

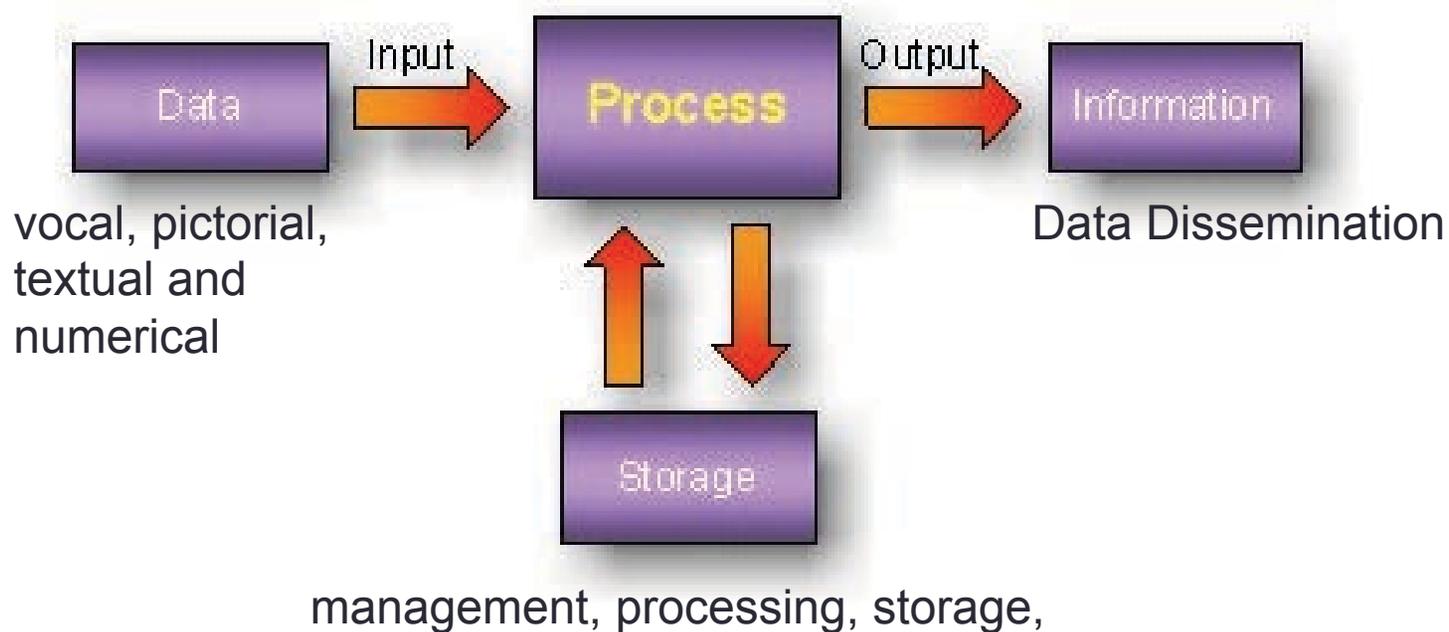


INTERNET TECHNOLOGY: LIBERATING OR CONTROLLING?

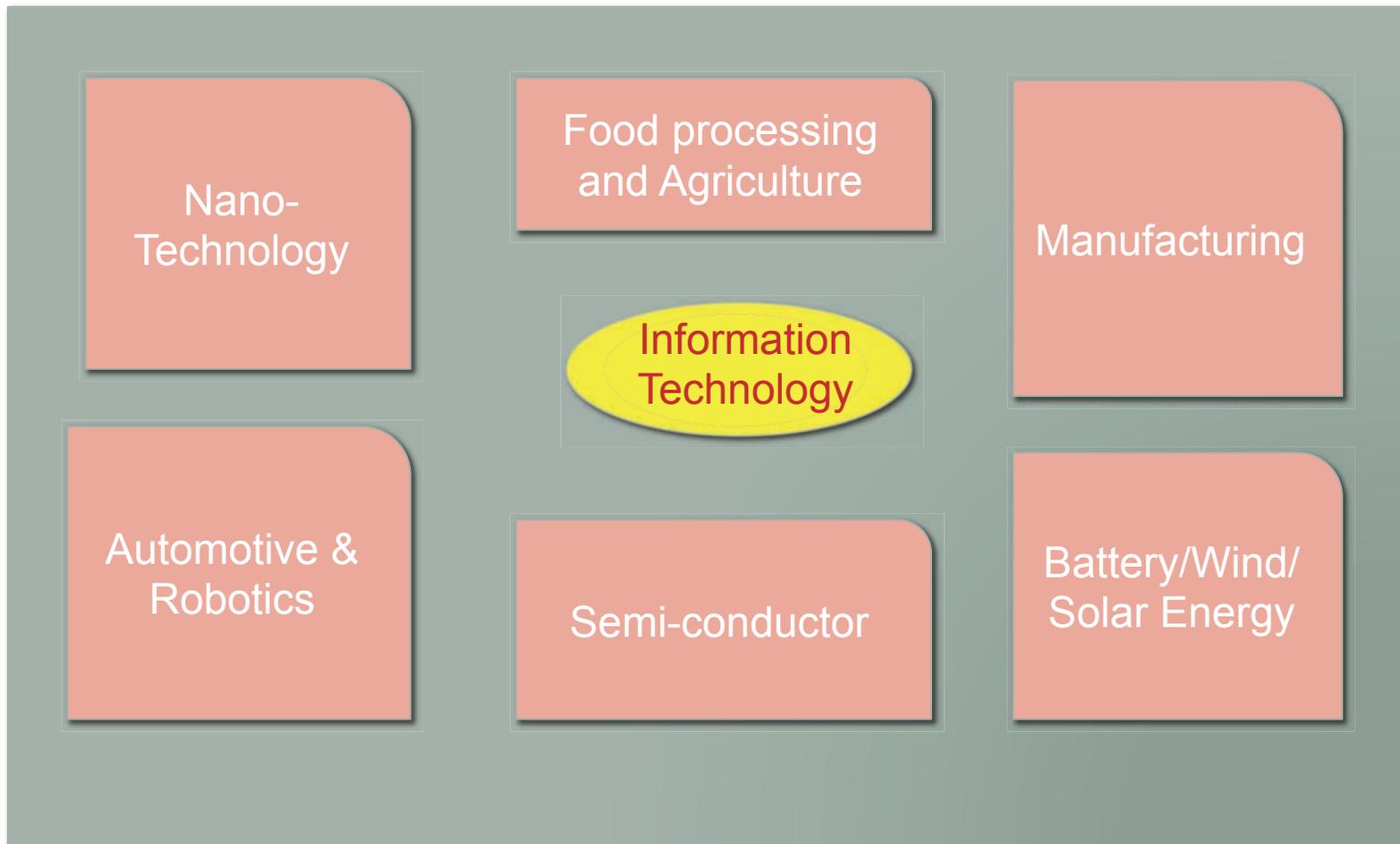
Dr. Farid Farahmand
Department of Engineering Science
Sonoma State University
Fall 2012

What is Information Technology?

Information Processing Cycle

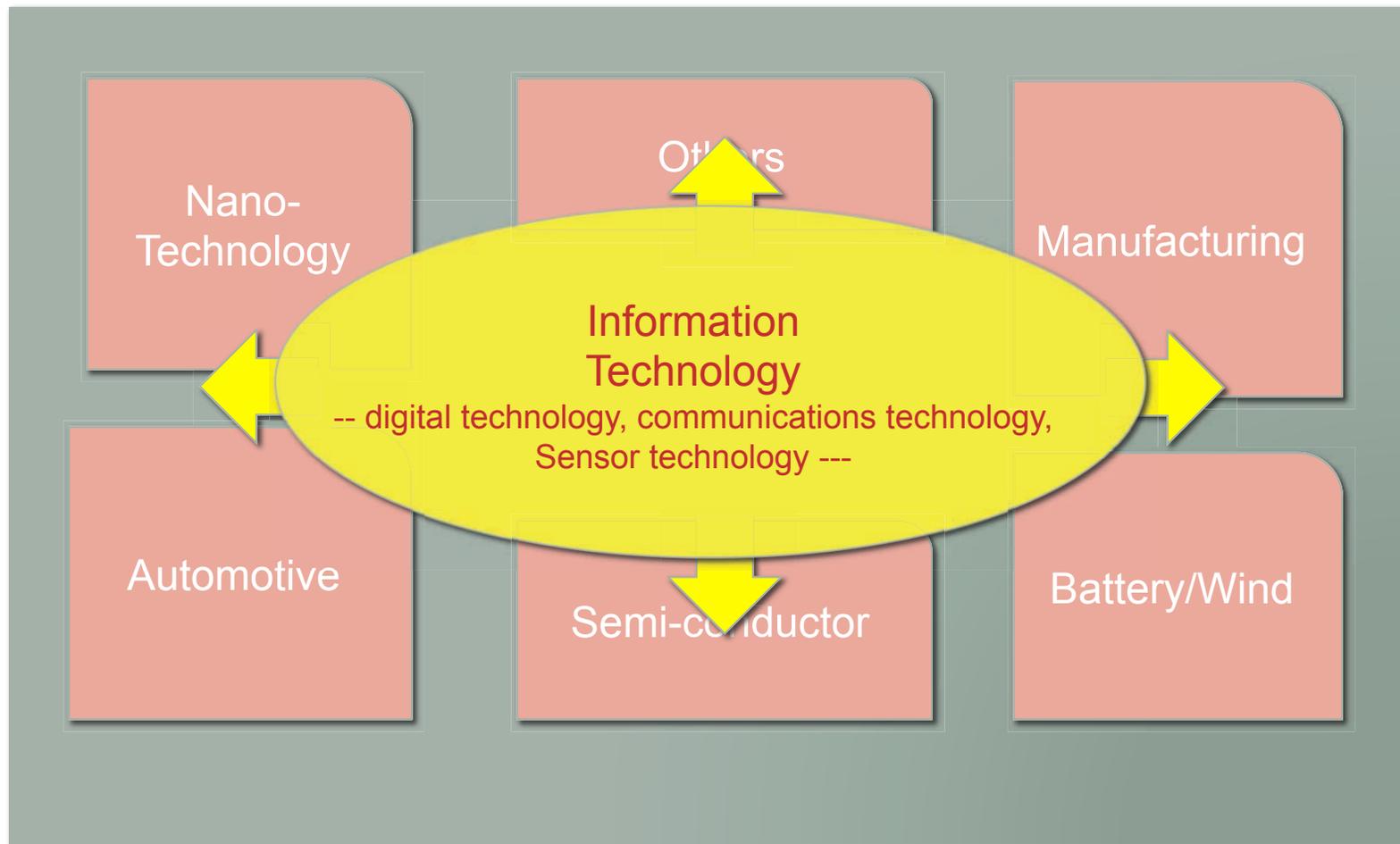


Technologies....

