
WebHits. February 2003 (Germany)



Source: WebHits.de. *Web Barometer*. February 2003, Available: <http://www.webhits.de/deutsch/webstats.html>

# Search Engine Market

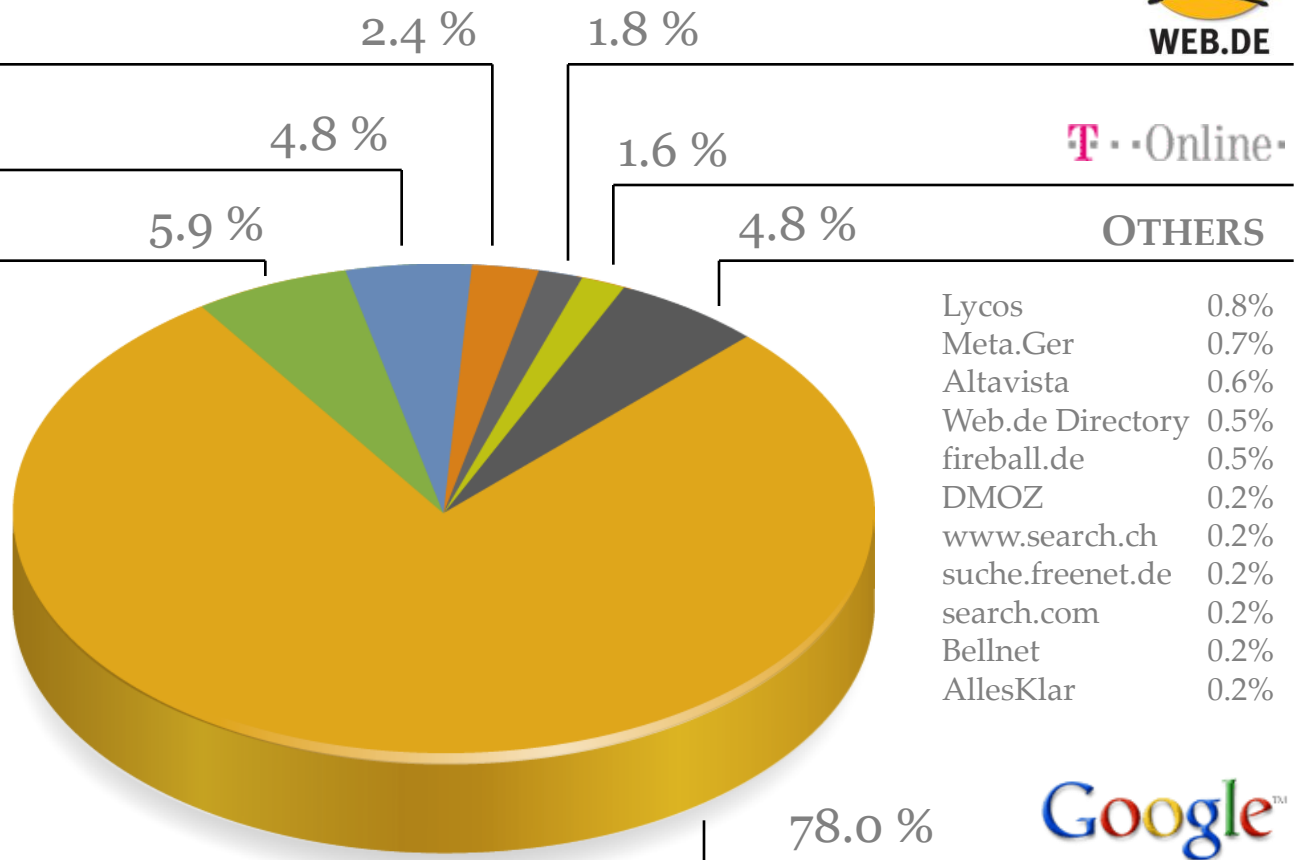
WebHits. February 2004 (Germany)



Source: WebHits.de. *Web Barometer*. February 2004, Available: <http://www.webhits.de/deutsch/webstats.html>

# Search Engine Market

WebHits. February 2005 (Germany)

