What is Web 2.0? Tim O'Reilly

O'Reilly Media, Inc. www.oreilly.com

> W3C May 8, 2007

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Let's Get One Thing Out of the Way

Web 1.0 = Web 2.0

It was Web 1.5 that got it wrong :-)









• How many of you use Linux?



- How many of you use Linux?
- How many of you use Google?



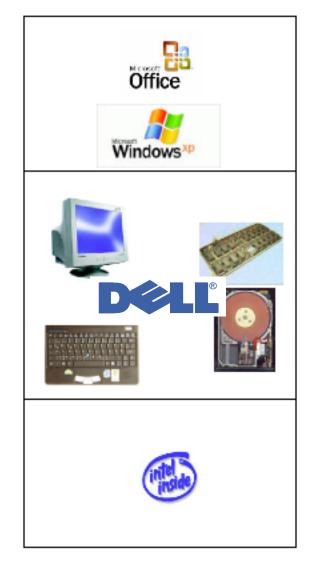
- How many of you use Linux?
- How many of you use Google?
- What's being missed here?







Desktop Application Stack



Proprietary Software (Control by API) Network Effects Drive Lock-In

System Assembled from Standardized Commodity Components

> Hardware Lock In By a Single-Source Supplier





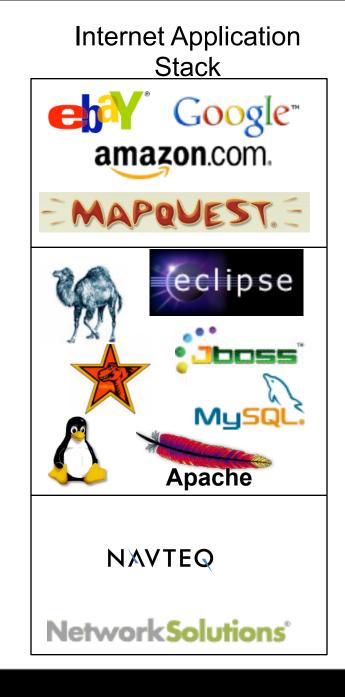
Free and Open Source Software

Cheap Commodity PCs



Intel Inside





Proprietary Software As a Service (Network Effects Drive Lock-In)

Integration of Commodity Components





Subsystem-Level Lock In

Understanding Open Source

- Focus on software licensing turned out to be a red herring
- What mattered more:
 - Modular architecture allows cooperating programs
 - Internet-enabled collaborative development
 - Users as co-contributors
 - -Viral distribution and marketing

Web companies leverage those same principles in new ways. The open source "alpha geeks" showed the way.



What Do These Apps Have in Common?





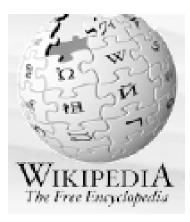














What Do These Apps Have in Common?

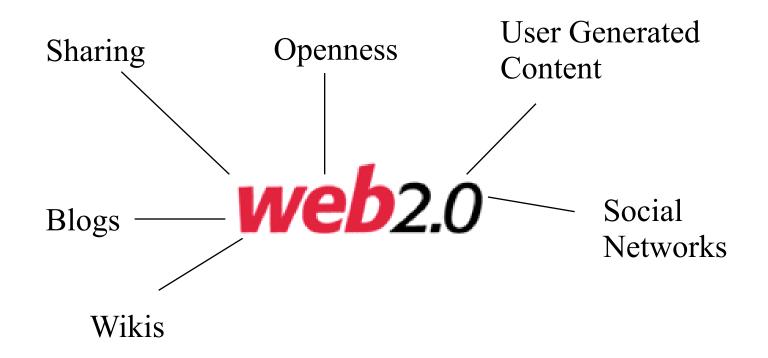
- The Internet, not the PC, is their platform
- Built on top of open source software, but not themselves open source
- Services, not packaged applications
- Data aggregators, not just software
- Network effects from user contributions are key to their market dominance

"The future is here. It's just not evenly distributed yet."

