

Computer Software & Social Networking

Winter Session: OLLI - 968

02/15/2011

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Topics

- Hardware versus Software
- Programming
 - Evolution of programming languages
 - Different types of software
- Malware
 - Types of malware
 - Protecting your computer
- Social Networking

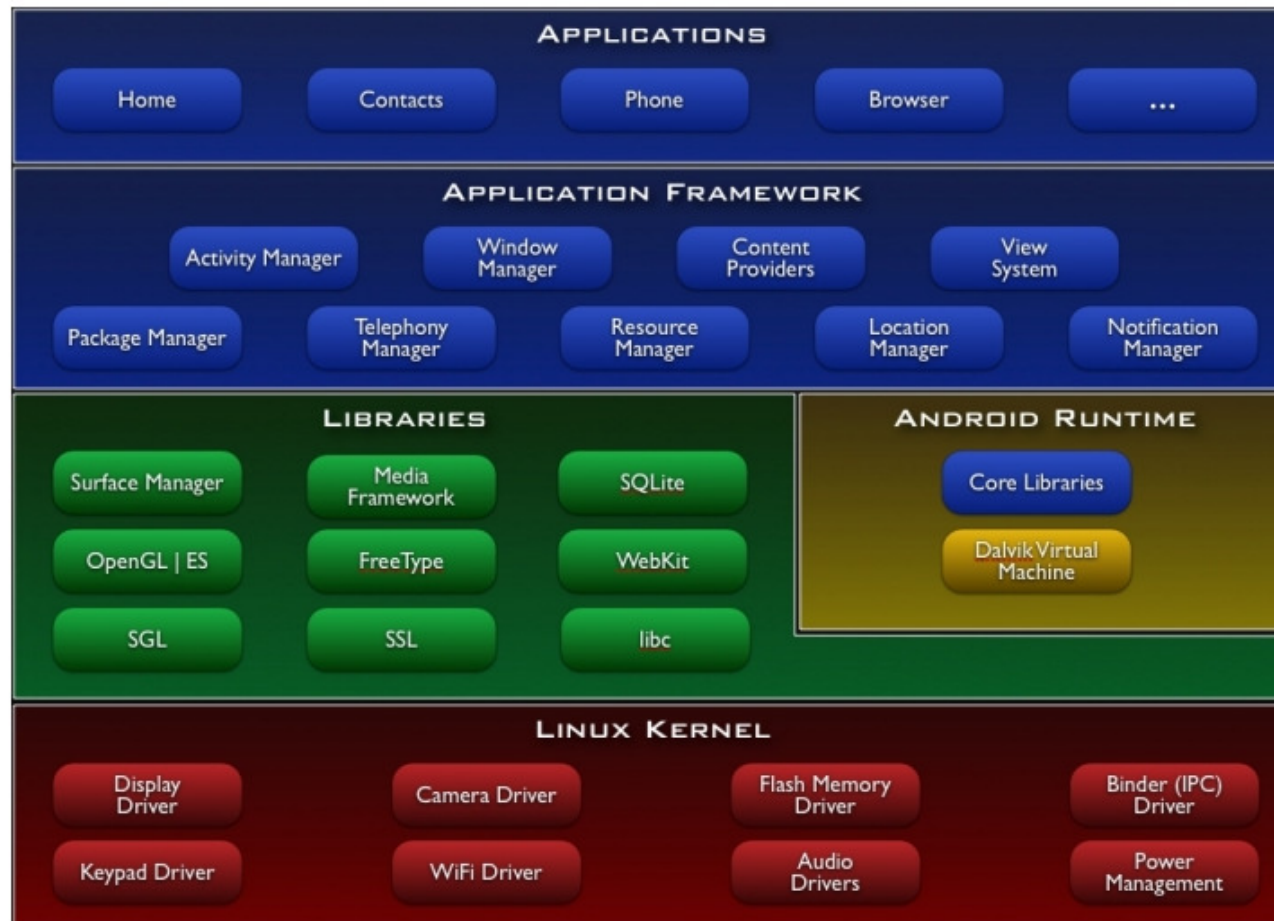
Definitions: Hardware and Software

- Hardware refers to objects that you can actually touch, like disks, disk drives, display screens, keyboards, printers, boards, and chips.
 - Hardware has a set of native commands that it can understand and execute
- Software is exists as ideas, concepts, and symbols, but it has no substance.
 - Software is a set of instructions that hope to perform a task using the underlying hardware