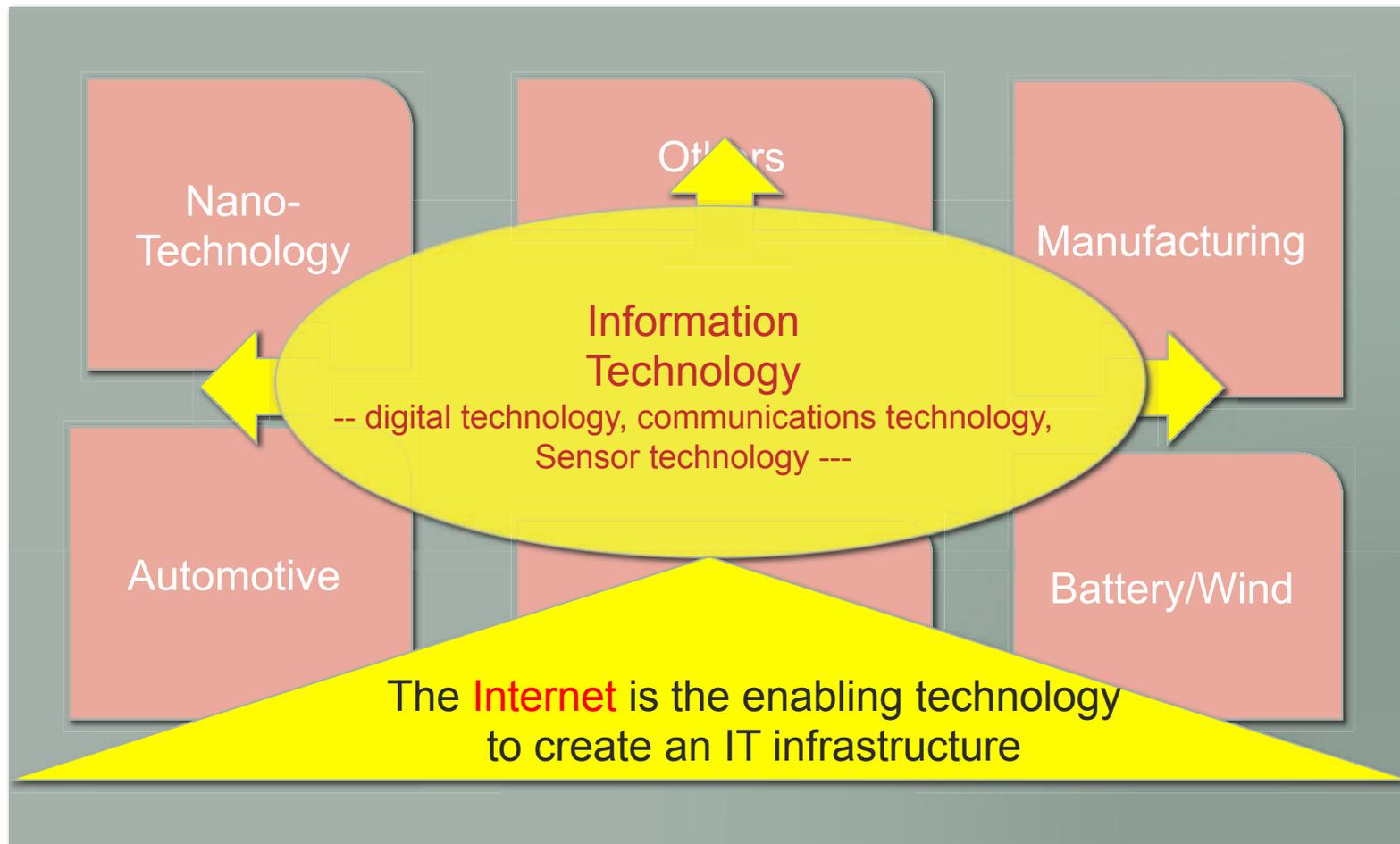


IT Technology

Integrated part of all other technologies

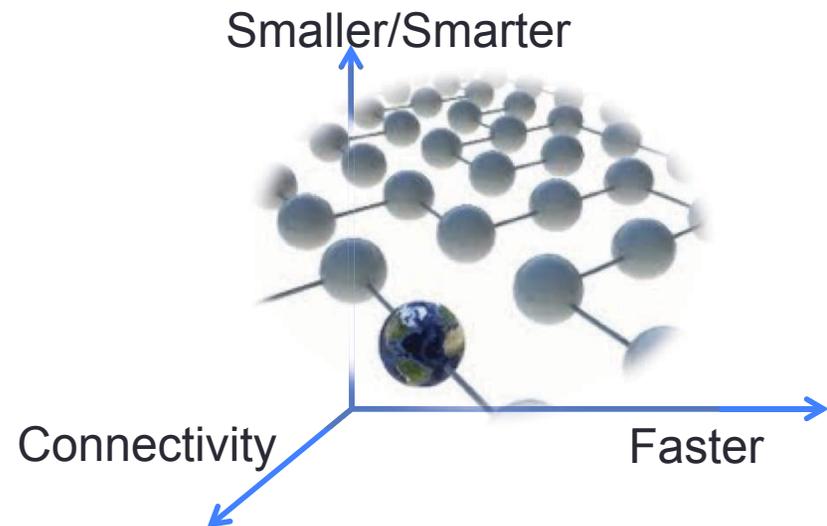


Internet & WWW: Enabling IT Infrastructure



Internet-Enabled Devices: Accessing the IT Infrastructure

- Internet-enabled devices are becoming smaller, more powerful, smarter
 - More accessible
- Smart-devices are becoming more **integrated** part of our lives



Who is Using the Internet?

WORLD INTERNET USAGE AND POPULATION STATISTICS March 31, 2011						
World Regions	Population (2011 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2011	Users % of Table
Africa	1,037,524,058	4,514,400	118,609,620	11.4 %	2,527.4 %	5.7 %
Asia	3,879,740,877	114,304,000	922,329,554	23.8 %	706.9 %	44.0 %
Europe	816,426,346	105,096,093	476,213,935	58.3 %	353.1 %	22.7 %
Middle East	216,258,843	3,284,800	68,553,666	31.7 %	1,987.0 %	3.3 %
North America	347,394,870	108,096,800	272,066,000	78.3 %	151.7 %	13.0 %
Latin America / Carib.	597,283,165	18,068,919	215,939,400	36.2 %	1,037.4 %	10.3 %
Oceania / Australia	35,426,995	7,620,480	21,293,830	60.1 %	179.4 %	1.0 %
WORLD TOTAL	6,930,055,154	360,985,492	2,095,006,005	30.2 %	480.4 %	100.0 %

The North America has the largest Internet penetration!

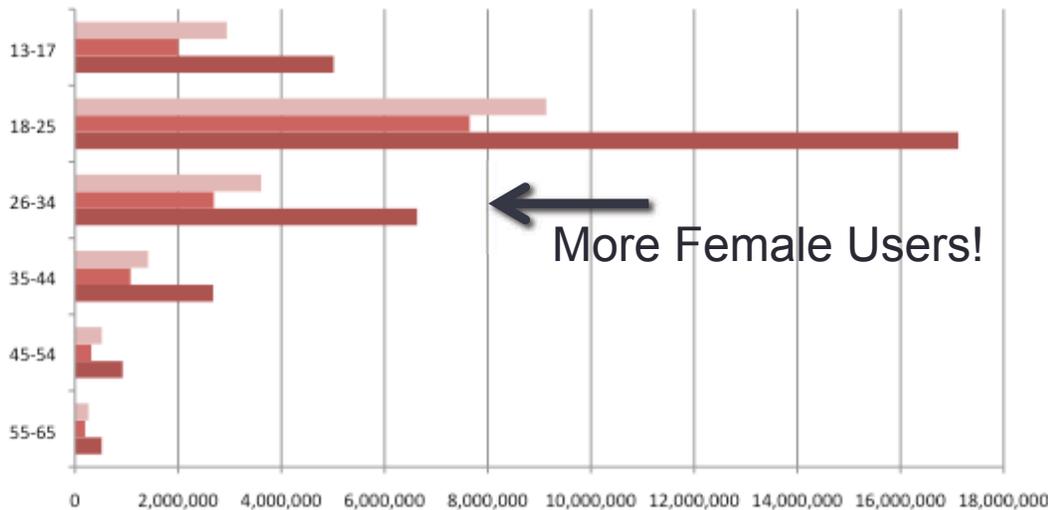
There are far fewer Internet users in the North America compared to Asia

The U.S. currently ranks 26th in the world in terms of Internet connection speeds!

What Is Internet Used For?

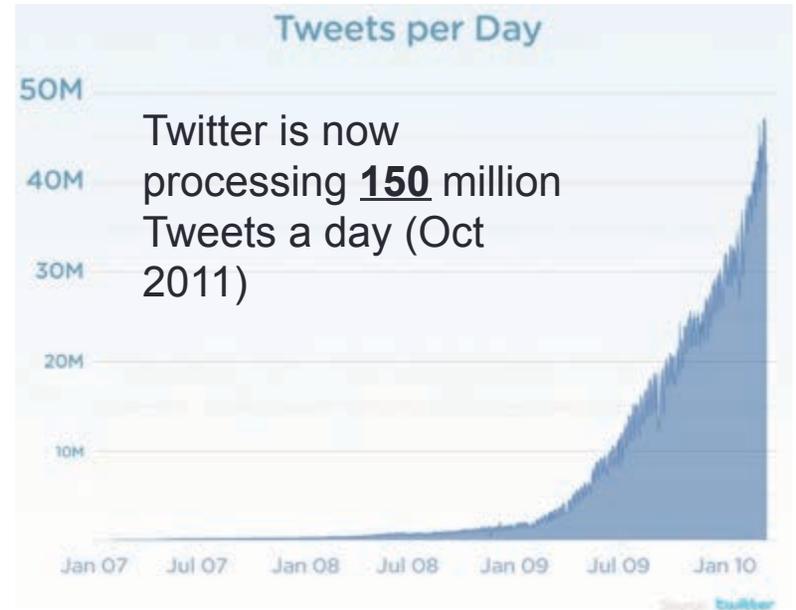
Tweets & Facebook

US Facebook Users By Age Group and Gender (9/18/08)
(InsideFacebook.com)



	55-65	45-54	35-44	26-34	18-25	13-17
Female	260,500	519,180	1,416,760	3,607,420	9,133,120	2,942,480
Male	197,060	316,700	1,078,920	2,692,800	7,649,520	2,003,720
Total Users	518,200	925,840	2,677,700	6,630,260	17,120,760	5,015,940

Female Male Total Users



6,845,609,960 humans
1,966,514,816 Internet users
800+ million Facebook users (2011)*

How Do We Access The Internet?