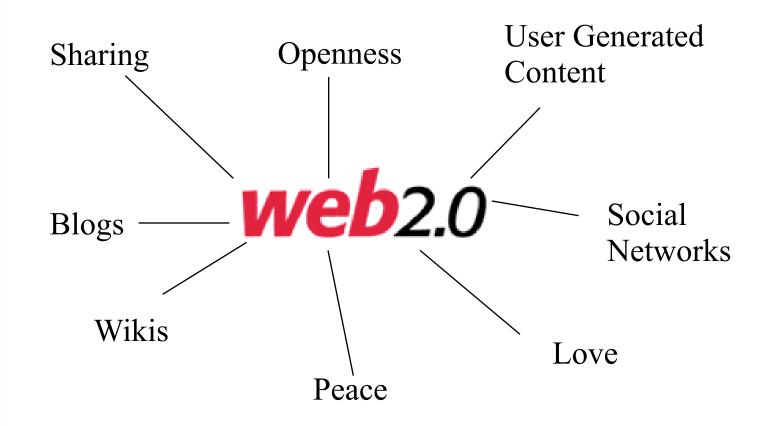
















"The Law of Conservation of Attractive Profits"

"When attractive profits disappear at one stage in the value chain because a product becomes modular and commoditized, the opportunity to earn attractive profits with proprietary products will usually emerge at an adjacent stage."

-- Clayton Christensen

Author of The Innovator's Solution

In Harvard Business Review, February 2004



What Really Distinguishes Web 2.0

Systems that harness network effects to get better the more people use them.



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craigslist factsheet
job boards compared
list in space
craigslist T-shirts
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download firefox

system status

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community 6019) activities lost+found artists musicians childcare news+views general politics groups rideshare pets volunteers events classes

personals (5225) strictly platonic women seek women women seeking men men seeking women men seeking men misc romance casual encounters missed connections rants and raves

discussion forums

arts	housing	politic
autos	jobs	psych
beauty	kink	queer
comp	legal	rato
crafts	loc pol	science
ecology	m4m	selfemp
educ	money	shop
feedback	music	spirit
film	night	sports
filness	npolngo	testing
fodt	open	transg
food	outdoor	transit
gaming	over 50	travel
garden	parent	tv
haiku	pero	v4v

boston "

housing (1157) apts / housing rooms / shared sublets / temporary housing wanted housing swap vacation rentals parking / storage office / commercial real estate for sale

for sale (57781) barter auto parts bikes baby+kids boats cars+trucks books cds/dvd/vhs clothes+acc free furniture collectibles general computer jewelry electronics sporting garage sale tickets household tools motorcycles wanted music instr

services (647) computer automotive creative household erotic labor/move

event skill'd trade financial real estate legal sm biz ads lessons therapeutic

jobs (24674) accounting / finance admin / office arch / engineering art / media / design biotech / science business / mgmt customer service education / teaching government human resources internet engineering legal / paralegal marketing / pr / ad medical / health nonprofit sector retail / food / hosp sales / biz dev skilled trade / craft software / qa / dba systems / network'g technical support tv / film / video web / info design writing / editing [ETC] [part time]

gigs (1923) computer event creative labor crew writing domestic talent adult

CONTRACT (10010)

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allentown	Ritle rock	stockton	capetown
anchorage	los angeles	syracuse	jo"burg
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asheville	madison	tampa bay	europe
atlanta.	maine	toledo	amsterdam
austin	medford	tucson	athens
bakersfield	memphis	tulsa	barcelona.
baltimore	miami	ventura.co	berlin
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birminghem	mobile	west paim	florence
boise	modesto	vest virginia	frankfurt
boston	montana.	vichita.	geneva.
buffalo	monterey	wyoming	madrid
burlington	montgomery		milan
chambana	nashville	canada	moscow
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chattanooga	newjersey	helifex	prague
chicago	new orleans	hemilton	rome
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dayton	pelm springs	victoria	beijing
delaware	pensacola.	vinnipeg	chennai
denver	philadelphia		delhi
desmoines	phoenix	americae	hyderabad
detroit	pittsburgh	buenos aires	hongkong
el paso	portland	lime.	istanbul
eugene	providence	mexico city	jerusalem
fort myers	puerto rico	rio de janeiro	manila.
fresno	raleigh	costarica	mumbai
gainesville	redding	santiago	osaka
grand rapids	reno	são paulo	secul
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harrisburg	rochester		singapore
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Top Sites on the Internet - 2005