Hardware and Software: Comparison

- **Types**
 - CPU, memory devices, input devices, printers, network
 - System software, application software
- **Interdependency**
- **Maintenance**
 - Rarely requires maintenance during life
 - Frequent updates – each update needs testing
- **Failure**
 - Works for its life and then fails
 - Does not degrade with age

Software Layers



Source : <http://developer.android.com/guide/basics/what-is-android.html>

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Copyleft Licensing

- 1st free software license
- Originally created by Richard Stallman of MIT
- Software can be distributed for free under this license

GNU General Public License



Free as in Freedom
GNU GPLv3 Logo

Author	Free Software Foundation
Version	3
Publisher	Free Software Foundation, Inc.
Published	June 29, 2007
DFSG compatible	Yes ^[1]
Free software	Yes ^[2]
OSI approved	Yes ^[3]
Copyleft	Yes ^{[2][4]}
Linking from code with a different license	No (except for linking GNU AGPLv3 with GNU GPLv3 – see section)
Website	www.gnu.org/licenses/gpl.html

Source http://en.wikipedia.org/wiki/GNU_General_Public_License

Software in Cars

- 1977 Oldsmobile Toronado (spark)
- 1978 Cadillac Seville (displayed speed, fuel, trip, and engine information.)
- Hybrids (twice as much software as a standard car)
- Low end cars (30- 50 ECUs in door, roof, body, seats, 10 million lines of code)
- Google car – Autonomous Car

Other applications

- Fight fraud in medicare, medicaid
- Fight wars – UAVs
- Monitor patients in ICU
- Weather



Source: <http://www.chrismadden.co.uk/>

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Everybody Needs a Break... Check Out the Cartoon of the Week!

 Posted by Kat



*"Hi-- I'd like to know if you have a program
that removes sand from your hard drive."*

Optimize-Your-PC.com

www.optimize-your-pc.com/regcure/regcure_blog/tag/computer-cartoons

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*"One day I just woke up and said to myself--
hey, thanks to the computer I can work
anywhere"*

Optimize-Your-PC.com

Source: www.optimize-your-pc.com/regcure/regcure_blog/tag/computer-cartoons

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**"It's the latest innovation in office safety.
When your computer crashes, an air bag is activated
so you won't bang your head in frustration."**



Programming



Source: <http://www.chrismadden.co.uk/>

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Evolution of Programming Langs

- 1GL - Machine Language
- 2GL - Assembly Language – Machine specific
- 3GL – Machine independent - Imperative, Structured Languages
- 4GL – Business Rule driven
- 5GL – Capable of simulating experts in a field

Machine Language

SimHYMN

File Memory Assembler Options Help

CPU Speed: 0

PC: 00000 00

IR: 00000000 HALT

AC: 00000000 0

I/O:

Run Step Back Reset

Zero Flag: true

Positive Flag: false

Instruction		Instruction		Decimal	
00000	10011110 LOAD 11110	01010	00000000 HALT	10100	00000000 0
00001	10110100 STOR 10100	01011	00000000 HALT	10101	00000000 0
00010	10011110 LOAD 11110	01100	00000000 HALT	10110	00000000 0
00011	11010100 ADD 10100	01101	00000000 HALT	10111	00000000 0
00100	10111111 STOR 11111	01110	00000000 HALT	11000	00000000 0
00101	00000000 HALT	01111	00000000 HALT	11001	00000000 0
00110	00000000 HALT	10000	00000000 HALT	11010	00000000 0
00111	00000000 HALT	10001	00000000 HALT	11011	00000000 0
01000	00000000 HALT	10010	00000000 HALT	11100	00000000 0
01001	00000000 HALT	10011	00000000 HALT	11101	00000000 0

Assembly Language

"Hello World!" program for Windows in MASM style assembly

```
; requires /coff switch on 6.15 and earlier versions
.386
.model small,c
.stack 100h

.data
msg      db "Hello World!",0

.code
includelib MSVCRT
extrn printf:near
extrn exit:near

public main
main proc
    push    offset msg
    call    printf
    push    0
    call    exit
main endp

end main
```

Structured Language – C

```
long some_function();  
/* int */ other_function();  
  
/* int */ calling_function()  
{  
    long test1;  
    register /* int */ test2;  
  
    test1 = some_function();  
    if (test1 > 0)  
        test2 = 0;  
    else  
        test2 = other_function();  
    return test2;  
}
```

Database Query Language

- EXTRACT ALL CUSTOMERS WHERE "PREVIOUS PURCHASES" TOTAL MORE THAN \$1000

Malware

- Created with an intent to enter a computer without informed consent, to annoy or cause damage
- Worm, Virus, Trojan horse
- Propagation Techniques
 - Spam
 - Fishing
 - Vulnerabilities