Mobile-Devices

Global internet usage through mobile devices, not including tablets, has almost doubled to 8.5% in January 2012

15% of Americans answer phone calls **During Sex** Hello? Hello?



3/10 Americans used a cell phone in **1999**



9/10 Americans used a cell phone in **2009**



tick tick tick!
Americans use approximately **Minutes Per Day**

(That's about 21 minutes per person)

80% own a wireless device
50% can text blindfolded

Have access to cell phones

Text Blindfolded!

Cell phones around the **WORLD**

Highest average number of cell phones per person

- | | |
|------------------------------|------------------------|
| 1. United Arab Emirates 1.95 | 6. Lithuania 1.41 |
| 2. Estonia 1.94 | 7. Portugal 1.39 |
| 3. Hong Kong 1.61 | 8. Singapore 1.36 |
| 4. Italy 1.52 | 9. Czech Republic 1.34 |
| 5. Bulgaria 1.47 | 10. Russia 1.33 |

Our New Dependency on Internet and Mobile Devices

- Finding Directions
- Shopping
- Chatting
- Music
- News
- Contacts
- File Sharing
- Dating



Nomophobia?

- The **phobia** of being out of contact with someone via mobile phone!
- **40 percent** of iPhones owners rather give up brushing their teeth for a week than go without their phone!

According to many studies: Internet Addiction Is Classified as New Mental Health Disorder

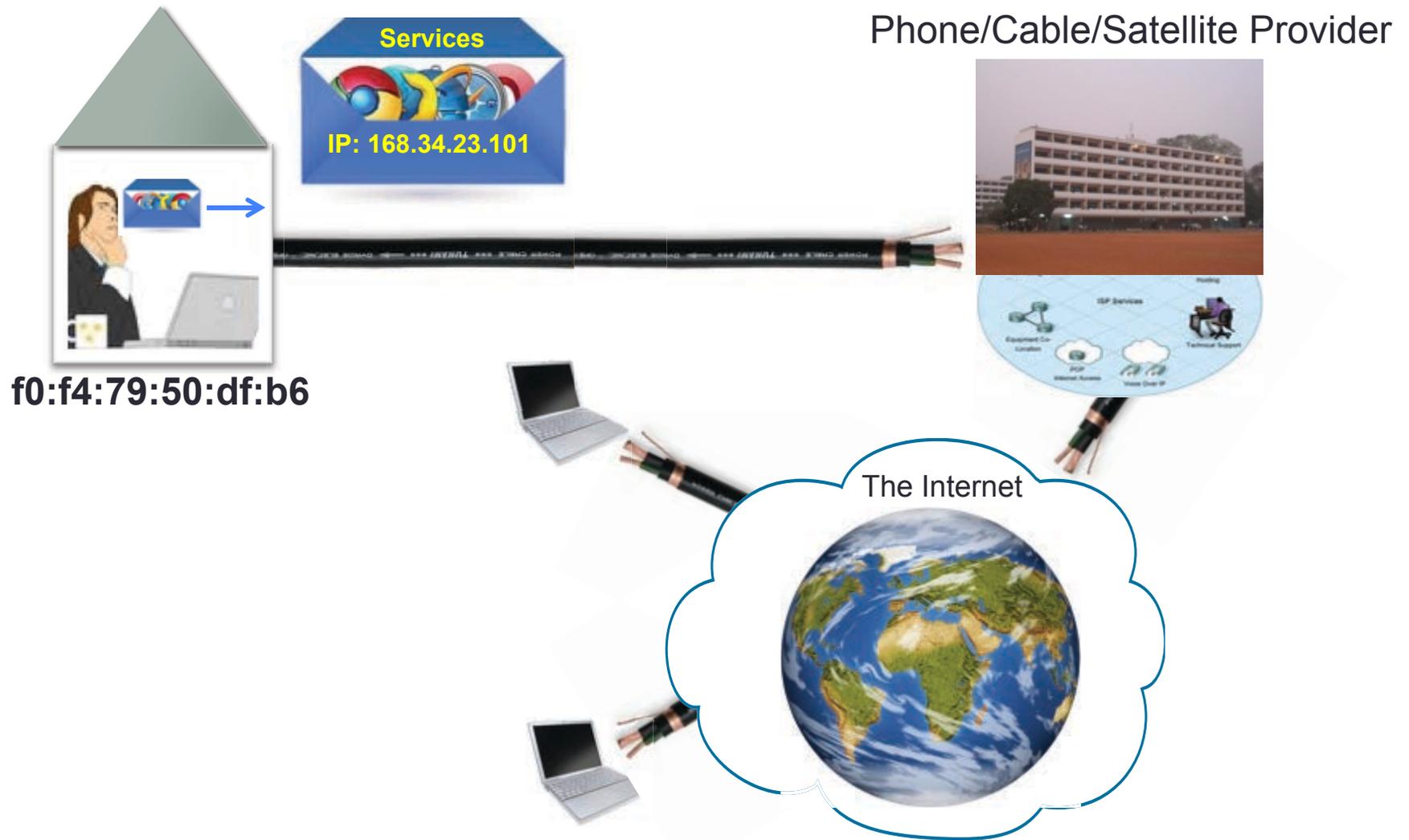


How
THE INTERNET
Works *In two minutes!*

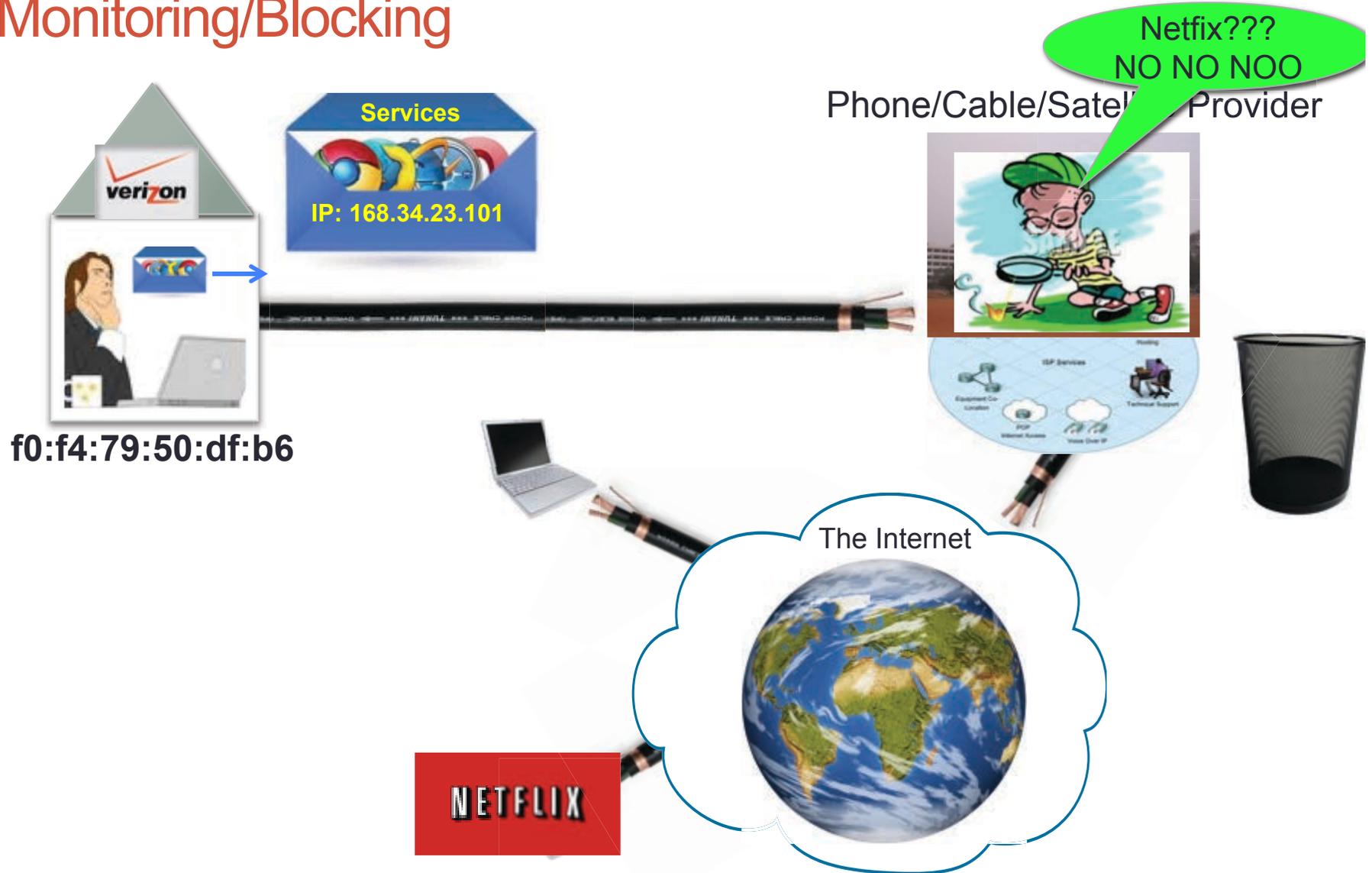
Getting Connected....

- Internet Device (e.g., computer or cell phone)
 - Each device has a unique hardware address (called MAC address)
 - My phone Wi-Fi MAC: **18:87:00:bf:99:0f**
 - My MacBook: **f0:f4:79:50:df:b6**
- Internet Service Provider (ISP)
 - Examples: AT&T, Verizon, Netzero, etc.
 - They provide IP (Internet Protocol) address (e.g., **168.34.23.101**)
 - Also offer services such as email, web page, etc.
- Physical Connection (e.g., cable or phone)
 - Provided by the phone company or the ISP