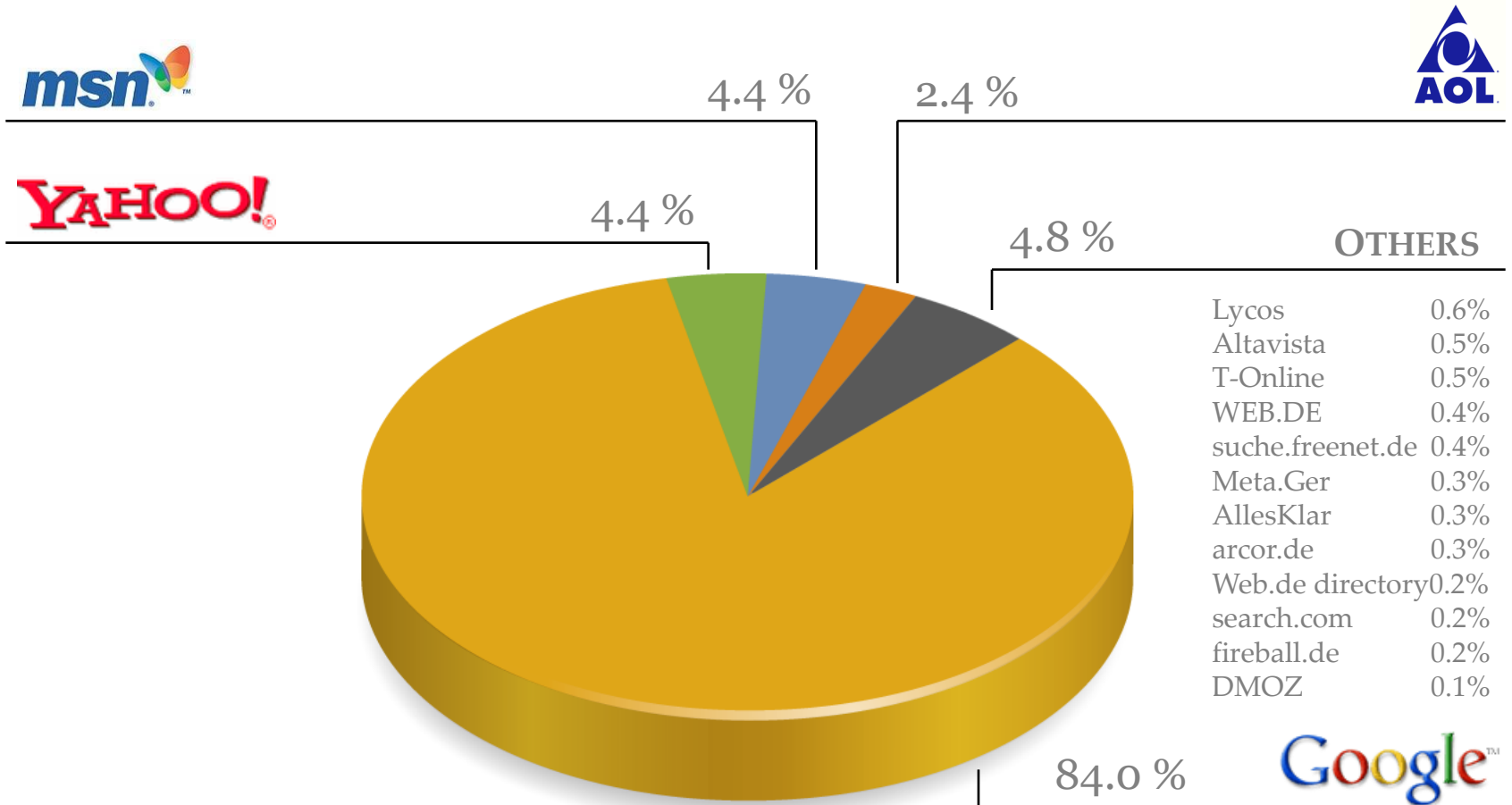


Source: WebHits.de. *Web Barometer*. February 2005, Available: <http://www.webhits.de/deutsch/webstats.html>



# Search Engine Market

WebHits. March 2006 (Germany)

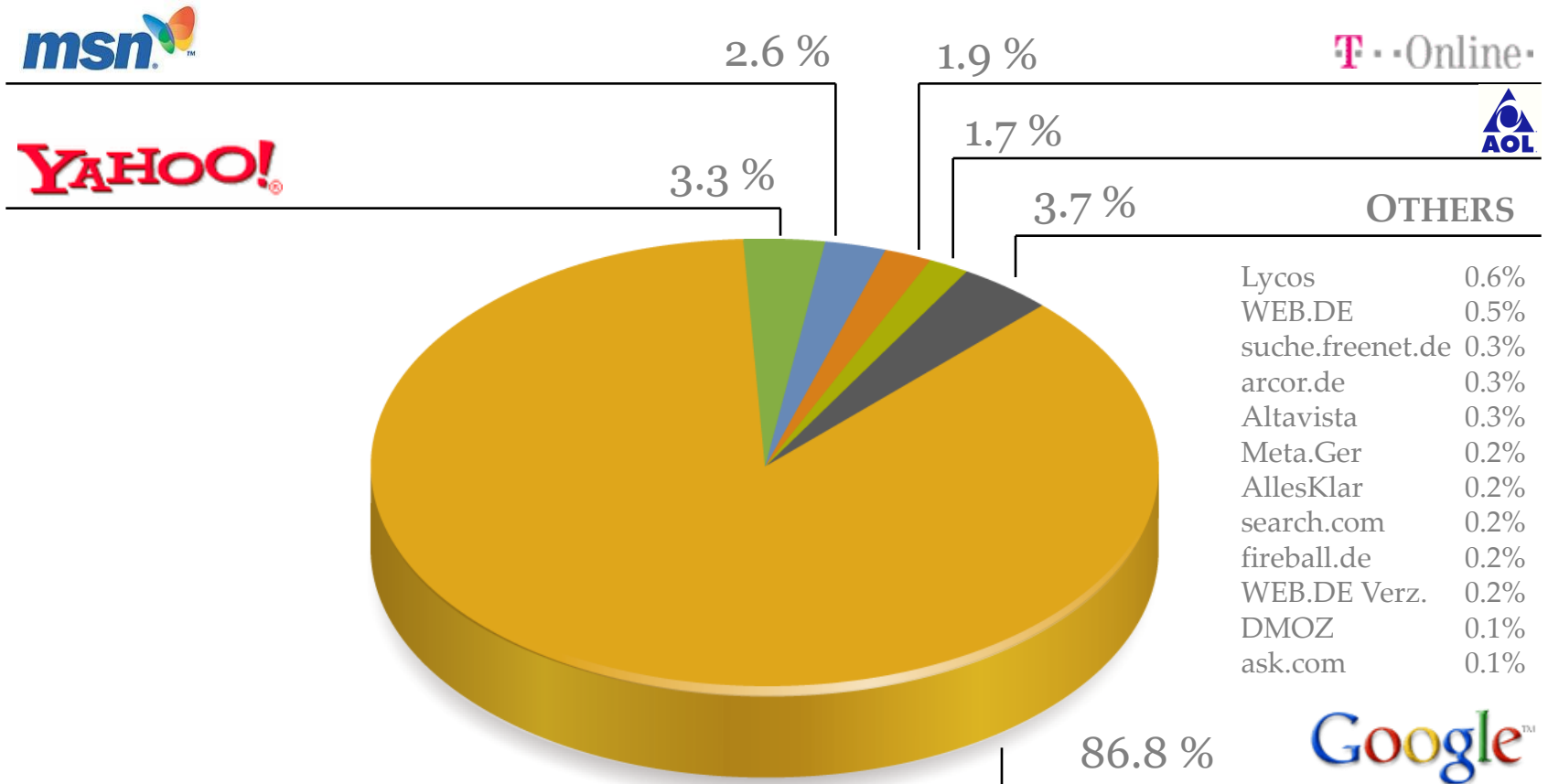


Source: WebHits.de. *Web Barometer*. March 2006, Available: <http://www.webhits.de/deutsch/webstats.html>