Rank	Company	# Employees
1	Yahoo	9,000
2	TimeWarner	85,000
3	Microsoft	61,000
4	Google	5,000
5	eBay	11,000
6	News Corp	38,000
7	Craigslist	18
8	Disney	129,000
9	BBC	60,000
10	IAC	26,000





Advertising Programs - Business Solutions - About Google

©2006 Google

Some Lessons from Google

- Harnesses users without them even knowing it
- Minimalist design
- Search relentlessly focused on relevance
- Advertising serves the user unobtrusive
- Top ad position doesn't go to highest bidder but to *bid times expected click-through-rate*
- This requires real-time monitoring and feedback loops

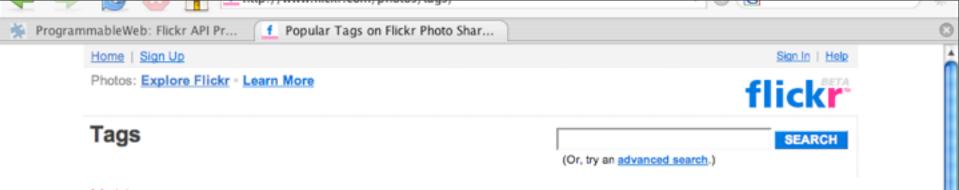


Web 2.0 = "Bionic Software"





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Hot tags

In the last 24 hours pillowfightclub, sexta, happyfurryfriday, californiapoppy, sextaposer, barrybonds furryfriday, photoaday, s5200, april62006, mobilife, creative1, creative2, contextwatcher, featheryfriday, colorweek, parallels, cellnetwork, inca, cellsignal63