Phishing

- Pretend to be a legitimate enterprise
- Fool recipient into providing personal information
- Large volumes of emails
- Aka brand spoofing or carding
- Spear Fishing – targeted fishing

Malware Statistics – March 2010

- Targeted Attacks
 - 28% originate from China,
 - 21% from Romania,
 - 13% from USA
- Most frequently targeted job roles
 - 8.7% Director
 - 7.3% Senior Official
- Most malicious file attachments
 - 15.4% Excel
 - 15.4% Word
 - 11.2% ZIP
 - 10.7% PDF
- Phishing Rate - (1 in 513 emails)
 - 1 in 254 UK
 - 1 in 337 Brazil
 - 1 in 432 China
- Spam Rate (90.7% - 1 in 1.10 emails)
 - 95.7% in Hungary
 - 94.9% in Denmark
 - 94.7% in Italy
- Anti Virus (1 in 358.3 emails)
 - 1 in 90.9 Taiwan
 - 1 in 173 China
 - 1 in 213 UK

Source: www.Symantec.com/MessageLabs

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Safety Guidelines

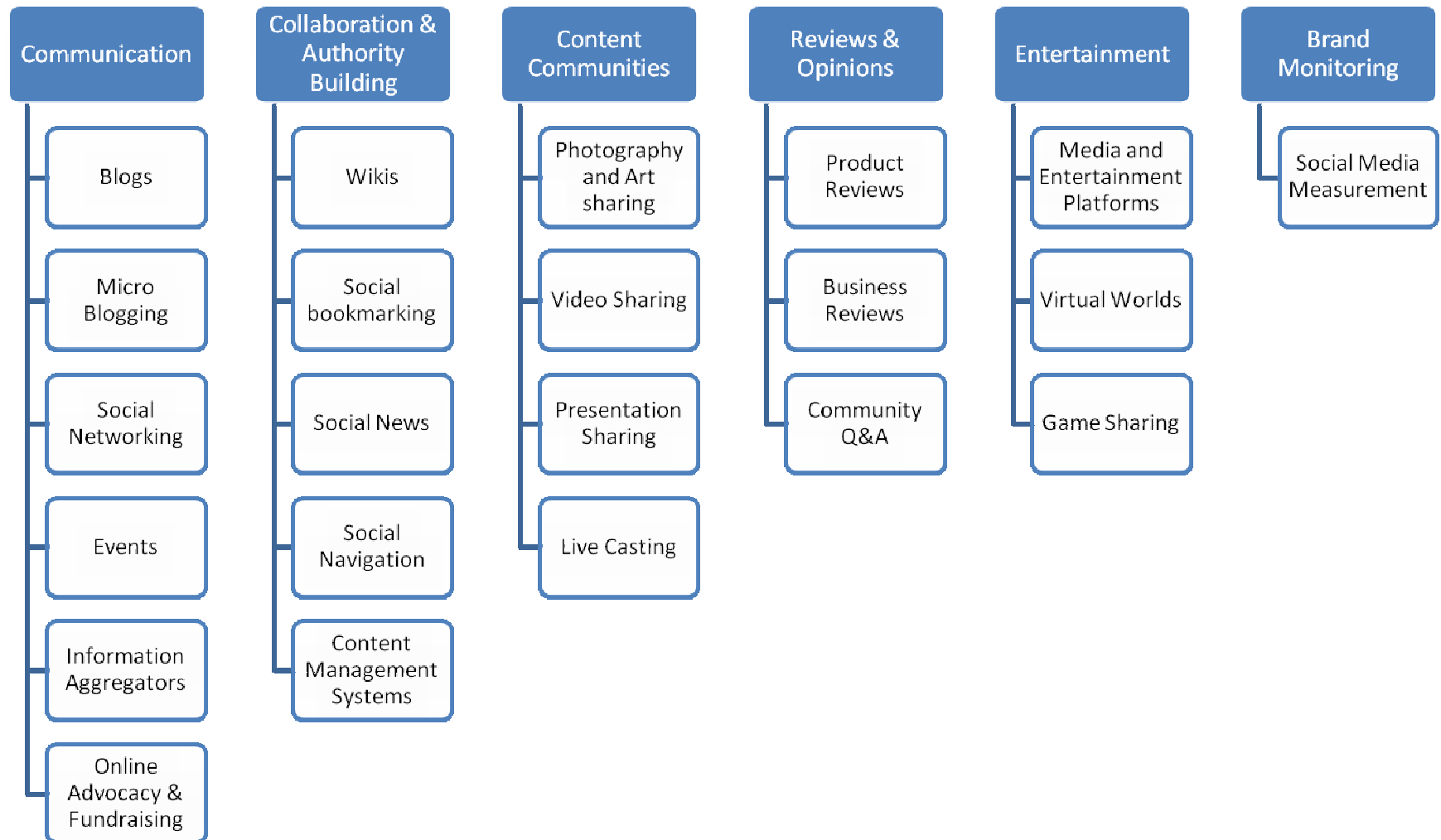
- Install, use and update anti-virus software
- Keep your operating system and programs patched
- Consider using alternative web browser and email software
- Be cautious when reading email with attachments and downloading files
- File formats
- Configure your operating system properly
- Preserving your privacy
- Miscellaneous tips
- If you still get hit by a virus...