# Search Engine Market

WebHits. February 2007 (Germany)

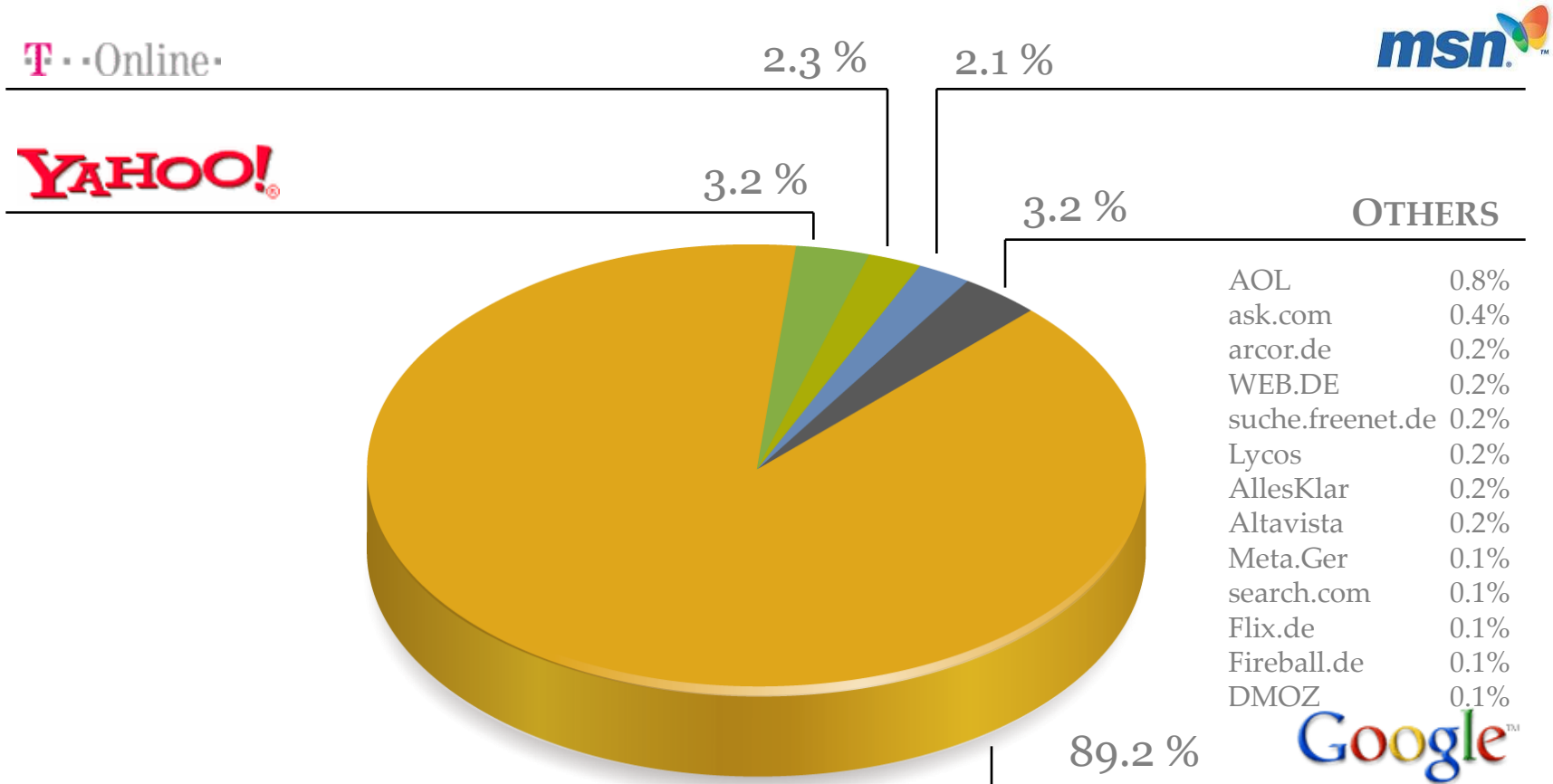


Source: WebHits.de. *Web Barometer*. February 2007, Available: <http://www.webhits.de/deutsch/webstats.html>



# Search Engine Market

WebHits. March 2008 (Germany)



Source: WebHits.de. *Web Barometer*. March 2008, Available: <http://www.webhits.de/deutsch/webstats.html>

# Search Engine Market

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



	Google™	YAHOO!®	msn.™	Others	Total
1.	36.20%	1.73%	1.56%	2.79%	42.29%
2.	10.20%	0.49%	0.44%	0.79%	11.92%
3.	7.22%	0.35%	0.31%	0.56%	8.44%
4.	5.15%	0.25%	0.22%	0.40%	6.02%
5.	4.15%	0.20%	0.18%	0.32%	4.85%
6.	3.41%	0.16%	0.15%	0.26%	3.98%
7.	2.88%	0.14%	0.12%	0.22%	3.37%
8.	2.55%	0.12%	0.11%	0.20%	2.98%
9.	2.41%	0.12%	0.10%	0.19%	2.82%
10.	2.54%	0.12%	0.11%	0.20%	2.97%
>10.	8.87%	0.42%	0.38%	0.68%	10.36%

Source: AOL Research. *500k User Queries Sampled Over 3 Months*. Available: <http://research.aol.com/pmwiki/pmwiki.php>

# Search Engine Market

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



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

Source: AOL Research. *500k User Queries Sampled Over 3 Months*. Available: <http://research.aol.com/pmwiki/pmwiki.php>

# Search Engine Industry

## Search Engine Business Models. I/II

- 1 Subscription/Fee
- 2 Direct Placement
- 3 Pay for Inclusion (PFI)
- 4 Merchandising
- 5 Advertisement (PPV/PPC/PPP)
- 6 Product Placement
- 7 Advertising/Partner Networks

# Search Engine Industry

## Search Engine Business Models. II/II

- 8** Affiliate Partnerships
- 9** Value Added Services (Audio/Video)
- 10** User Data
- 11** User Generated Content/Web 2.0
- 12** Premium Services
- 13** Consulting/Research
- 14** Licenses/Search Appliances

# Search Engine Industry

Google. Sources of Revenue in Thousand USD. 2003 – 2008.