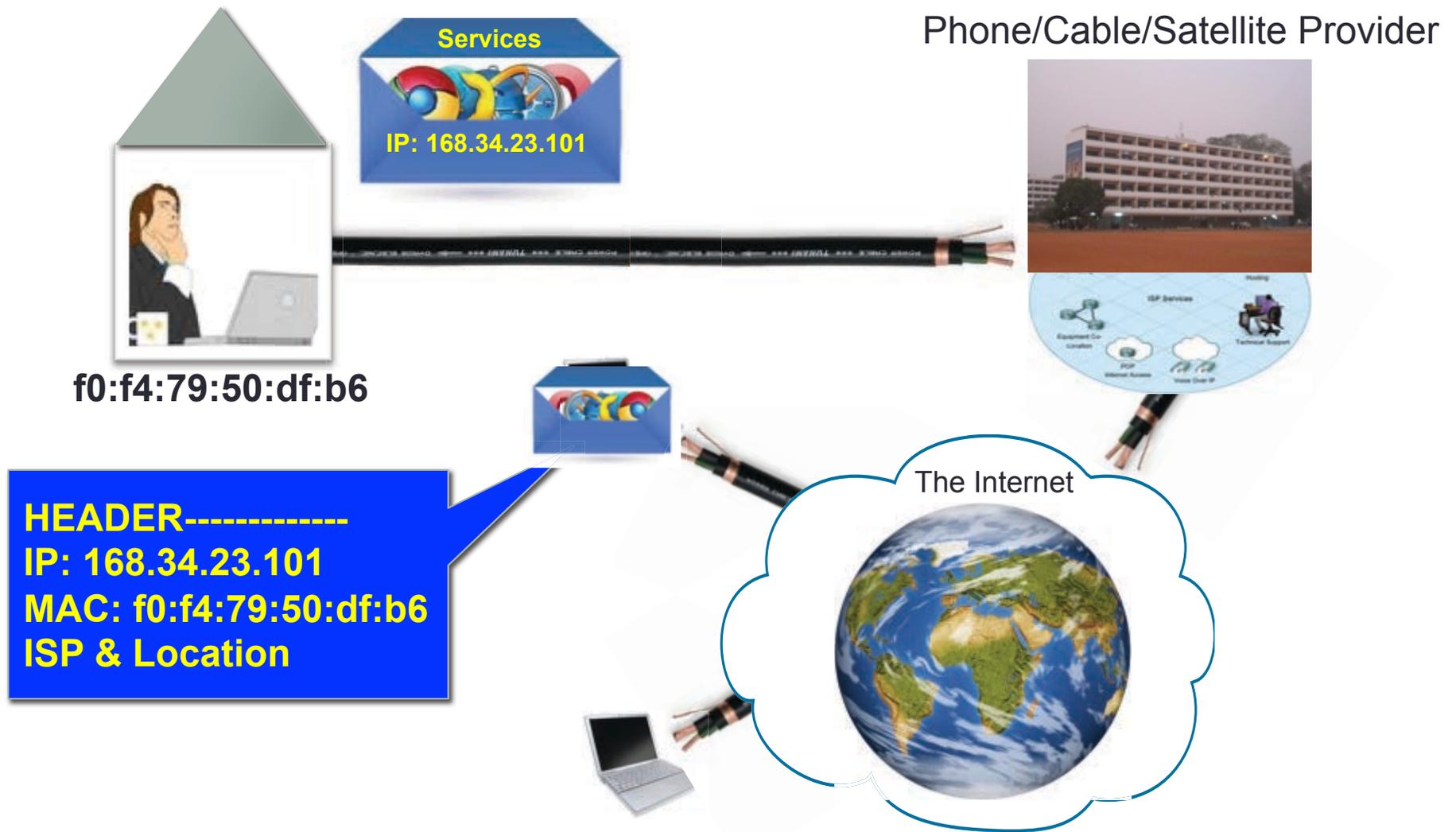
The Internet In Action



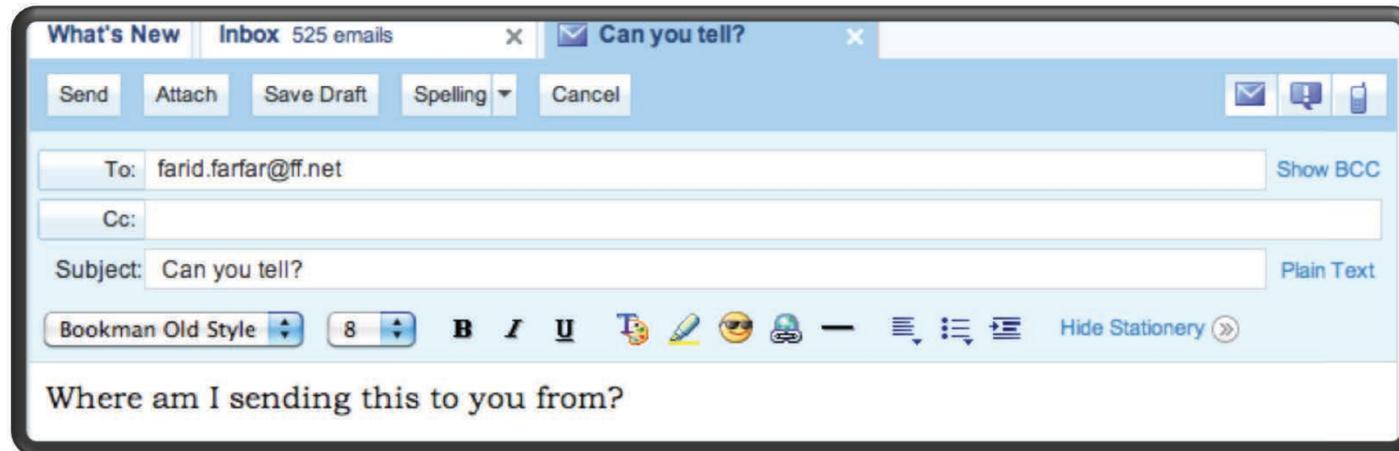
The Internet In Action – Monitoring/Blocking



The Internet In Action – Tracing



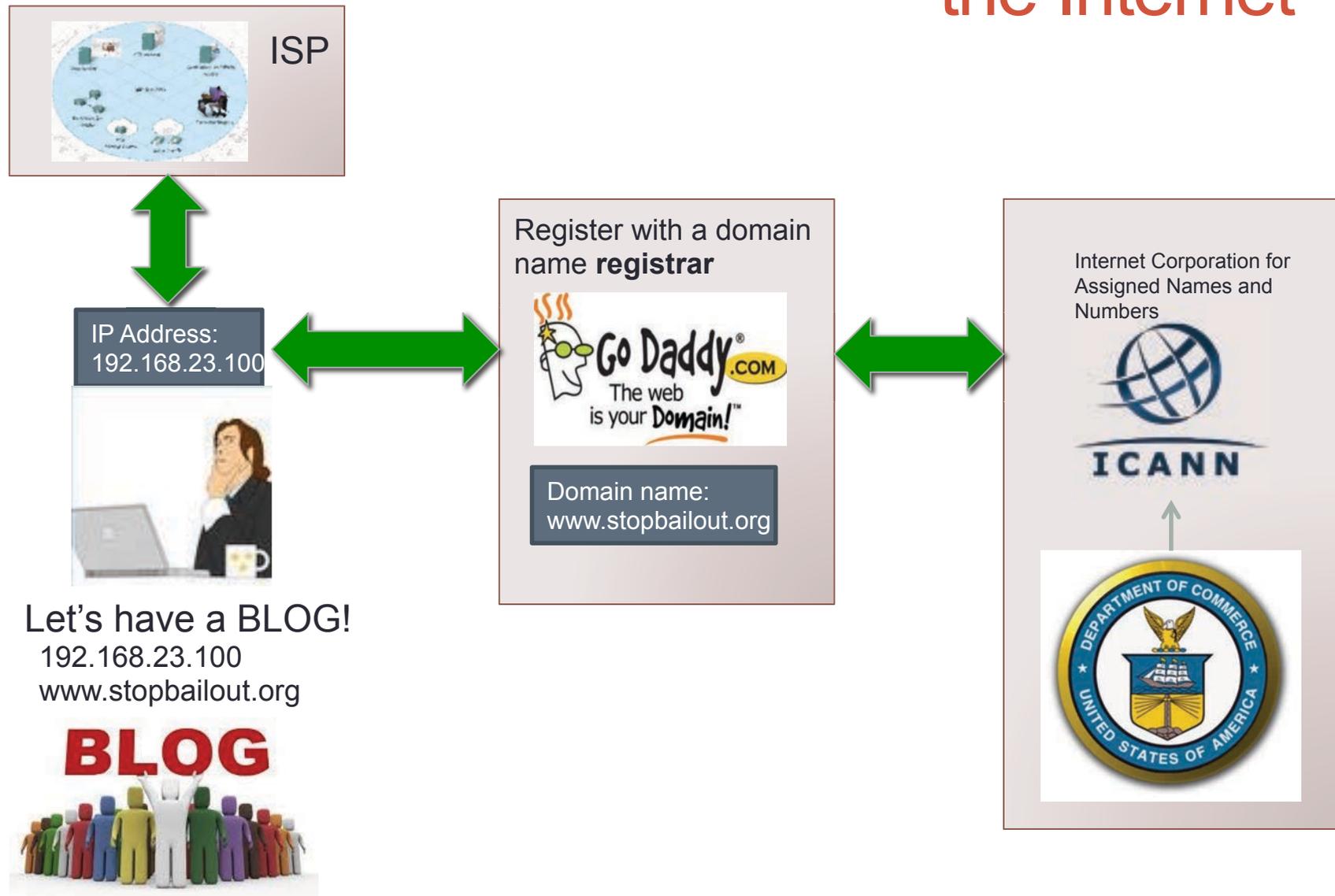
Tracing A Simple Email From YAHOO!



```
X-Mailer: YahooMailRC/574 YahooMailWebService/0.9.113.315625
Message-Id: <1316149525.30665.YahooMailRC@web180114.mail.gq1.yahoo.com>
Date: Thu, 15 Sep 2011 22:05:25 -0700 (PDT)
From: Farid farfar <farid.farfar@ff.net>
Subject: Can you tell?
To: farfar Farid <farid.farfar@ff.net>
Mime-Version: 1.0
Content-Type: multipart/alternative; boundary="0-924320724-1316149525=:30665"
Message Body: --0-924320724-1316149525=:30665 Where am i sending this to you from? --0-924320724-1316149525=:30665 <html><head>
<style type="text/css"><!--div {margin-top:} -->/style></head><body><div style="font-family:'bookman old style','new york', times, serif;font-size:12pt;color:#000000;"><div>Where am i sending this to you from?</div><div style="position:fixed"></div></div></body></html> --0-924320724-1316149525=:30665--
Content-Type: text/plain; charset=us-ascii
Content-Type: text/html; charset=us-ascii
```