Source: <http://www.claymania.com/safe-hex.html#9>

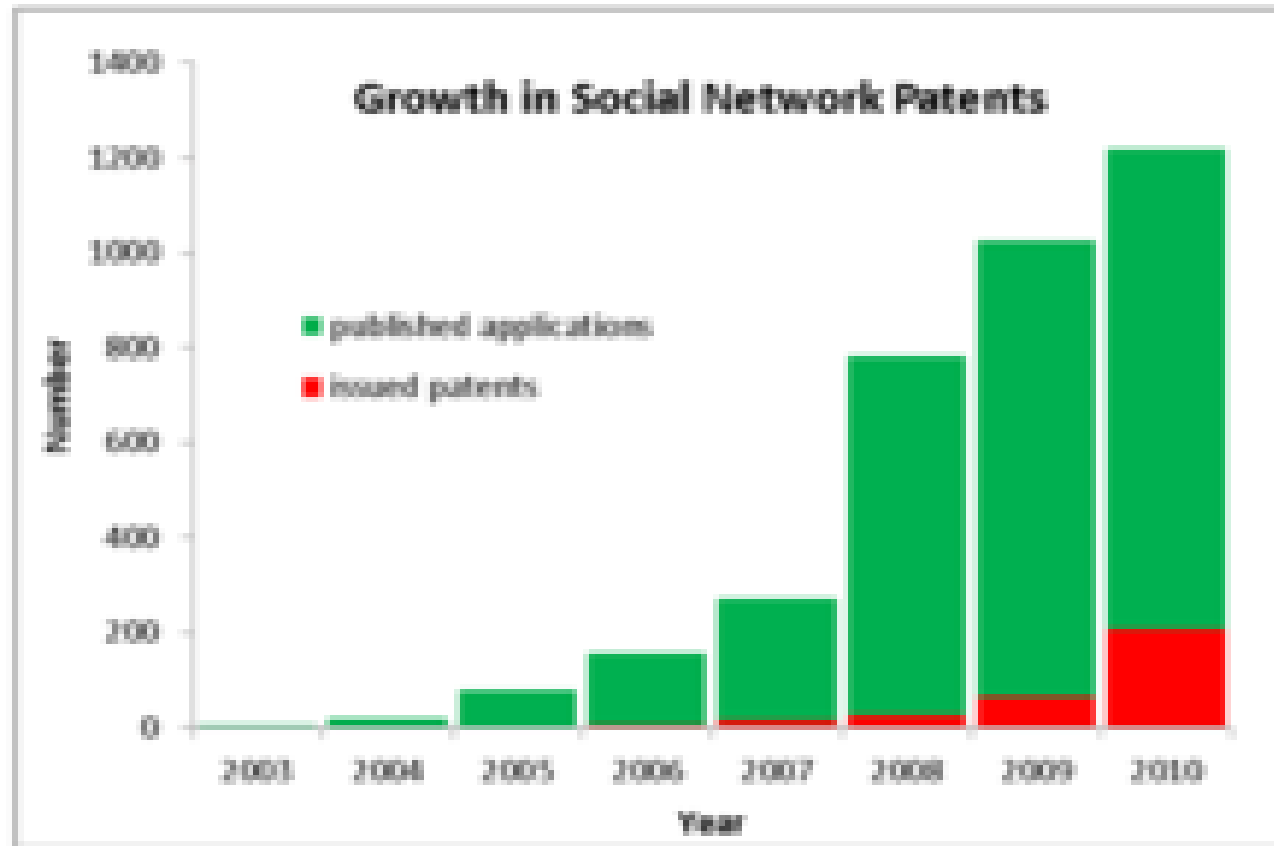
Social Networking

- Term coined by Prof. Barnes in 1950
 - Association of people drawn together by family, people or hobby
- Nodes of people or organizations which are tied by common interest, common beliefs, friendship, kinship, business connections
- Use of online technologies to make connections