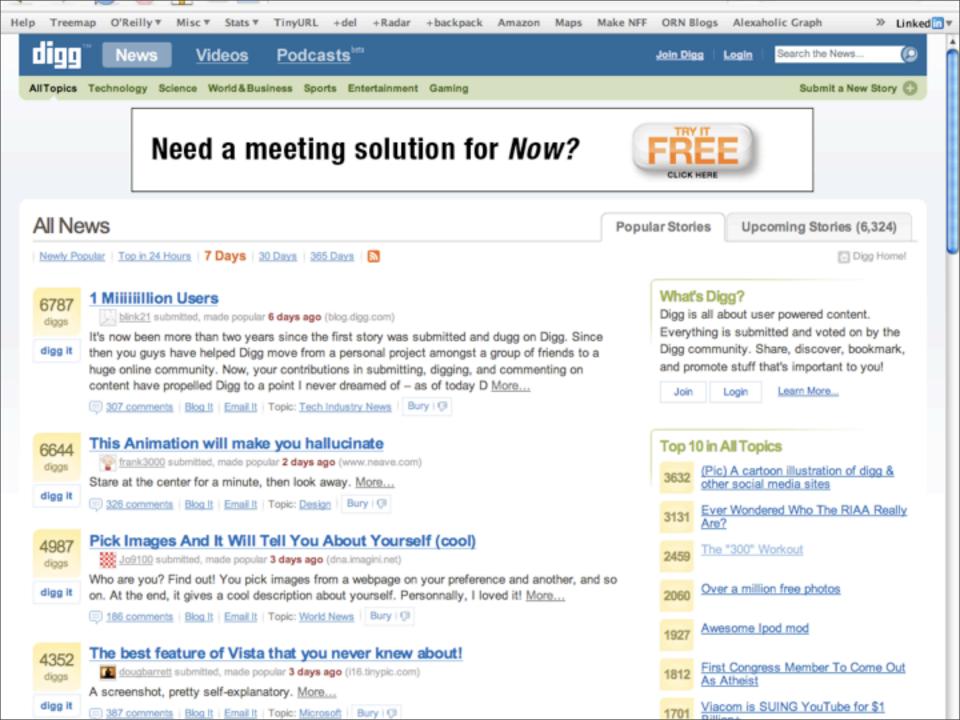
Over the last week

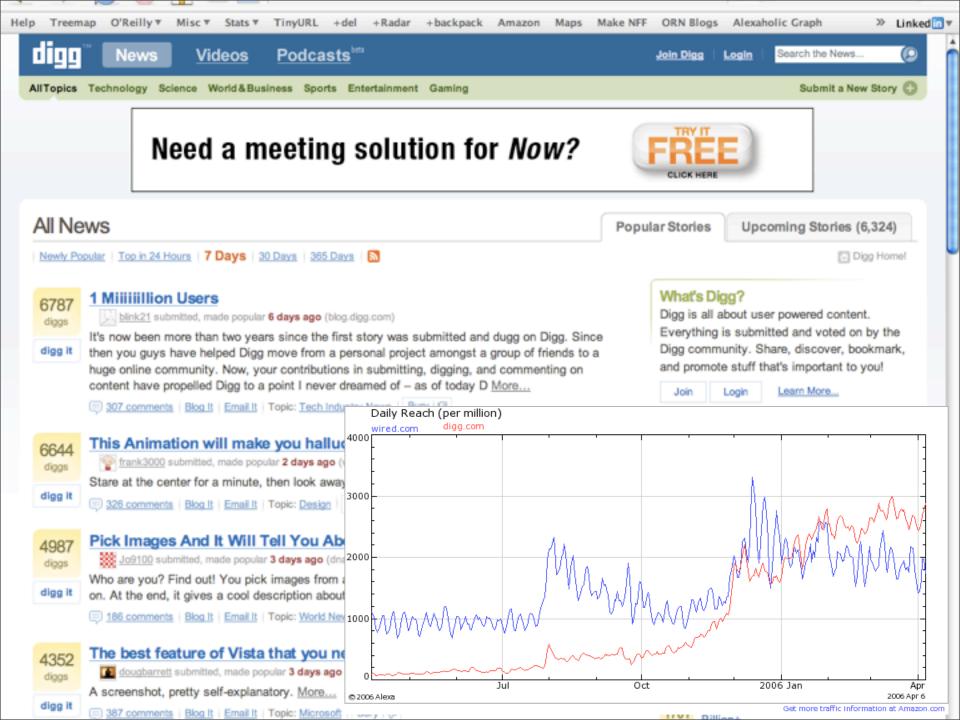
april2006, colorweek, april12006, portraitthrowdown2, brisbanezombiewalk, apr2006 kinnernet2006, fidae, blogak, april2, soulclipse, cazasco, sharplydone, april06, boatrace, aprilfoolsday, april1, fools, aprilfool, msh0406

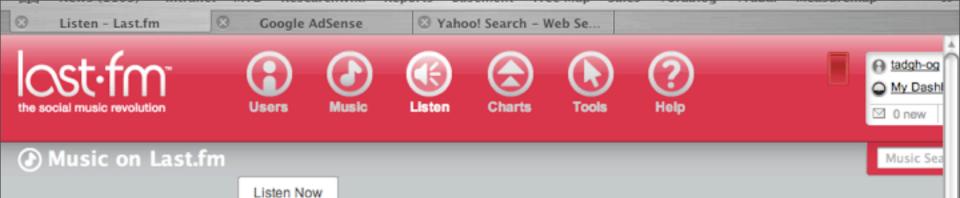
All time most popular tags

os atrica amsterdam animal animals architecture art australia autumn baby barcelona beach berlin birthday black blackandwhite blue boston building bw california cameraphone camping canada canon car cat cats chicago china christmas church city clouds color concert day dc december dog dogs england europe fall family festival florida flower flowers food france friends fun garden geotagged germany girl graffiti green halloween hawaii hiking holiday home honeymoon hongkong house india ireland italy japan july kids lake landscape light london losangeles macro march me mexico moblog mountain mountains museum music nature new newyork newyorkcity newzealand night