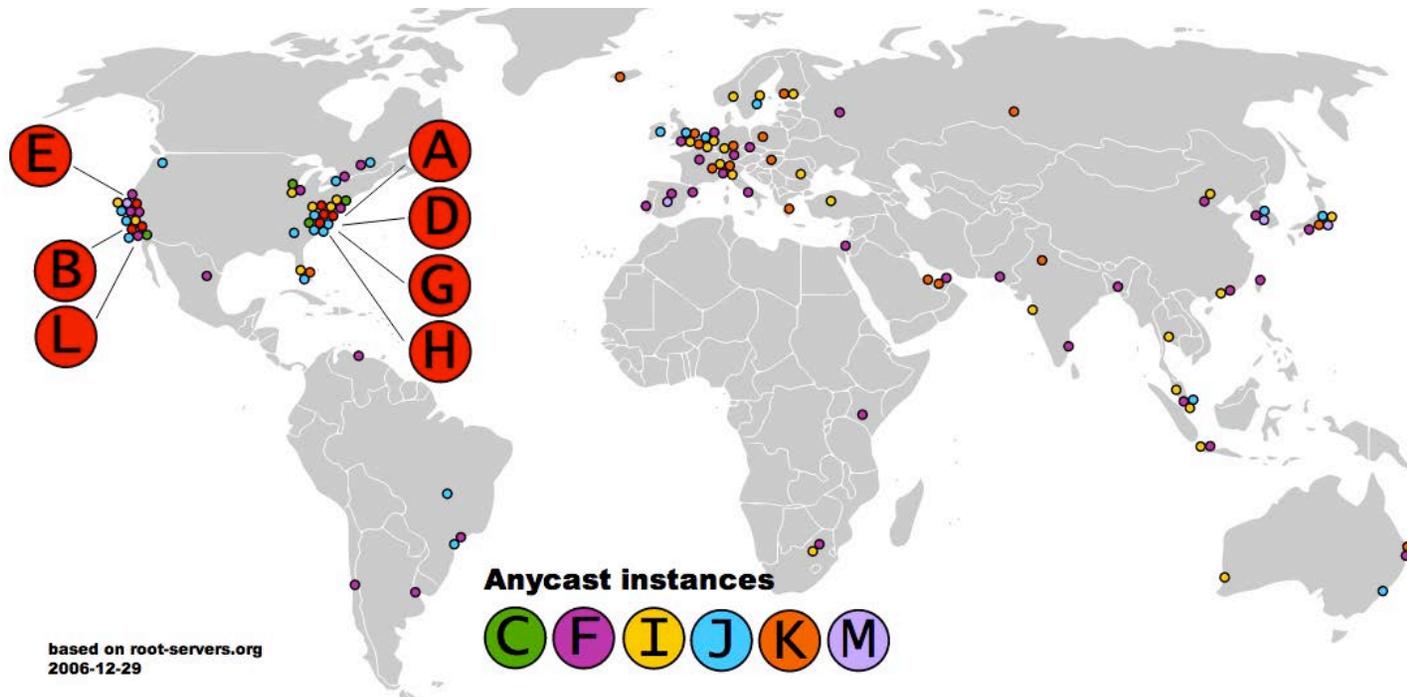
HEADER-----
IP: 168.34.23.101
MAC: f0:f4:79:50:df:b6
ISP & Location

Publishing on the Internet



Root Servers

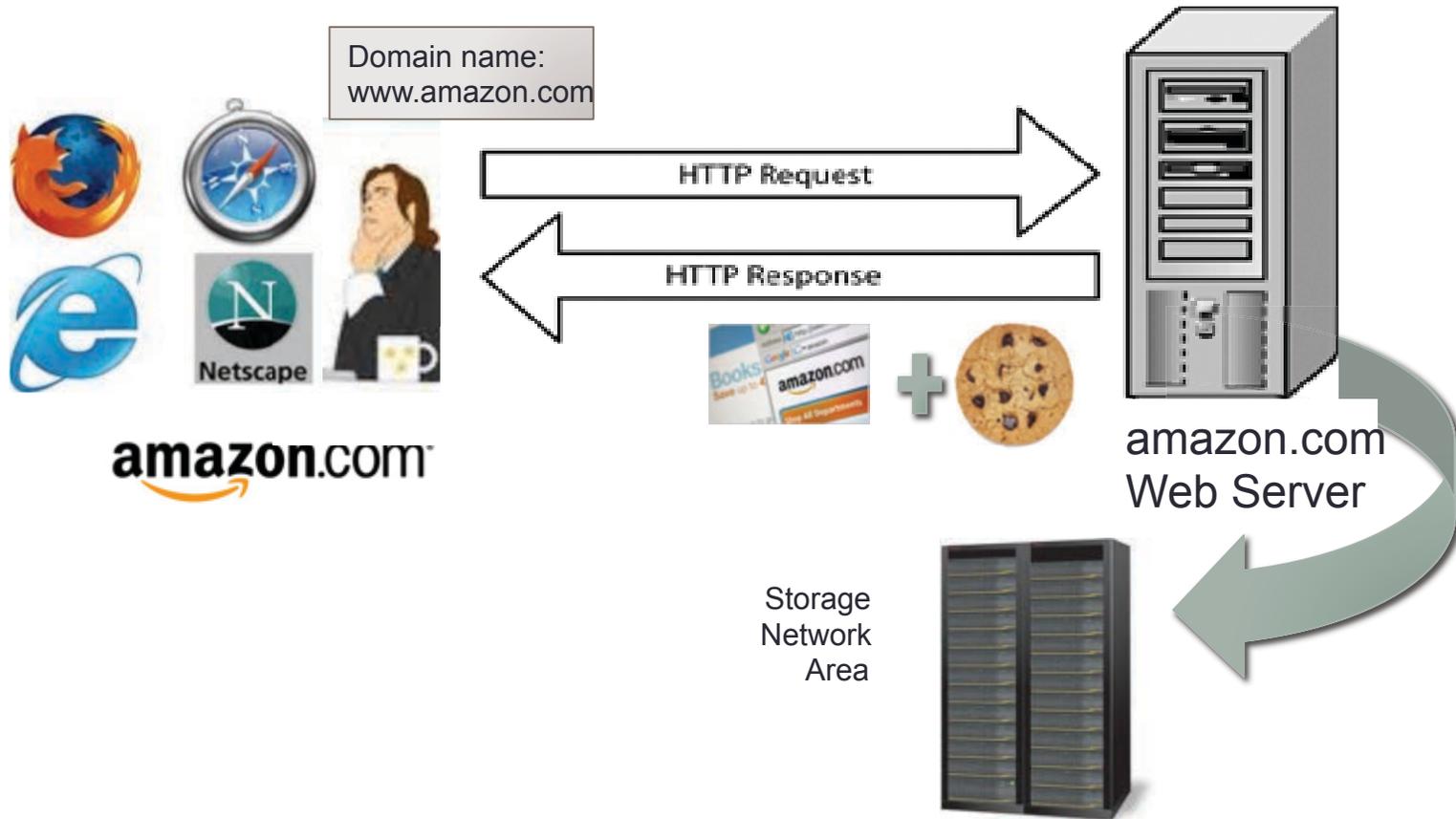
- 13 Unique Root Servers
- 123 Physical Locations around the world



The U.S. government has the ability to shut down any website violating its laws (espionage, Patriot Act I & II, etc.)

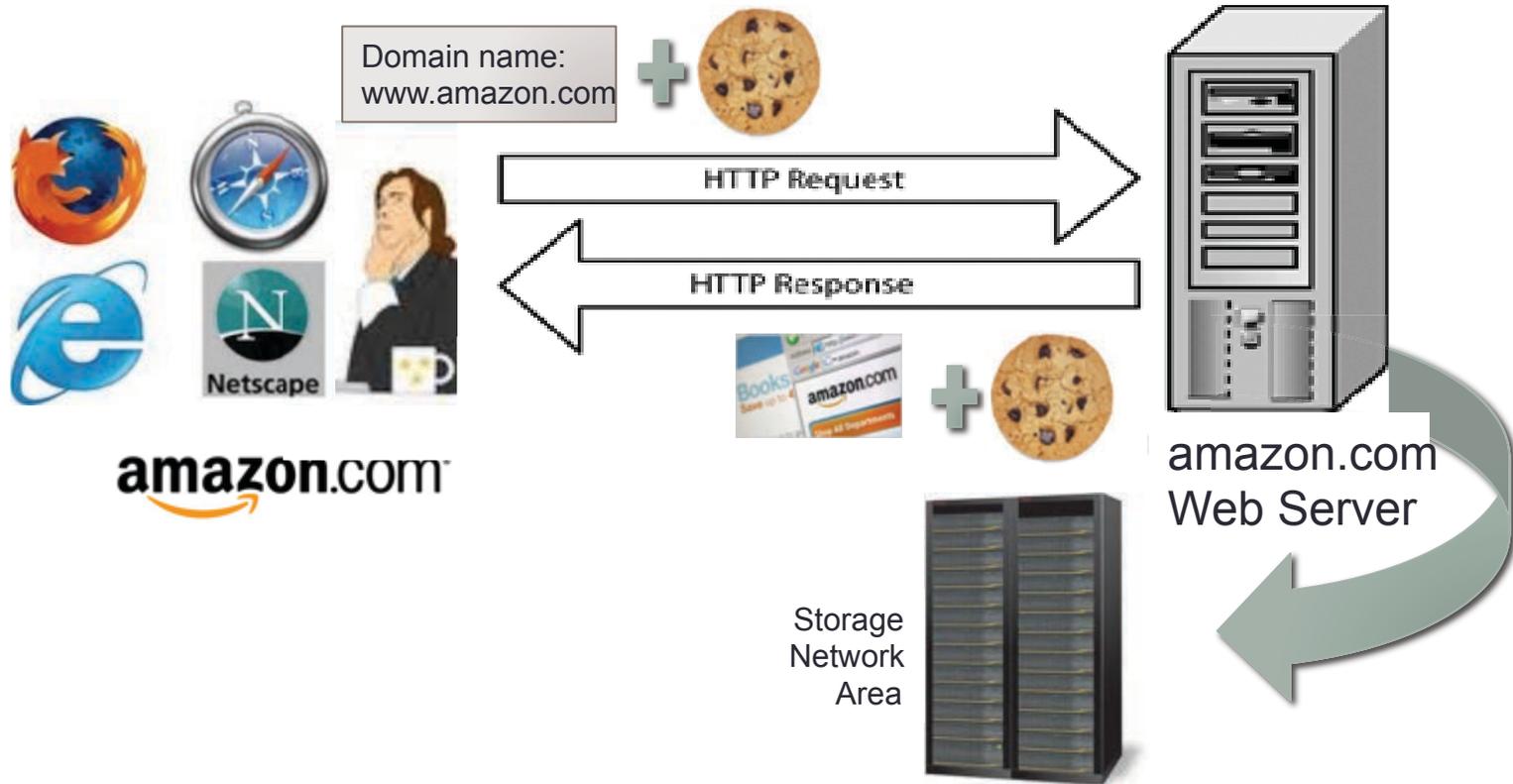
Checking Out a Web Page...

Take a cookie!