Social Networking Platforms



Growth in Social Networking



Source: http://en.wikipedia.org/wiki/Social_network

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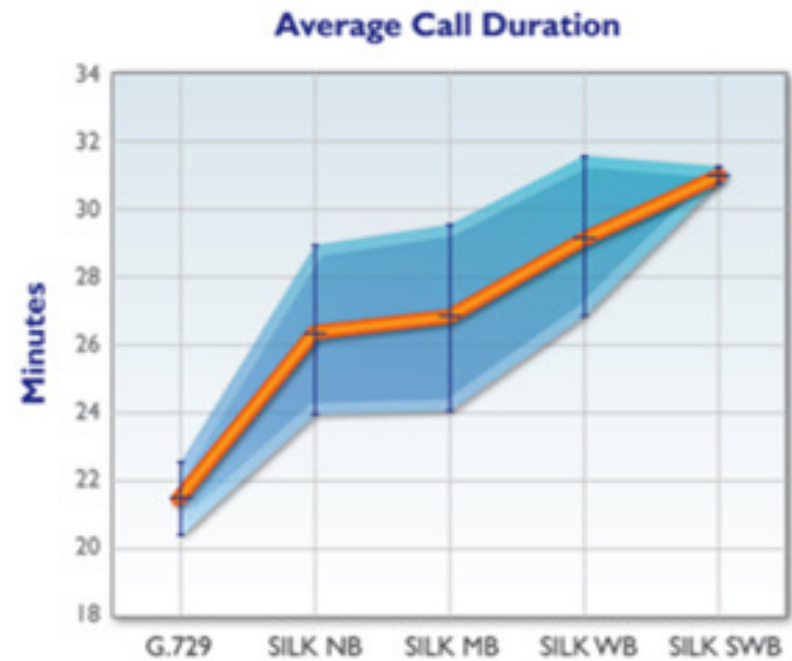
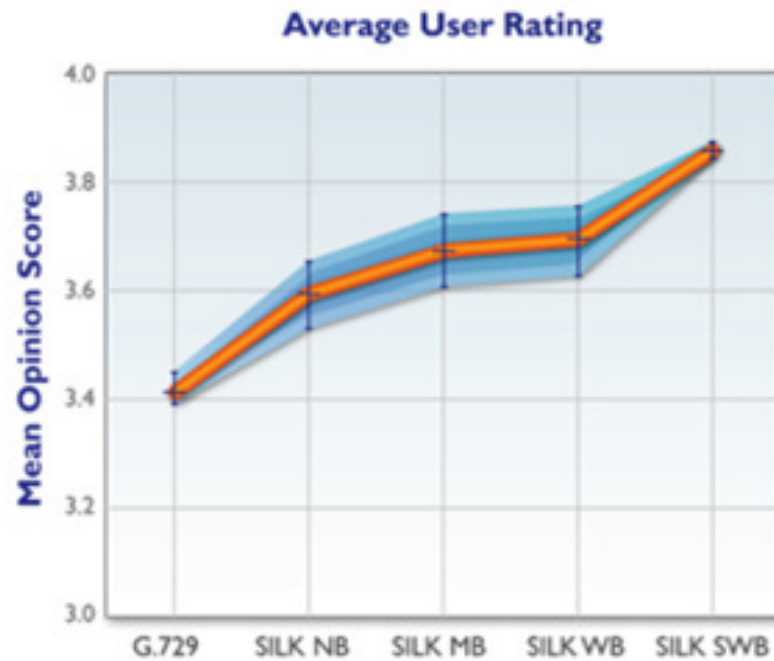
Statistics

- Social networking now accounts for 22% of all time spent online in the US.
- Over 25% of U.S. internet page views occurred at one of the top social networking sites in December 2009, up from 13.8% a year before.
- Australia has some of the highest social media usage statistics in the world. In terms of Facebook use Australia ranks highest with almost 9 hours per month from over 9 million users.
- The number of social media users age 65 and older grew 100 percent throughout 2010, so that one in four people in that age group are now part of a social networking site.