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👾 ProgrammableWeb: Flickr API Pr 📑 del.icio.us/popular 🔗 Sales-At-A-Glance	0
del.icio.us / popular /	popular help login register search
PhotoShop Massive List Of Plugins, Filters, Brushes, Actions & Gradients save this first posted by walden on 2006-03-12 saved by 299 other people (272 recently)	popular tags » see more tags
CSS Showcase CSS Navigation Menus, Tabs and CSS Navigation Techniques Showcase save this first posted by poomoo on 2006-04-07 saved by 441 other people (133 recently) Inside AdSense: Meet Ivan the optimiser but please, no paparazzi save this first posted by BocaJuniors on 2006-04-08 saved by 112 other people (104 recently)	blog software design reference web
Playboy Centerfolds 1953 - 2003 save this first posted by brucutu on 2006-03-02 saved by 190 other people (70 recently)	music news tools programming
Ten video sharing services compared - DV Guru save this first posted by frenziminds on 2006-04-08 saved by 155 other people (64 recently)	webdesign art web2.0
How to pull an all-nighter save this first posted by cmontoya on 2006-04-05 saved by 100 other people (53 recently)	css video linux
Windows to Ubuntu Transition Guide save this first posted by beachbum01 on 2006-04-07 saved by 260 other people (45 recently)	javascript shopping free
Vyew.com - Free Web-Based Collaboration save this first posted by hu_man01 on 2006-04-08 saved by 77 other people (41 recently)	windows howto
Rube Goldberg devices save this first posted by shinynew on 2006-04-07 saved by 115 other people (40 recently)	blogs mac photography technology
Mindfulness: The practice of being "here" 43 Folders save this first posted by bradbeck on 2006-04-07 saved by 172 other people (32 recently)	ajax security tutorial
Dr. Web Weblog - Collection of Web 2.0 Navigation Menus save this first posted by drweblen on 2006-04-07 saved by 100 other people (32 recently)	search business media
Tutorials save this first posted by toddco on 2006-04-08 saved by 50 other people (27 recently)	internet home games







How to Tune In

Click to Play

Click a radio button to start listening instantly in the Last.fm flash player, right in your web browser.

Get scrobbling

If you want Last.fm to remember your music taste and improve based on your musical profile, <u>create an account</u> and <u>download</u> <u>Last.fm</u> for your computer. Every Last.fm radio stream is unique, personalised just for you. Here are a few ways to get started...

Similar Artist Radio

Enter the name of a band or artist you like to create your own radio station of similar music:

feathers	Go
Play Your Station!	

User Tag Radio

Tune in to a variety of stations created b Last.fm who tag their music with keywor

S	Seen Live
	Heavy Metal
	Instrumental
	Soundtrack
	Ska
G	Hardcore
	Death Metal
Ģ	Favorites
G	Post-Rock
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	Folk
	Hip-Hop

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1	PANDORA TH created by the Music Ger	nome Project™					
	Ever since we starte	d the Music Genome Pr	roject, our friends would	ask:			
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Pandora Tip: Want to rename a station or edit your feedback? Just click the triangle next to a station name.

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PANDORA	
created by the Music Genome Project [™]	
Ever since we started the Music Genome Project, our friends would ask:	
Can you help me discover more music that I'll like?	
Those questions often evolved into great conversations. Each friend told us their favorite	
artists and songs, explored the music we suggested, gave us feedback, and we in turn made new suggestions. Everybody started joking that we were now their personal DJs.	
We created Pand Daily Pageviews (per million)	
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2006 Nov 1 Get more traffic information at Alexa.com

Pandora Tip: Want to rename a station or edit your feedback? Just click the triangle next to a station name.