	2003	2004	2005	2006	2007	2008
Google Web	792,063	1,589,032	3,377,060	6,332,797	10,624,700	14,413,800
Network Sites	628,600	1,554,256	2,687,942	4,159,831	5,787,900	6,714,00
Advertising	1,420,663	3,143,288	6,065,002	10,492,628	16,412,600	21,128,500
Licensing	45,271	45,935	73,558	112,289	181,400	667,100
Revenues	1,465,934	3,189,223	6,138,560	10,604,917	16,594,000	21,795,600

Source: Google. *Annual Report 2005*. United States Securities and Exchange Commission. March 16, 2006, Form 10-K, Available: [http://investor.google.com/pdf/2005\\_Google\\_AnnualReport.pdf](http://investor.google.com/pdf/2005_Google_AnnualReport.pdf) and Google. *Annual Report 2006*. United States Securities and Exchange Commission. March 1, 2007, Form 10-K, Available: [http://investor.google.com/pdf/2006\\_Google\\_AnnualReport.pdf](http://investor.google.com/pdf/2006_Google_AnnualReport.pdf), Google. *Annual Report 2007*. United States Securities and Exchange Commission. February 15, 2008. Available: [http://investor.google.com/documents/2007\\_Google\\_AnnualReport.html](http://investor.google.com/documents/2007_Google_AnnualReport.html) and Google. *Annual Report 2008*. United States Securities and Exchange Commission. February 13, 2009. Available: [http://investor.google.com/documents/2008\\_google\\_annual\\_report.html](http://investor.google.com/documents/2008_google_annual_report.html)



# Search Engine Industry

Google. Sources of Revenue in Percent. 2003 – 2008.

	2003	2004	2005	2006	2007	2008
Google Web	54%	50%	55%	60%	64%	66%
Network Sites	43%	49%	44%	39%	35%	31%
Advertising Total	97%	99%	99%	99%	99%	97%
Licensing	3%	1%	1%	1%	1%	3%

Source: Google. *Annual Report 2005*. United States Securities and Exchange Commission. March 16, 2006, Form 10-K, Available: [http://investor.google.com/pdf/2005\\_Google\\_AnnualReport.pdf](http://investor.google.com/pdf/2005_Google_AnnualReport.pdf) and Google. *Annual Report 2006*. United States Securities and Exchange Commission. March 1, 2007, Form 10-K, Available: [http://investor.google.com/pdf/2006\\_Google\\_AnnualReport.pdf](http://investor.google.com/pdf/2006_Google_AnnualReport.pdf), Google. *Annual Report 2007*. United States Securities and Exchange Commission. February 15, 2008. Available: [http://investor.google.com/documents/2007\\_Google\\_AnnualReport.html](http://investor.google.com/documents/2007_Google_AnnualReport.html) and Google. *Annual Report 2008*. United States Securities and Exchange Commission. February 13, 2009. Available: [http://investor.google.com/documents/2008\\_google\\_annual\\_report.html](http://investor.google.com/documents/2008_google_annual_report.html)