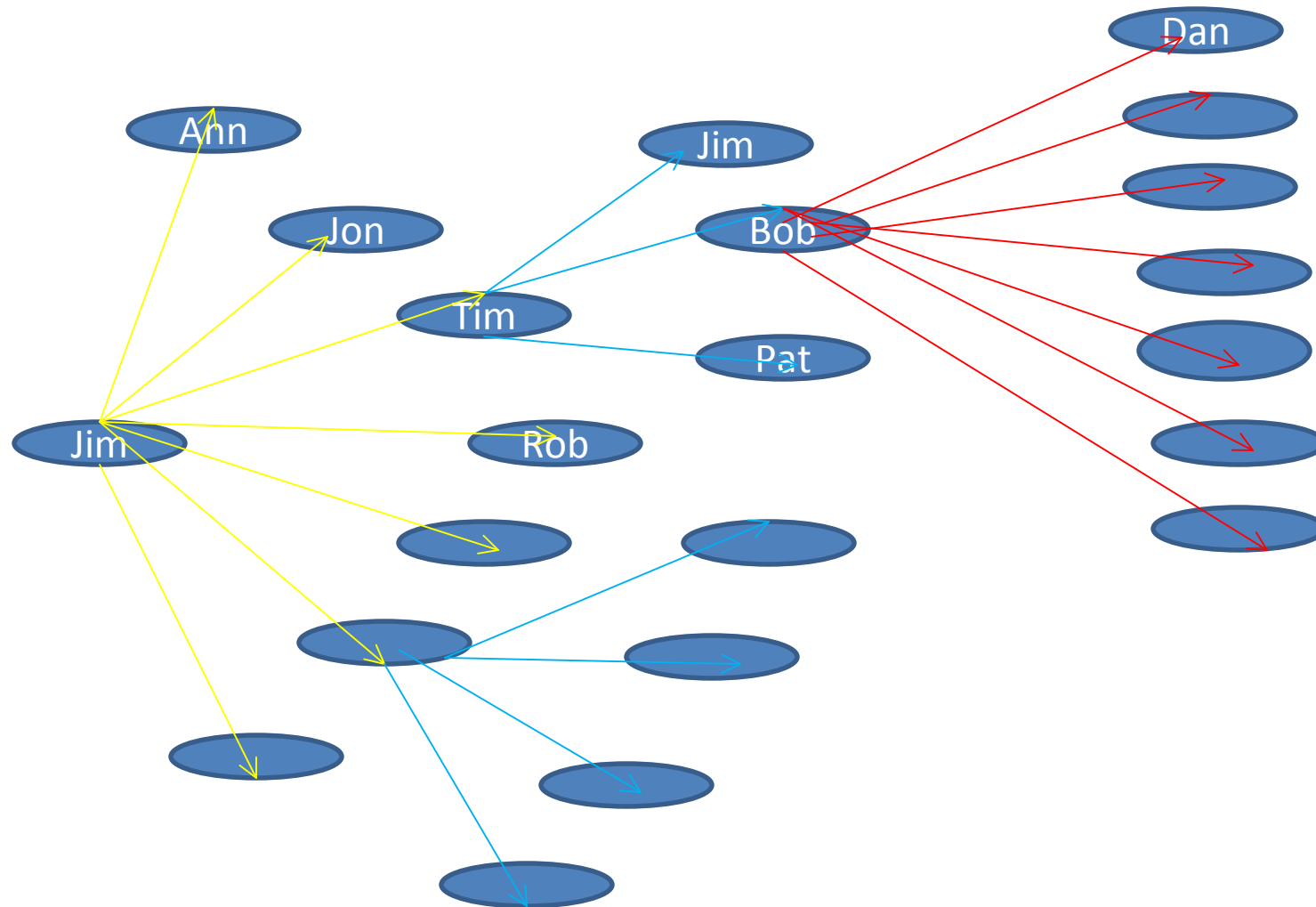
Skype - Overview

- To do things when you are apart
 - Text, voice, video
 - Share experiences with people that matter
- Founded in 2003
- HQ Luxembourg
- Peak usage – 23 million online users
- 95 billion minutes of voice and video calls in 1st half of 2010
- Free & Paid services

Skype – Voice Quality



Twitter



Famous Tweets - 2010



AnnCurry Ann Curry

@usairforce find a way to let Doctors without Borders planes land in Haiti:
<http://bit.ly/8hYZOK> THE most effective at this.

After the massive 7.0 earthquake in Haiti, Doctors Without Borders flew in a team of physicians to assist the wounded, but they were unable to get clearance to land the plane. Reporter Ann Curry used Twitter to convince the U.S. Air Force to allow the flight to land.

Source: <http://yearinreview.twitter.com/powerful-tweets/>
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Famous Tweets - 2010



LeighFazzina Leigh Fazzina

I've had a serious injury and NEED Help! Can
someone please call Winding Trails in Farmington,

Twitter to the rescue: When she crashed her bike in a forest with no cell phone reception, a gravely injured triathlete saved her own life when she tweeted out a desperate call for help.