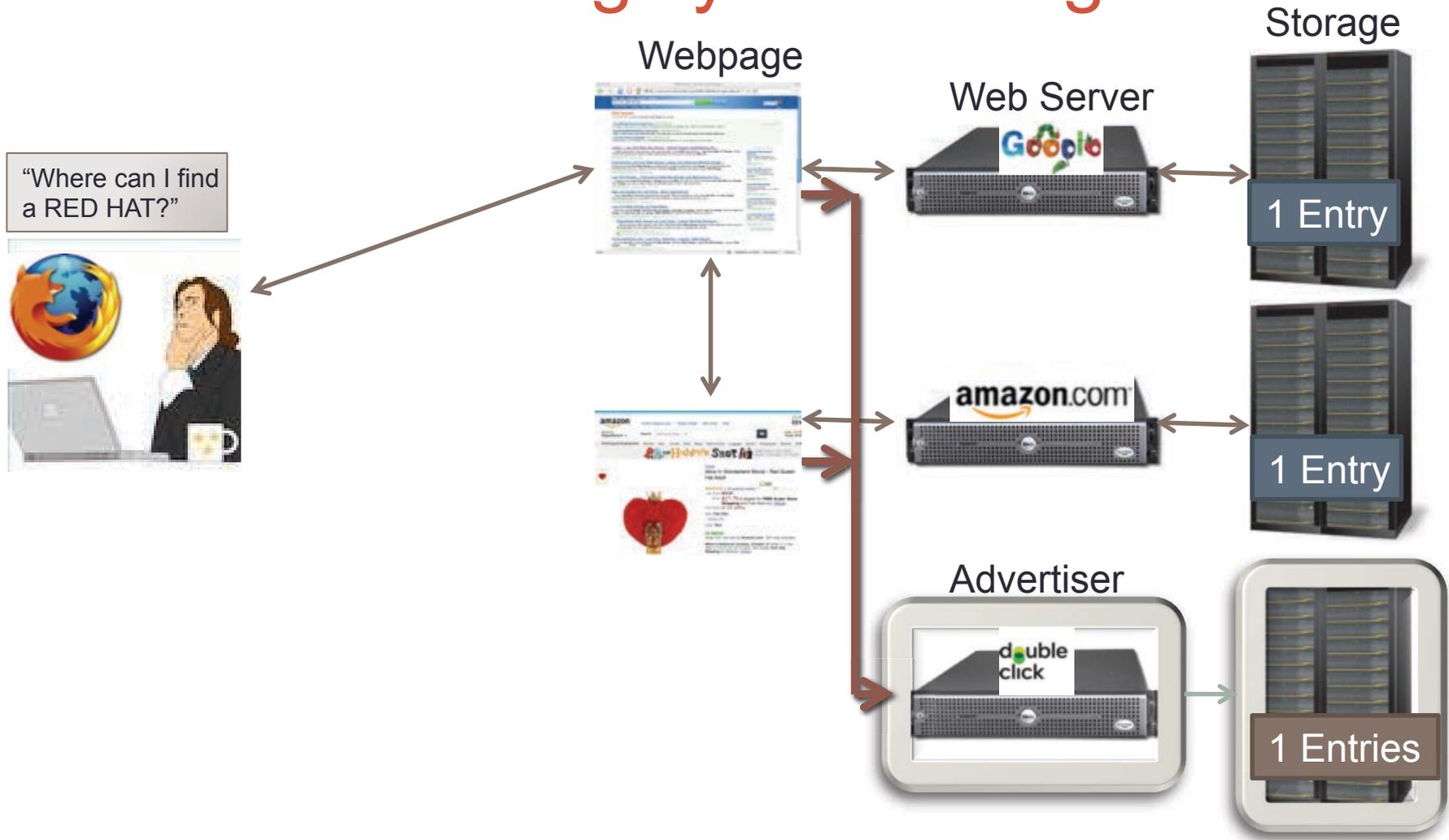


Checking Out a Web Page...

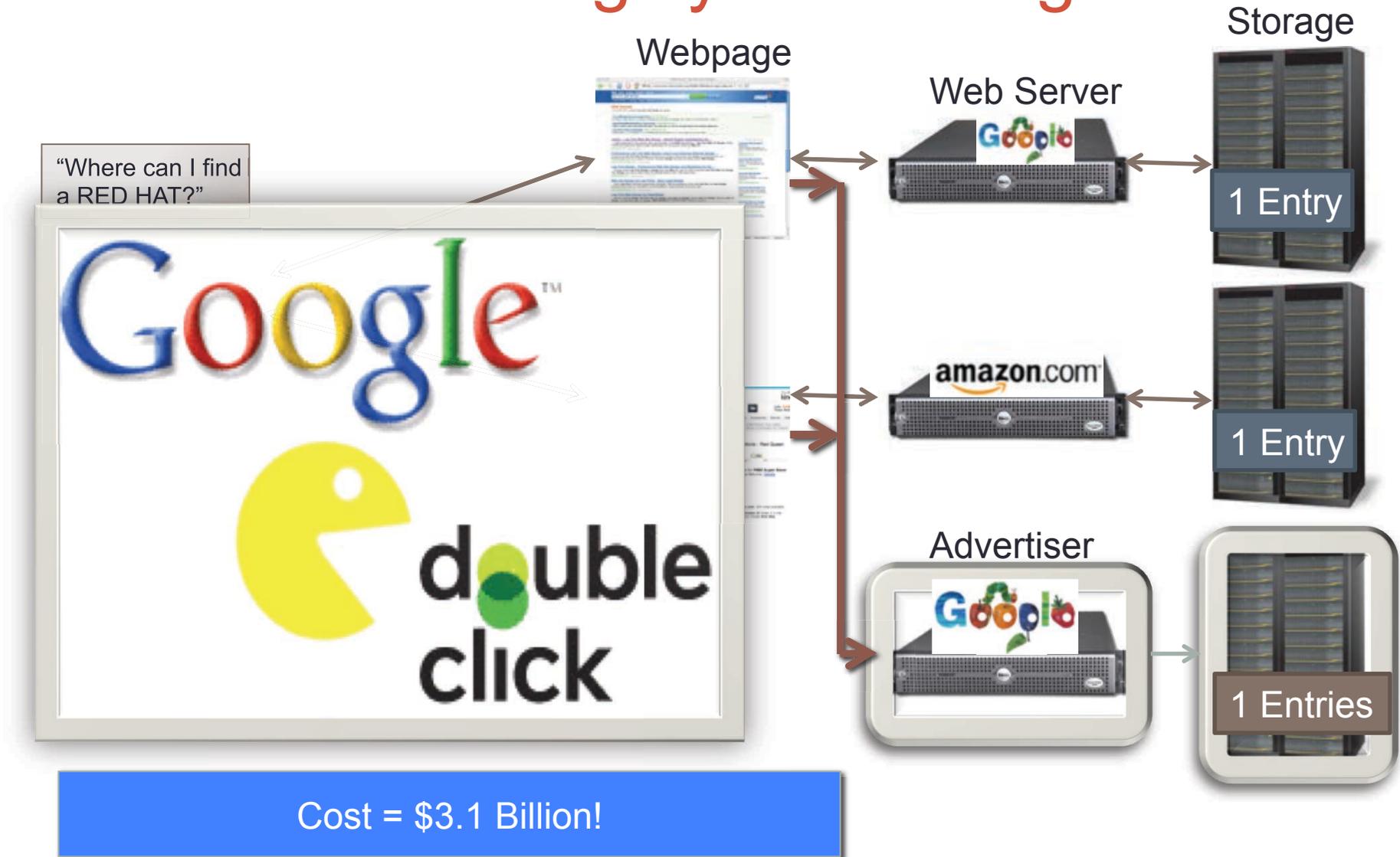
I got your cookie!



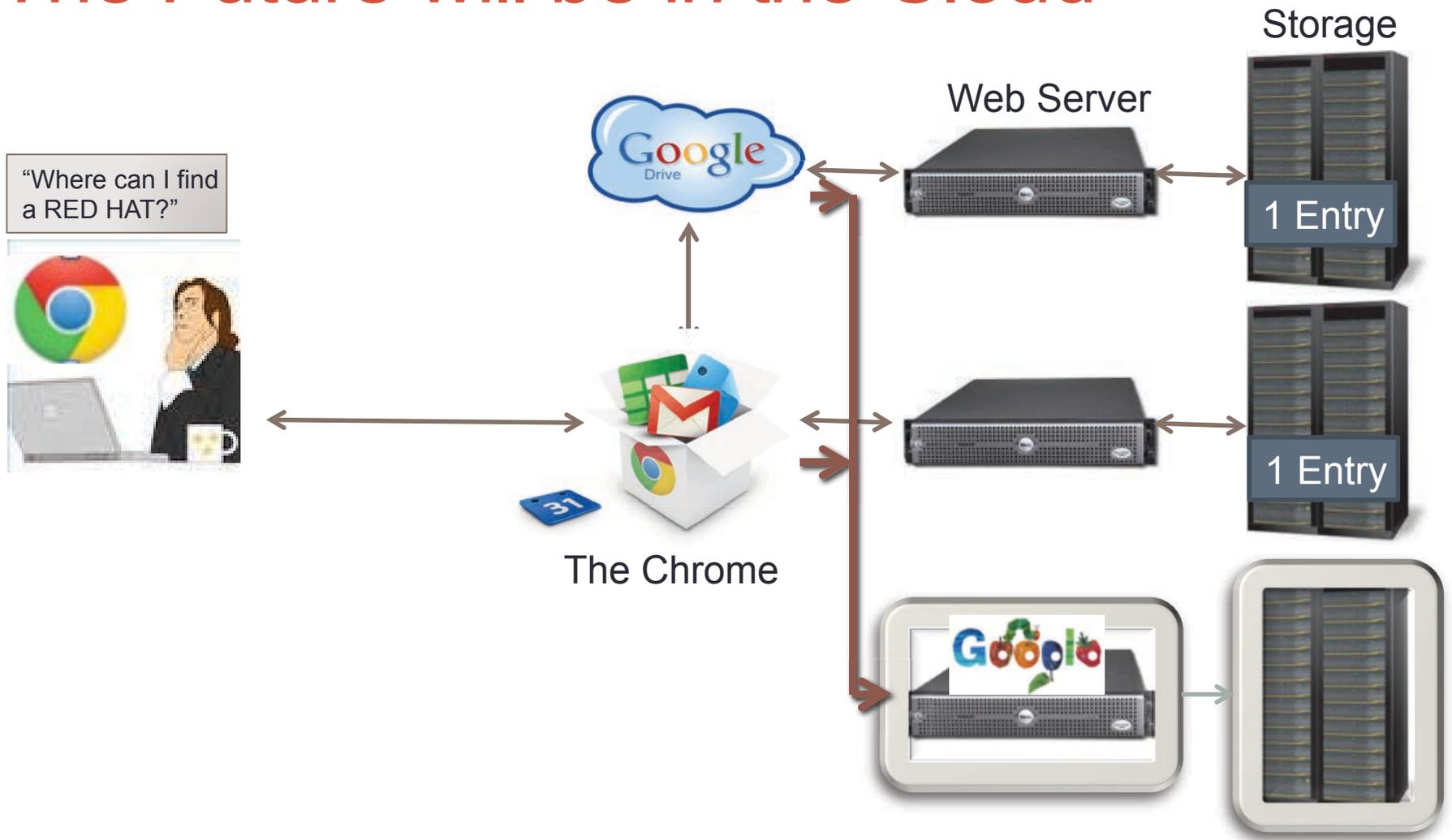
Cross-Site Tracking by Advertising Network