# Search Engine Industry

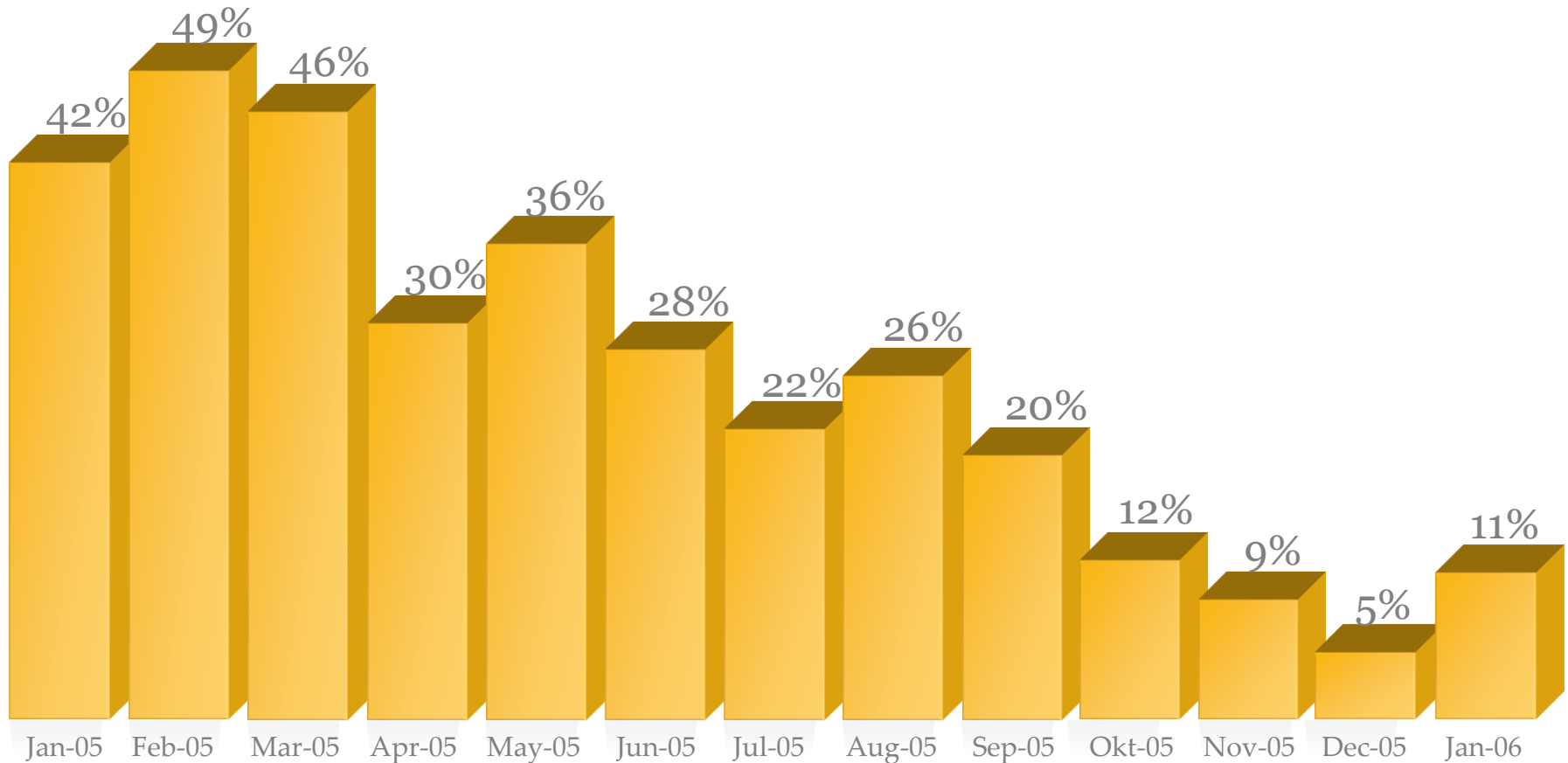
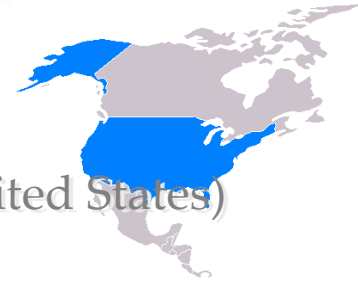
Google. Growth Rates per Section. 2003 – 2008.

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

Source: Google. *Annual Report 2005*. United States Securities and Exchange Commission. March 16, 2006, Form 10-K, Available: [http://investor.google.com/pdf/2005\\_Google\\_AnnualReport.pdf](http://investor.google.com/pdf/2005_Google_AnnualReport.pdf) and Google. *Annual Report 2006*. United States Securities and Exchange Commission. March 1, 2007, Form 10-K, Available: [http://investor.google.com/pdf/2006\\_Google\\_AnnualReport.pdf](http://investor.google.com/pdf/2006_Google_AnnualReport.pdf), Google. *Annual Report 2007*. United States Securities and Exchange Commission. February 15, 2008. Available: [http://investor.google.com/documents/2007\\_Google\\_AnnualReport.html](http://investor.google.com/documents/2007_Google_AnnualReport.html) and Google. *Annual Report 2008*. United States Securities and Exchange Commission. February 13, 2009. Available: [http://investor.google.com/documents/2008\\_google\\_annual\\_report.html](http://investor.google.com/documents/2008_google_annual_report.html)

# Search Engine Industry

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

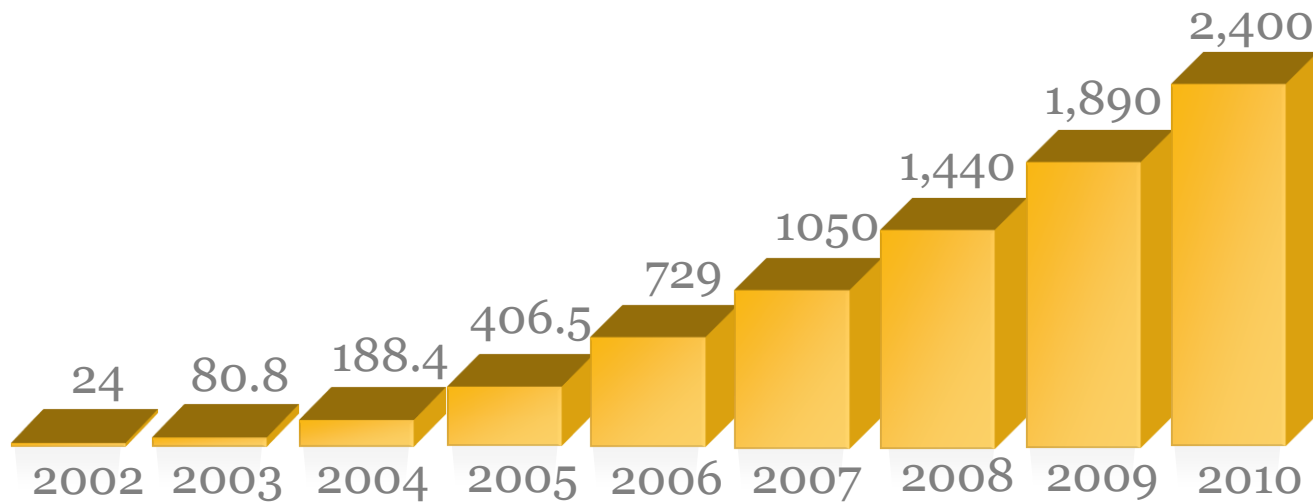


Source: comScore. *Search Query Annual Growth Rates*. February 2006, Available:

<http://www.comscore.com/cms/displaycontent.asp?id=764&suffix=pdf>

# Search Engine Industry

Daily Search Queries in China in Million/Day. iResearch. 2002 to 2010.