Source: <http://yearinreview.twitter.com/powerful-tweets/>



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Twitter Tracking Tools

- Twitscoop - general hot trends
- Happen.in – Local topics in a town
- Twitrratr – tracks your brand
- Twitteraholic – tracks usage , identifies addiction
- Twitturly – top 100 twitter conversations

Twitt(url)y



Hi. We track and rank what URLs people are talking about on Twitter. [More?](#)  [Tweet about us](#) 

[Top100](#) [Profiles](#) [GO](#)


145
active
tweets

Algeria shuts down internet and Facebook as protest mounts - Telegraph
Internet providers were shut down and Facebook accounts deleted across Algeria on Saturday as thousands of pro-democracy demonstrators were arrested i...
www.telegraph.co.uk/...uts-down-internet-and-Facebook-as-protest-mounts.html

[Tweet it](#)

What people are saying:

145 total tweets on this URL | 145 were counted towards this URL's Active Tweets




RT @TwittyAlgeria: Algeria shuts down internet and Facebook as protest mounts <http://tinyurl.com/4c2zesa>: Algeria shuts down internet and Facebook as pr...

by aramram 


02/13/11 7:45 am




#Algeria: "Journalists, and especially those with cameras, are being taken away by the police." <http://bit.ly/f6FfPM>
#photography

by NewPhotoDigest 


02/13/11 6:54 am




Here we go again... "The government doesn't want us forming crowds thru the internet," Algerian demonstrator
<http://ow.ly/3VusT>

by ECCSOnline 

02/13/11 6:28 am



Algeria shuts down internet and Facebook as protest mounts - Telegraph <http://t.co/DWYITC5> via @Telegraph

by Internetistress 

02/13/11 6:23 am

URL Info

145 tweets in the last 24 hours

145 tweets in the last week

145 tweets in the last 30 days

145 total tweets

145 total comments

177 total retweets

Short URLs used

Sorry, this feature has been temporarily disabled.

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LinkedIn


- Largest professional social networking site
- 90 million users
- 200 countries
- 2 billion people searches in 2010
- 6 languages: English, French, German, Italian, Portuguese and Spanish

Benefits of LinkedIn



USA

What: "Jobseeker lands not one, but two jobs in a row via LinkedIn status updates"

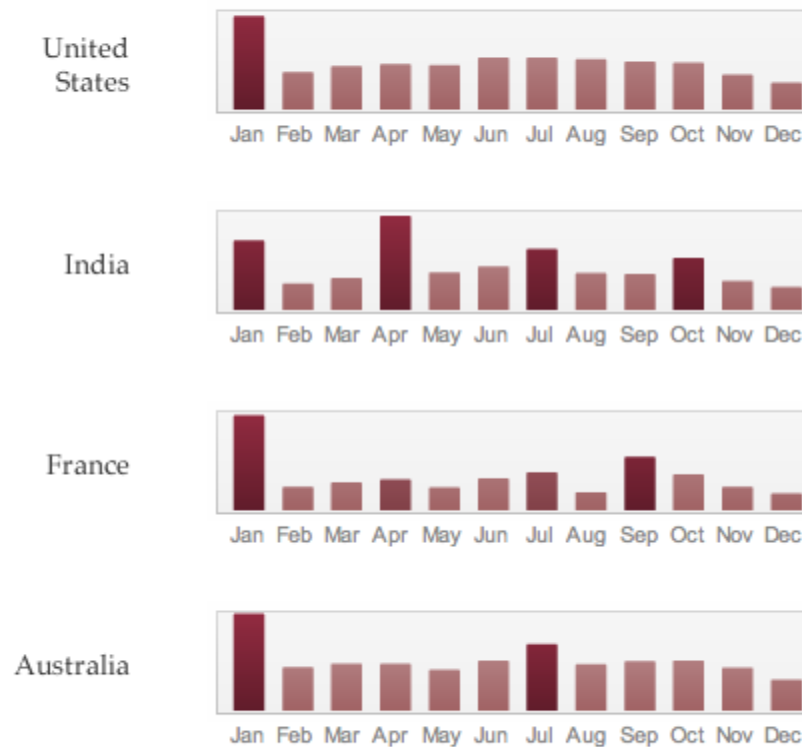
Who: [David T. Stevens](#) , event manager executive at [streamlineevents](#)

Where: Emeryville, California, United States of America

Used LinkedIn to: Quickly find work after a lay off, and to change jobs a few years later

How: David frequented networking events for his sales job, following up via LinkedIn with the people he "connected" with at the events. Upon being laid off in 2008, David immediately updated his [LinkedIn Status](#) to "I'm up for grabs, who wants me?" and received a phone call that morning on a job lead. He was back to work within a week. In 2011, David was ready for a new opportunity and he once again tapped into his professional network, reconnecting with industry peers. Within just two weeks, David had used his LinkedIn connections to land an interview at [streamlineevents](#), was offered a position and accepted the new job.