©2006 Alexa

Help 🔺

Intelligence Augmentation, not Artificial Intelligence

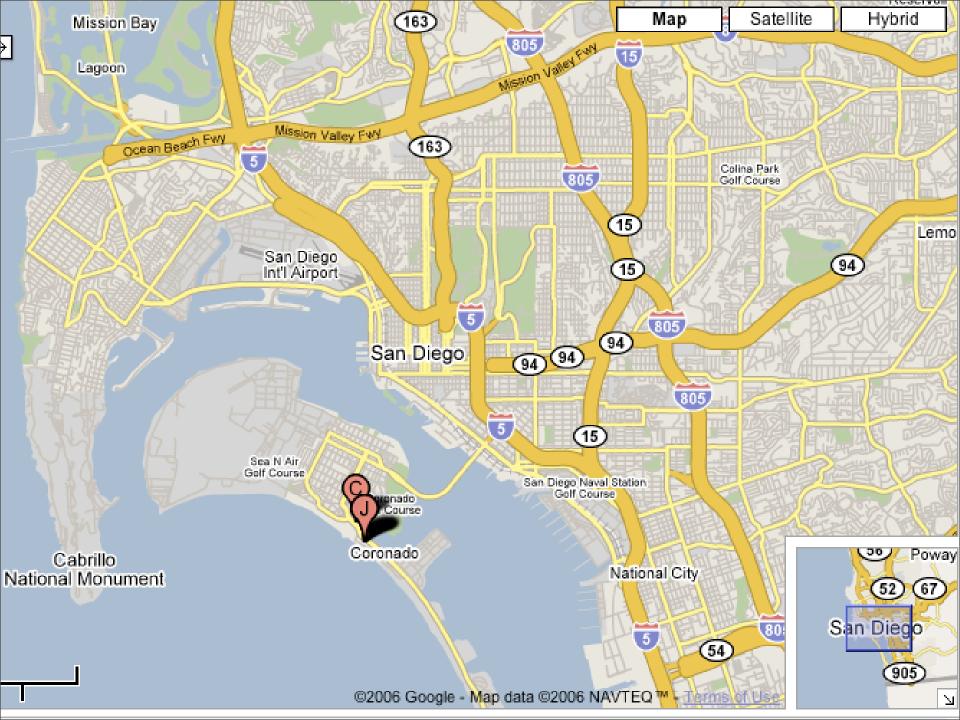
We set out to have them make us smarter. Instead, we make *them* smarter.

Data is the Next "Intel Inside"

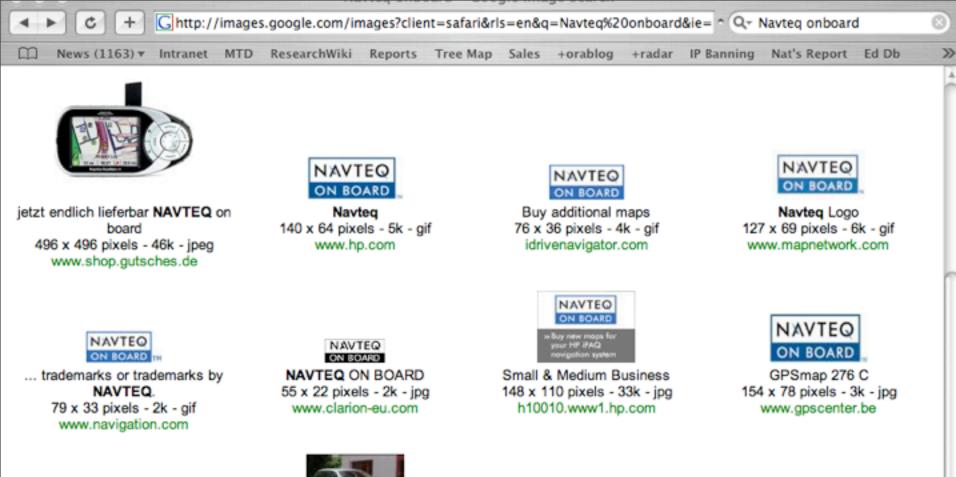
Applications are increasingly data-driven.

Therefore: Owning a unique, hard-to-recreate source of data may lead to an Intel-style single-source competitive advantage.











ROUTE 66 Navigate Europe 2004

150 x 71 pixels - 6k - jpg www.euroatlas.cz



... navteq on board 2.0 bva 2005 ... 150 x 112 pixels - 5k - jpg www.ctavou.com



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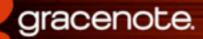
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... losfahren! NAVTEQ ON BOARD Peugeot 807 NavTeg On Board 2.0 NAVTEQ on Board - dies trifft nicht







Gracenote* is a leader in global digital entertainment technology.

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COMPANY INFO GRACENOTE PRODUCTS

DEVELOPER ZONE POWERED by GRACENOTE MUSIC SEARCH CONTACT

GRACENOTE PRODUCTS

Consumers will expect more from the next generation of digital music products. Give it to them.





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Playlist[®]



Playlist Plus*





Media Manager"

MusicID[®]

POWERED by GRACENOTE

See how today's most advanced products enhance the listening experience with Gracenote.