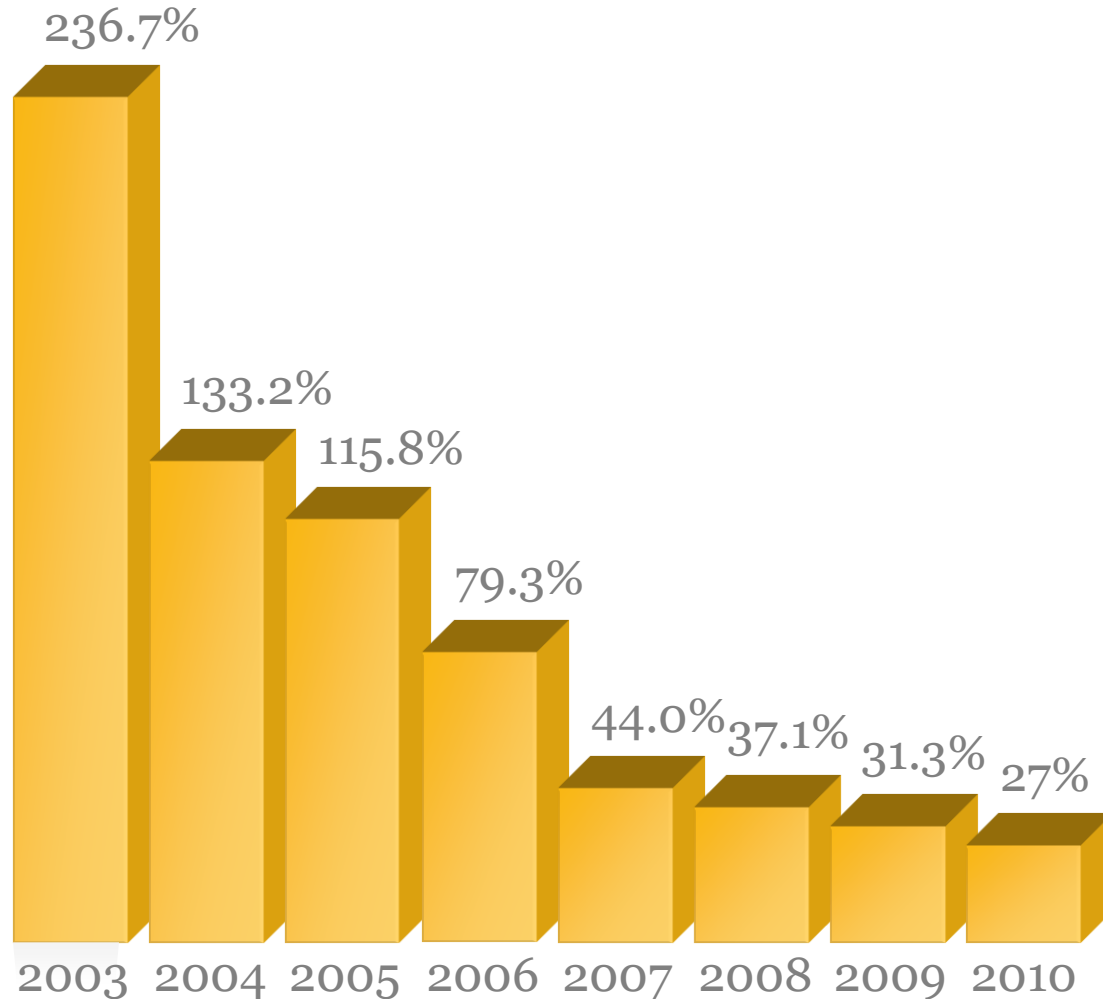


Source: iResearch. *China Internet Search Market Report*. 2005. Available: <http://english.iresearch.com.cn/downloadfile.asp?id=404>

# Search Engine Industry



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



Source: iResearch. *China Internet Search Market Report*. 2005. Available: <http://english.iresearch.com.cn/downloadfile.asp?id=404>

# Googleopoly

„in Google we trust“

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

Eric Schmidt, Google CEO

Source: Schmidt, Eric. *Last Lecture Series*. Stanford Graduate School of Business. April 13, 2004, Video. RealAudio. 21:33min,  
Available: <http://www.gsb.stanford.edu/multimedia/Lectures/LastLecture/schmidt.ram>

# Technological Trends

# Search Engine History

Google Inc. 1999





# Privacy

## The Eric Schmidt Story

“

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

”

Eric Schmidt,  
Chief Executive Officer Google

Source: Hansell, Saul. “Google's Chef Speaks, but Not Its Finance Officer.” *New York Times*. February 10, 2005, Available:  
<http://www.nytimes.com/2005/02/10/technology/10google.html>

# Search Engine Industry

Search Functionality. Google Web Search I/II

- 1 Search/Advanced Search
- 2 Spell Checker
- 3 Translation
- 4 Stock Quotes
- 5 Street Maps
- 6 Calculator
- 7 Currency Conversion
- 8 Definitions

# 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

Source: Google. *Google Privacy Policy. Information Sharing*. Google. 2008. Available:

<http://www.google.com/intl/en/mobile/xhtml/privacy2.html> or Google. *Privacy Center. Archive: Privacy Policy. Version 07/01/2004*.