Cross-Site Tracking by Advertising Network

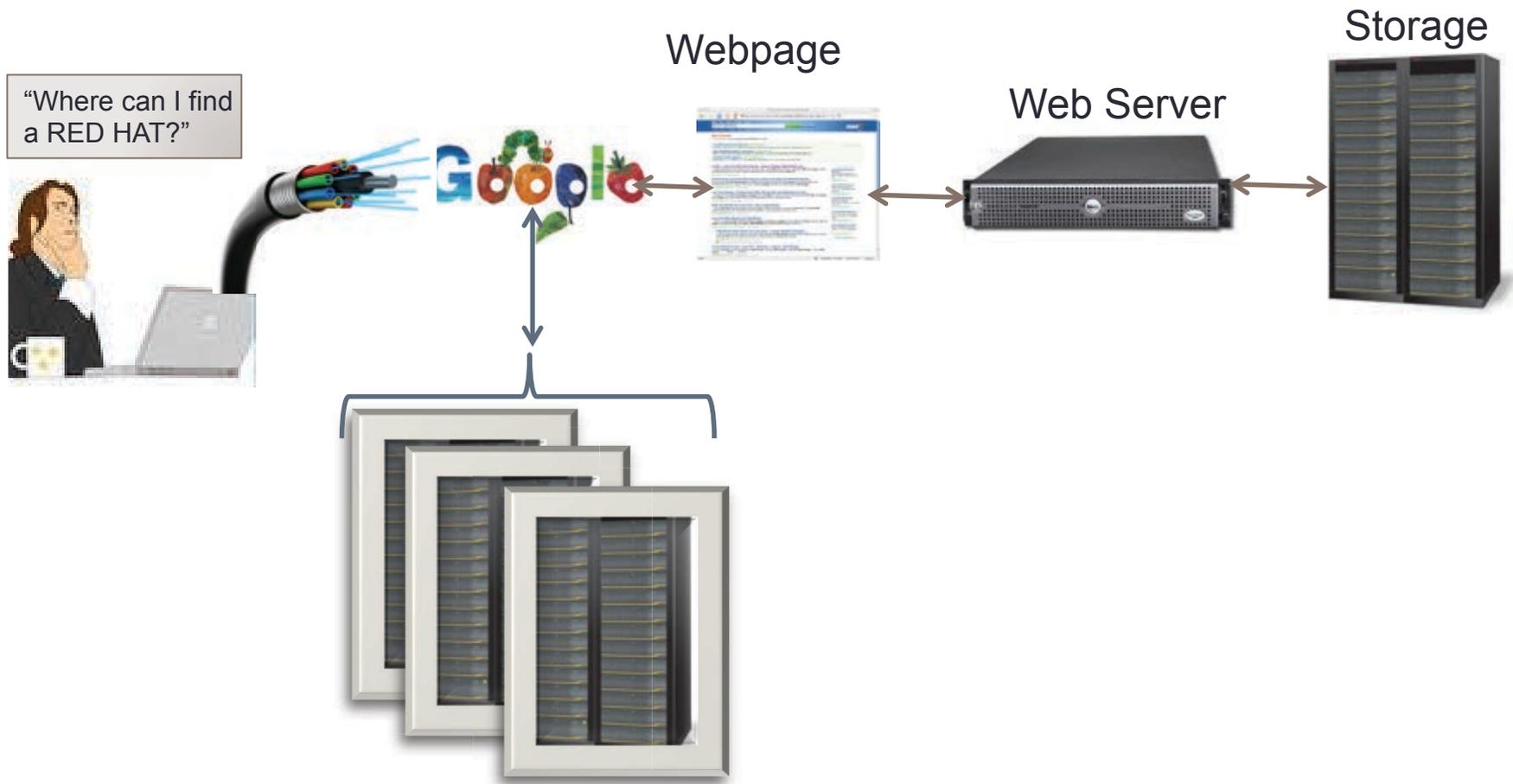


The Future will be in the Cloud



Google Becoming ISP

Google announced that it will beginning to build an ultra high-speed broadband network



AOL Scandal (www.aolscandale.com)

- On August 4, 2006, AOL Research released a compressed text file on one of its websites
 - The file contained twenty million search keywords for over 650,000 users over a 3-month period
 - The file was intended for research purposes
 - AOL pulled the file from public access by the 7th

So How Much Information Do We Reveal?

people search	→	www.whowhere.com
high school records santa rosa california	←	www.santarosa.edu
high school credit records santa rosa ca	→	www.santarosa.edu
piner high school santa rosa california	→	www.worldbadminton.com
high school records santa rosa ca	→	www.santarosa.edu
santa rosa junior collage santa rosa ca	→	www.santarosa.edu
win free money	→	www.freecenter.com
free photo contest	→	www.picture.com
montgomery high santa rosa california	→	www.greatschools.net
disposable wages	→	www.cccsintl.org
disposable earnings	→	www.dol.gov
car insurance age brakes	→	googolplex.cuna.org
stinger car audio	→	stingerelectronics.com
heart shaped diamonds	→	www.diamondgrading.com
heart shaped diamond rings	→	shopping.yahoo.com
heart shaped pink diamond engagement rings	→	www.nextag.com
heart diamond engagement rings	→	www.nextag.com
heart engagement rings	→	www.nextag.com
newly diagnosed tumor a patient's story	→	www.mskcc.org
tumor	→	hope.abta.org
pacific northwest	→	www.gonorthwest.com
stanley morgan	→	www.morganstanley.com
how to rebuild ram	→	mmd.foxtail.com
tumor by the brain	→	www.thomasnet.com
rebuild hydraulic ram	→	wwwapps.tdi.state.tx.us
meritplan insurance	→	wwwapps.tdi.state.tx.us
celecox pills	→	www.pharmaexpress.com

AOL user #3558174 searched for:

Keyword	Found site
las vegas discounts	← → www.tripreservations.com
comopare best travel deals las vegas	→ compareairfare.1x16.org
las vegas entertainment	→ www.sunfinder-vacations.com
sick feeling in body	→ www.cancerhelp.org.uk
burning pains in the body	→ www.wrongdiagnosis.com
low energy	→ thyroid.about.com
writing letter	→ esl.about.com
writing a finance letter to customers	→ www.amazon.com
travel discounts	→ www.traveldiscounts.com
uc davis cancer treatment center	→ cancer.ucdmc.ucdavis.edu
uc davis medical center	← → www.dcn.davis.ca.us
uc davis cancer center	→ daviswiki.org
las vegas	→ www.vegas.com
new cancer drug santa rosa california	← → www.nih.gov
smart travel deals	→ www.statesman.com
advance travel deals	→ ww2.aaa.com
richie brothers	→ www.rbauction.com
travel	→ www.fodors.com
astelin	→ www.dir.qld.gov.au
concrete trucks	→ uk.holidaysguide.yahoo.com
las vages coupon offers	→ www.springfield.net
peterbilt mixer trucks	→ www.rockanddirt.com
kenworth semi mcneilus sliding trailer mixer	→ tannerequipment.com
kenworth mixer	→ www.gulf-times.com
fifteen yard concrete trucks for sale	→ www.orthopedicquestions.com
burning feeling in arm	→ www.lasvegas-nv.com
vegas casino coupons	→ www.imdb.com
pretty	→ searchenginez.com
public record death search free	→ www.publicrecordfinder.com
public records	→ www.publicrecordfinder.com

So How Much Information Do We Reveal?

AOL user #3558174 searched for:

Keyword	Found site
las vegas discounts	→ www.tripreservations.com
comopare best travel deals las vegas	→ compareairfare.1x16.org
las vegas entertainment	→ www.sunfinder-vacations.com
sick feeling in body	→ www.cancerhelp.org.uk
burning pains in the body	→ www.wrongdiagnosis.com
low energy	→ thyroid.about.com
writing letter	→ esl.about.com
writing a finance letter to customers	→ www.amazon.com
travel discounts	→ www.traveldiscounts.com

Conclusion:

- The user faces serious medical concerns (possibly long cancer)
- Searching for cure in UC Davis;
- Planning a trip to Las Vegas;
- Searching for some old friends!

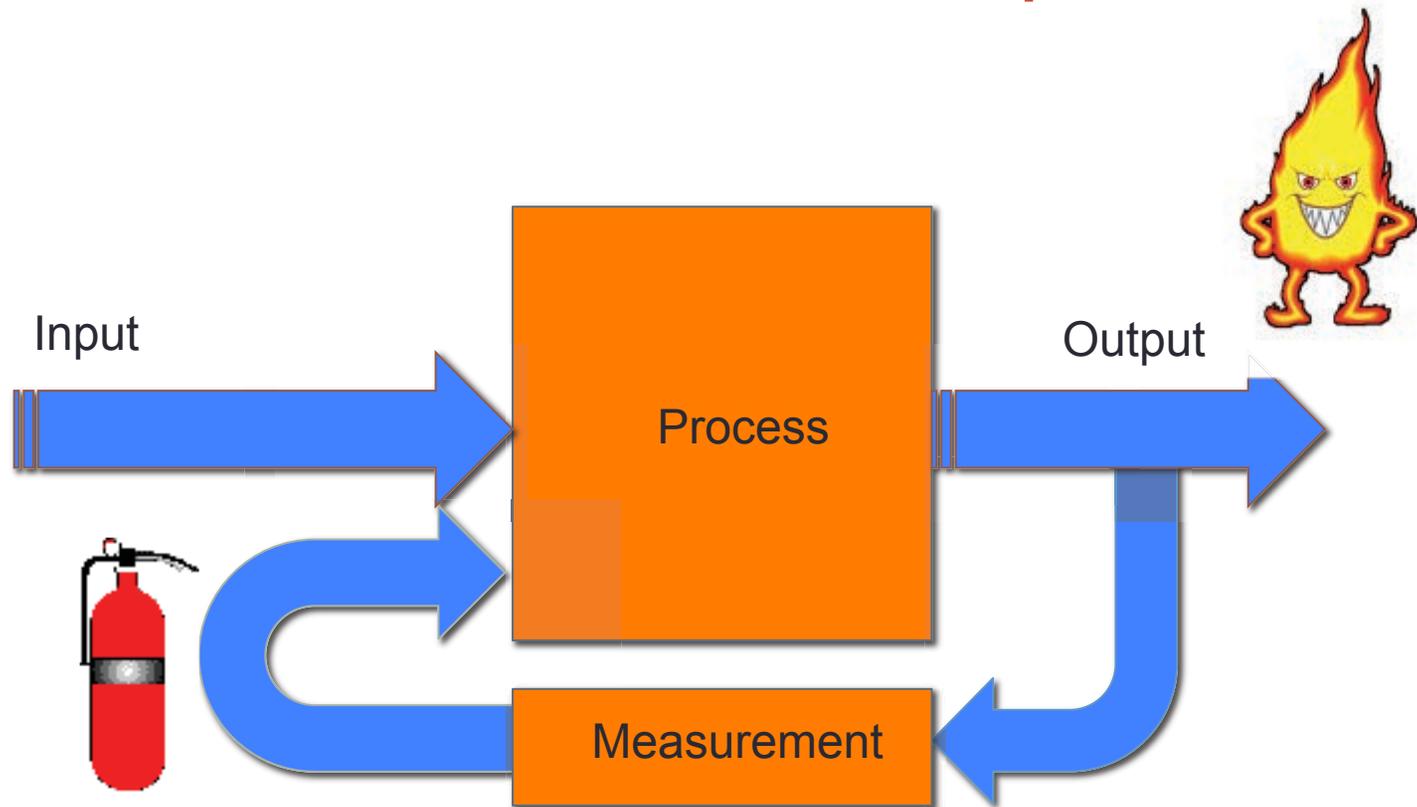
Can you imagine what GOOGLE has on you?