Annual job promotions: Trends by country





LinkedIn. Today's Most Searched Titles




Facebook

- Launched in 2004
- 600 million users as of Jan 2011
- 40% of US population has a facebook account
- 1700 employees in 12 countries
- Facebooking, friend, unfriend adopted as verbs
- Features
 - Profiles, Friends,
 - Wall
 - Online Chat
 - News Feed
 - Photos
 - Gifts
 - Market Place

Ivy Bean

- 4962 Friends on FB
- 56,000 Twitter followers
- @102 – oldest person ever on Facebook

Ivy Lesly Bean



Born	Ivy Asquith 8 November 1905 Bradford, West Riding of Yorkshire, England
Died	28 July 2010 (aged 104) Bradford, West Yorkshire, England
Nationality	British
Years active	2008–2010
Known for	Oldest person on Twitter & one of the oldest on Facebook Centenarian

Source: http://en.wikipedia.org/wiki/Ivy_Bean

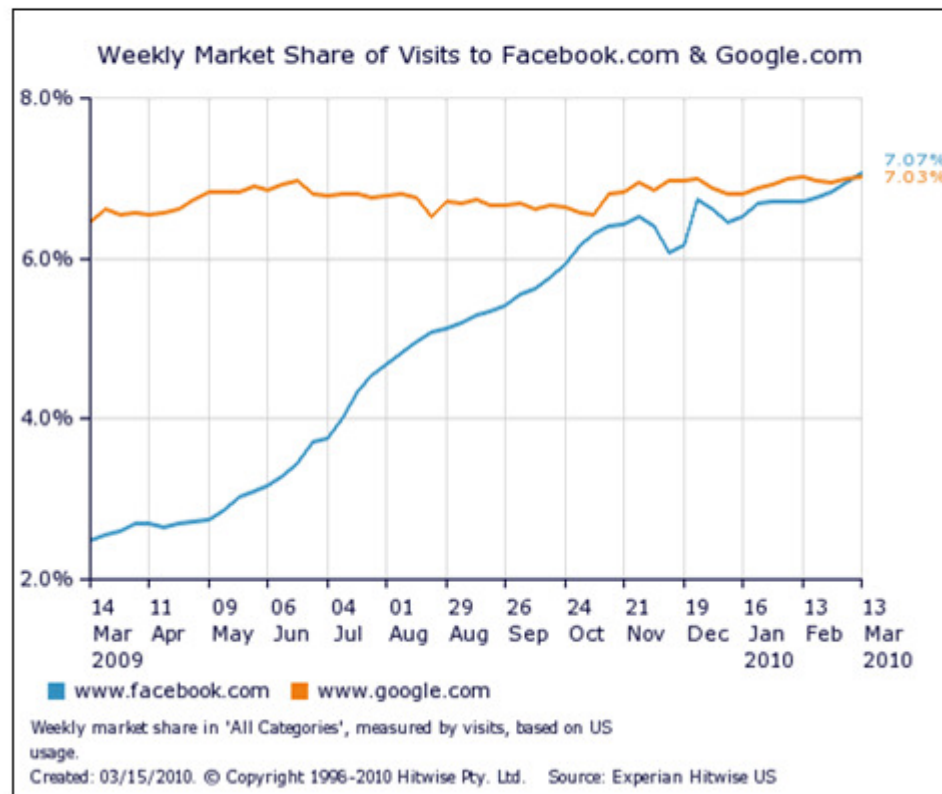
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Internet more sociable than searchable

Facebook becomes bigger hit than Google

By Chris Nuttall and David Gelles in San Francisco

Published: March 16 2010 13:15 | Last updated: March 17 2010 00:10



How it fits together

- Increases ambient awareness
- Insignificant, frequent piece of information
- Less carefully considered information
- Snippets coalesce into surprising sophisticated portraits
- Like thousands of dots making a pointillist painting
- Who would call to let you know the kind of sandwich you are eating

Pros and Cons of Facebook

- Pros
 - Hello old friend!
 - Networking
 - Mass Updates
- Cons
 - Everyone wants to be a friend
 - Spam
 - Too much drama!