PDHercules Digital Recordable Jukebox II uses the Gracenote Media Recognition Service to rapidly archive music from CDs into MP3 files, storing them in the Jukebox's internal hard drive - all without using a computer or internet connection! See how Gracenote is enabling more home, portable, and software products.

NEWS, PRESS & EVENTS

16 March 06 MarketWatch - Gracenote video clip: Digital Music Everywhere

日本語 한국머

20 March 06 Sacramento Bee - Keeping tracks

15 March 06

Gracenote Selected by OnHollywood as Top 100 Private Company Award Winner Recognized for Leadership in Emerging Technology

January 06

PC World - Software Aims to Help You Pick New Tunes

5 January 06

Gracenote and Muze Partner to Create Integrated Global Entertainment Data and Content Offering

5 January 06 Gracenote Introduces Discover™ Industry's First Global Multi-Method Music Recommendation Engine

Owning Data Provides Huge Leverage

• But data owners be aware:

- Web 2.0 sites are putting friendly front-ends on existing databases, and opening them to user contribution.
- User-enhanced data can create new "Intel Inside" positions





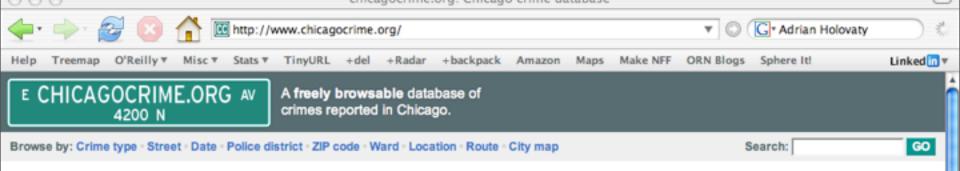
You own your content

The basic features and concept

Your content and data should be yours to manage and do with as you please. Your images, writing, tags, profile, blog entries, comments, testimonials, video, and music should be yours to download and move anyplace you want.

We will help ensure that no website ever holds your data hostage.

community of	content sites	
flickr	youtube	Download your content
myspace	blogger	Upload your content



Welcome to chicagocrime.org

Currently listing crimes from November 2, 2005 to September 11, 2006.

Browse crimes by...

- » Crime type Examples: Arson - Homicide - Assault - Gambling
- » <u>Street</u> Browse streets to block level, and map nearby crimes.
- » Date Drill down to detailed hour-by-hour lists of all crime reports.
- » Police district / beat Not sure which district you're looking for? Find it on our map.
- » ZIP code
 - Examples: 60615 60634 60659
- » Ward Examples: Ward 3 - Ward 23 - Ward 44
- » Location Examples: ATM - CTA train - Gas station - Bowling alley
- » City map Filter crimes by multiple criteria, and view them on one map.
- » Route

C Find: Q

Draw a line on the map of Chicago, and we'll display crimes along that route.

» Blotter NEW FEATURE

Search by exact address...

GO

Example: "1060 w. addison"

Site news Rss

More site news

New block-level archive pages May 9, 2006

Now that we're storing crime data (i.e., not deleting it any more after 90 days), we'll be making some changes to the site to make it easier to view older crime reports. Today we unveiled the first phase of this plan: Each block page, which displays only the latest 20 crimes, now has a link to a page with *all* crimes reported on that block since this site began collecting data Nov. 2, 2005. For example: <u>100 S.</u> State St. has a link to <u>all crimes on 100 S. State St.</u>

New feature: Police blotter March 21, 2006

Until now, this site has featured raw crime-report data, with no "stories behind the crimes." Thanks to help from the Chicago Journal newspaper, now we're displaying synopses of selected crimes. The new <u>blotter page</u> lists all crimes that have synopses, and each crime that has a synopsis will display it on its crime page (<u>example</u>). Synopses

Web 2.0 and the Semantic Web

- PageRank semantic overloading, not semantic specification
- What would Google do with social network data from phone calls if it were Verizon?
- How does this compare with what social networking sites do? With FOAF?



For More Information

• What is Web 2.0?

http://www.oreillynet.com/go/web2

- http://tim.oreilly.com
- http://radar.oreilly.com