Google. 2004. Available: [http://www.google.com/privacy\\_archive\\_2004.html](http://www.google.com/privacy_archive_2004.html)

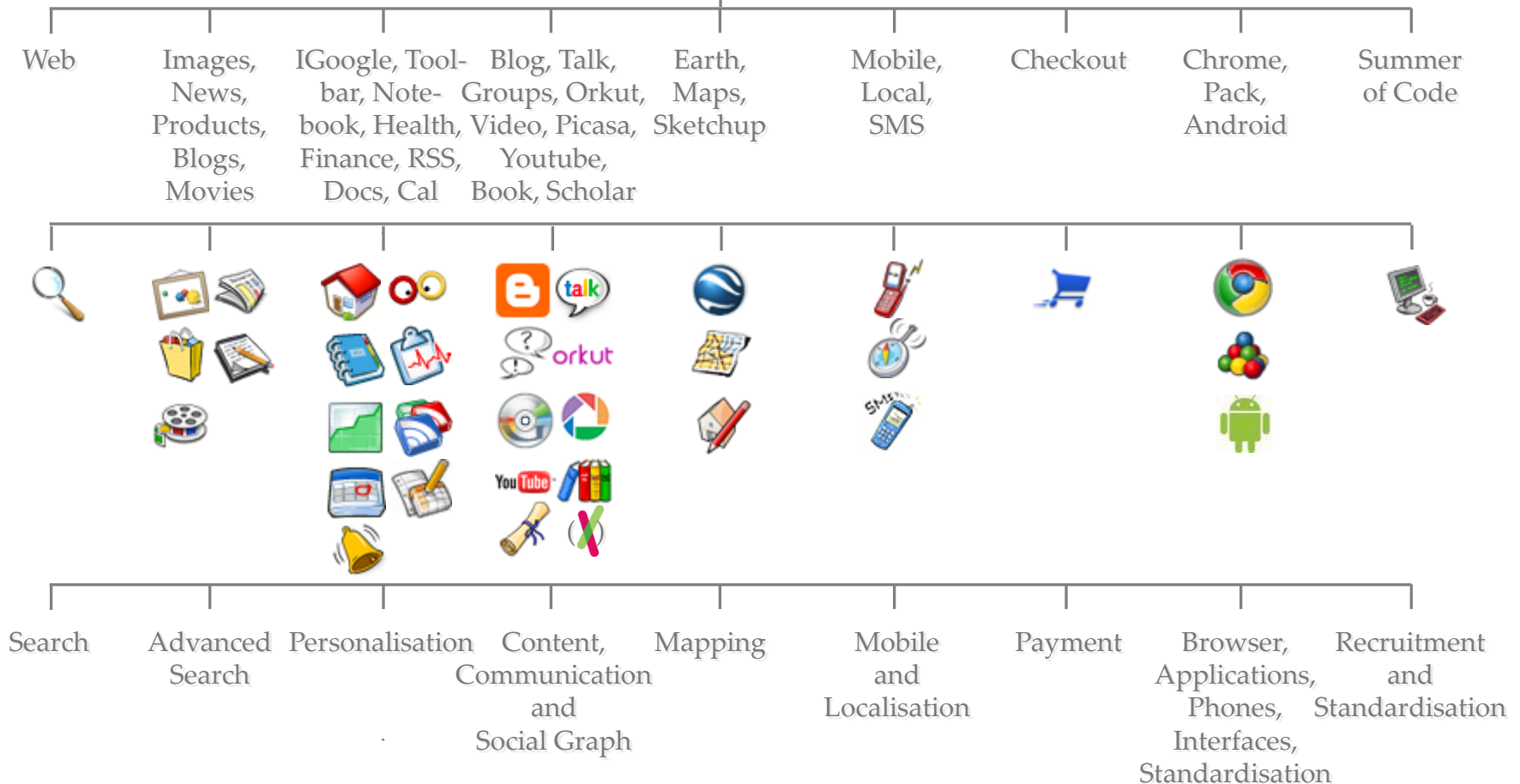
# Anatomy of a Business Model

## Product Diversification of Google Inc.



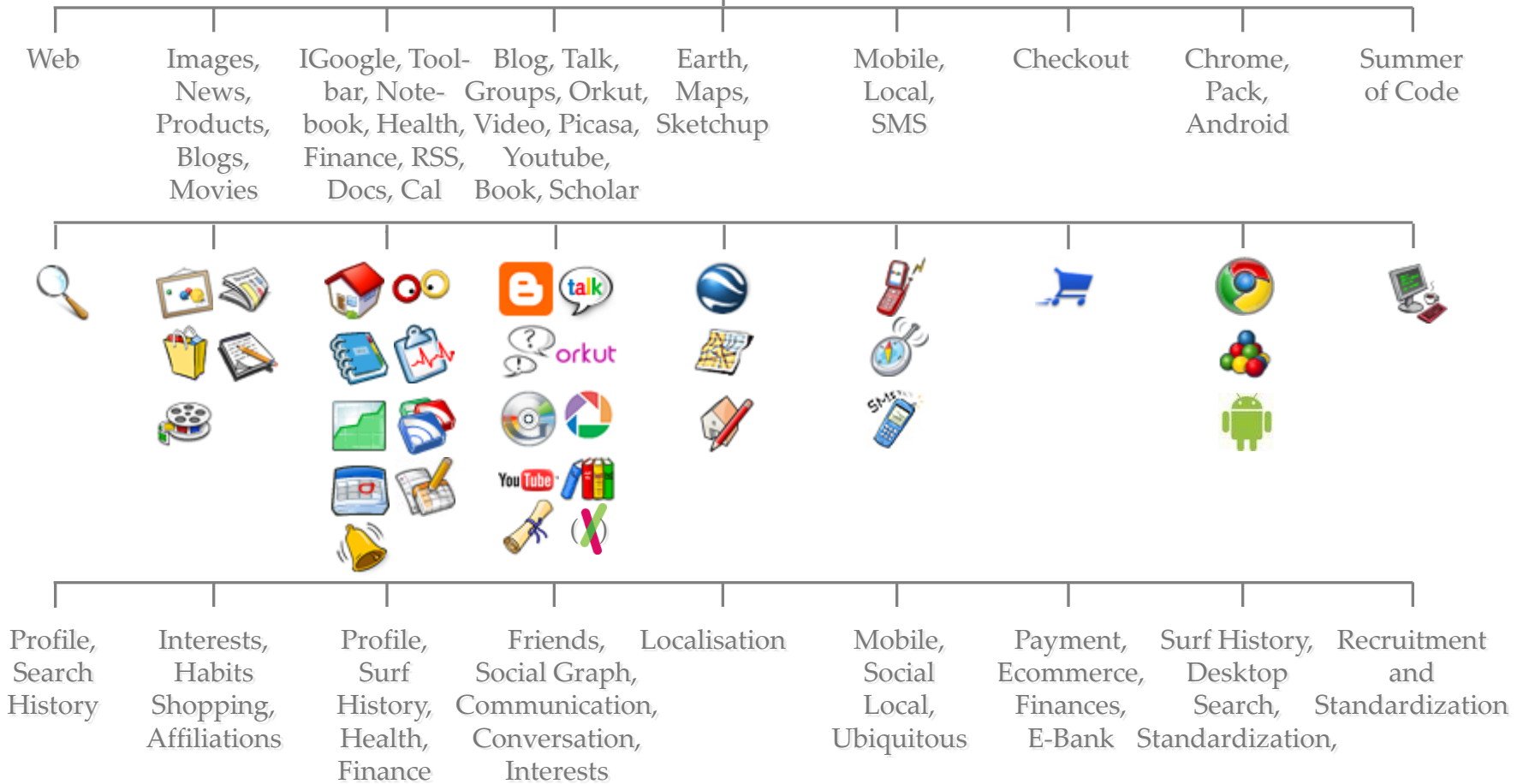
# Anatomy of a Business Model

Strategic Objectives



# Anatomy of a Business Model

Implications  
Google™



# Vision of Search

## Privacy vs. Anonymity



Source: Siegel, Randy. "Google 2084. What Google's homepage may look like in 2084." *New York Times*. October 10, 2005. Available: <http://www.nytimes.com/imagepages/2005/10/10/opinion/1010opart.html>



# 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

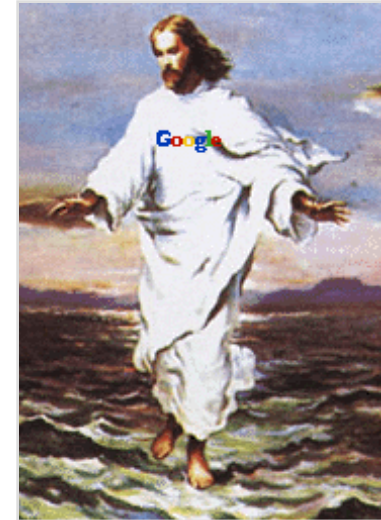
What Would a Perfect Search Engine Look Like?

“

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

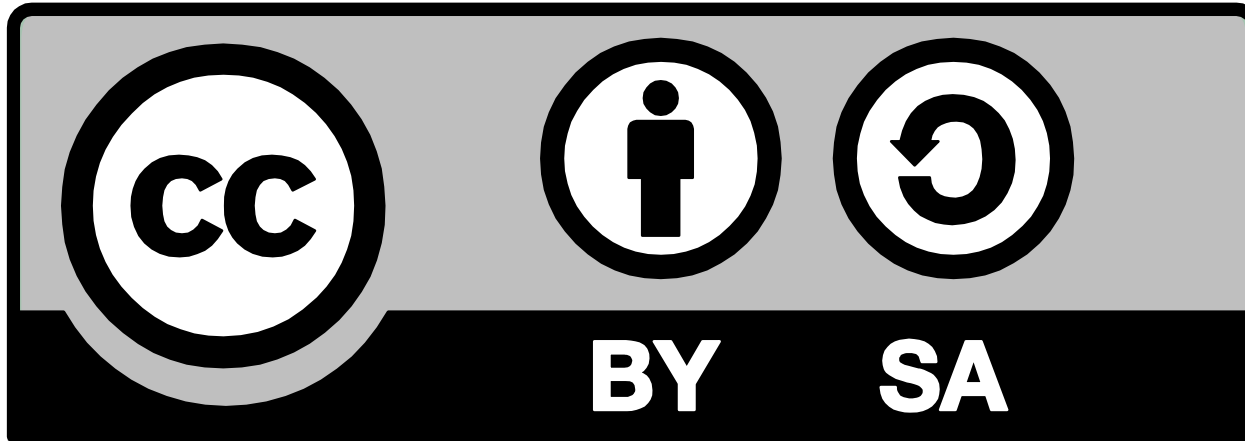
”

Larry Page  
Google Founder



Source: Pontin, Jason. "Dinner with the mind behind the mind of God." *Red Herring*. July 16, 2002, Available: <http://www.redherring.com/insider/2002/0716/bait071602.html>

End



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contact (at) hendrikspeck [dot] com

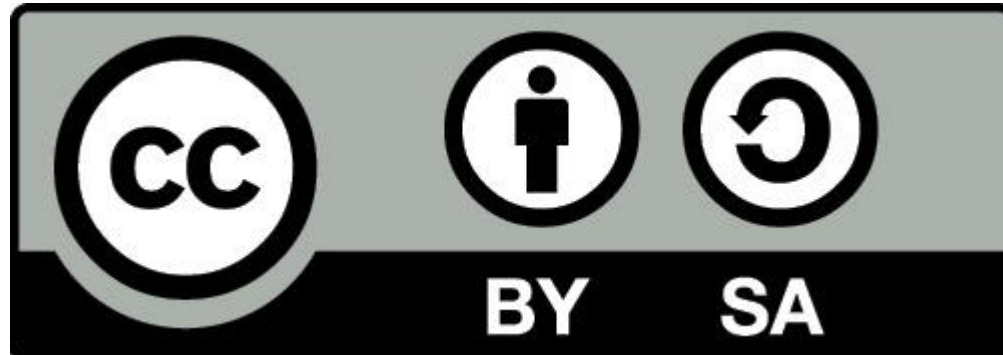
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[Information Architecture Lab](#)

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# Conclusion

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