people search
high school records santa rosa calif
high school credit records santa rosa
piner high school santa rosa californi
high school records santa rosa ca
santa rosa junior collage santa rosa c
win free money
free photo contest
montgomery high santa rosa californi
disposable wages
disposable earnings
car insurance age brakes
stinger car audio
heart shaped diamonds
heart shaped diamond rings
heart sh
heart di
heart er
newly d
tumor
pacific r
stanley
how to r
tumor b
rebuild hydraulic ram
meritplan insurance
celecox pills

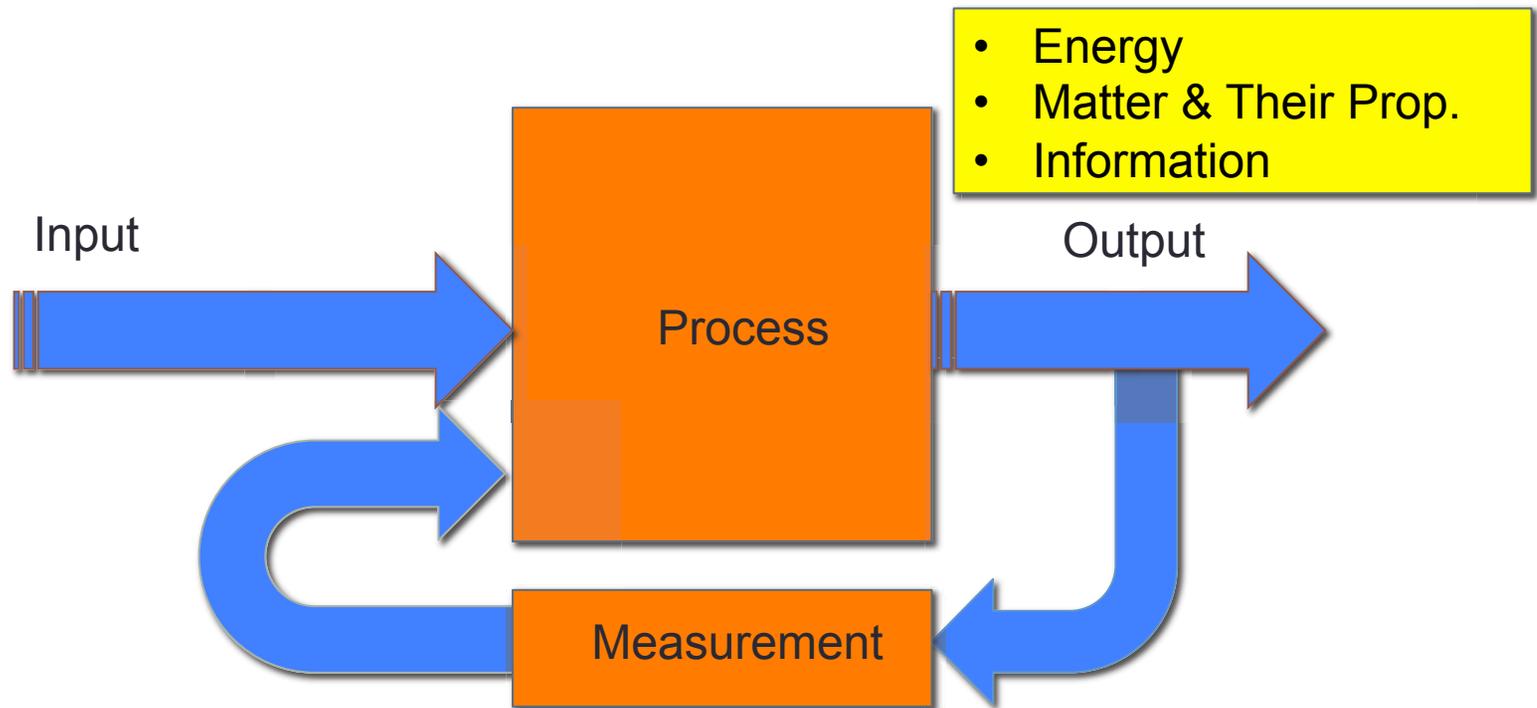
shopping.yahoo.com
www.centex.com
concrete trucks
las vages coupon offers
www.qld.gov.au
uk.holidaysguide.yahoo.com
om
om
m
estions.com
com
www.mdb.com
searchenginez.com
www.publicrecordfinder.com

Technology is about Controlling!

Technology Is All About Processing & Measurement to Control the Output

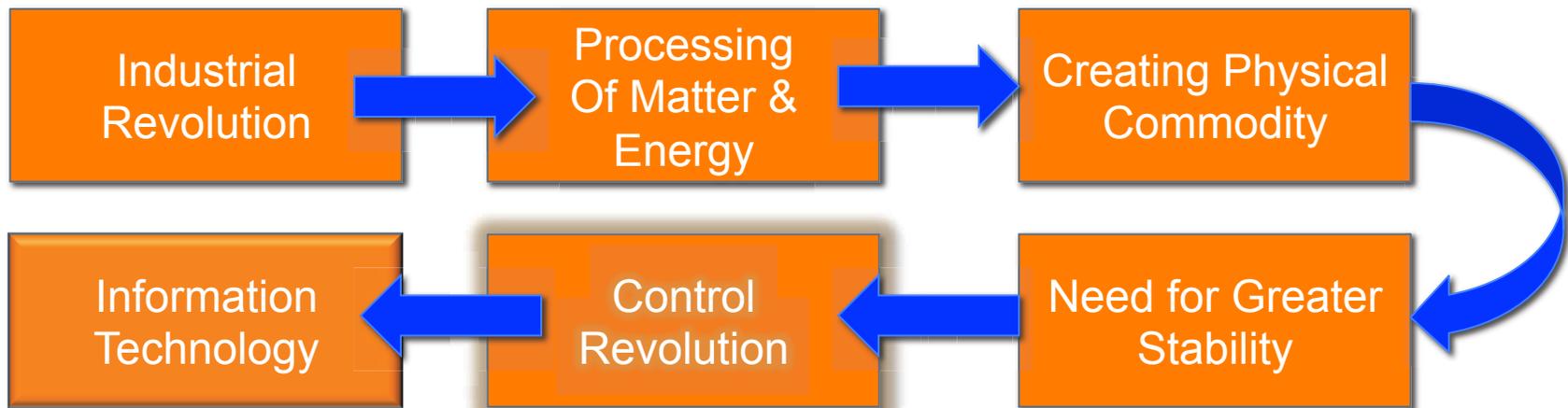


Technology Is All About Processing & Measurement to Control the Output



Control Revolution & Information Technology

A Historical Prospective

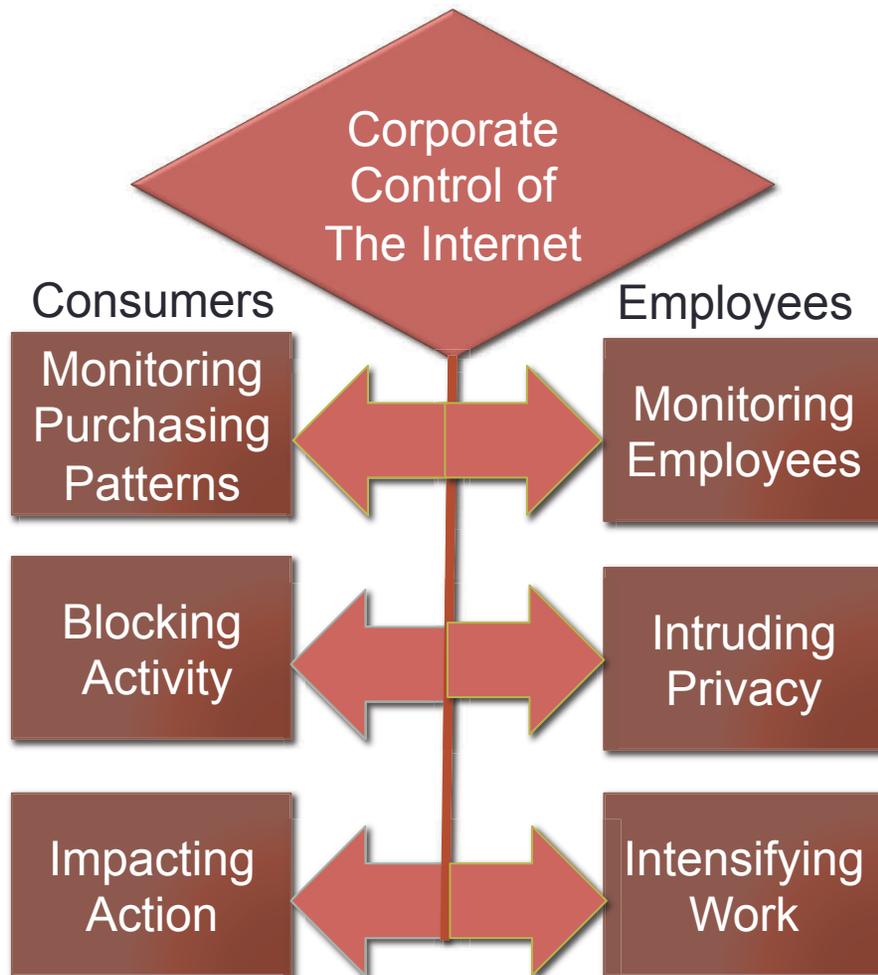


Industrial Revolution → Control Revolution → IT

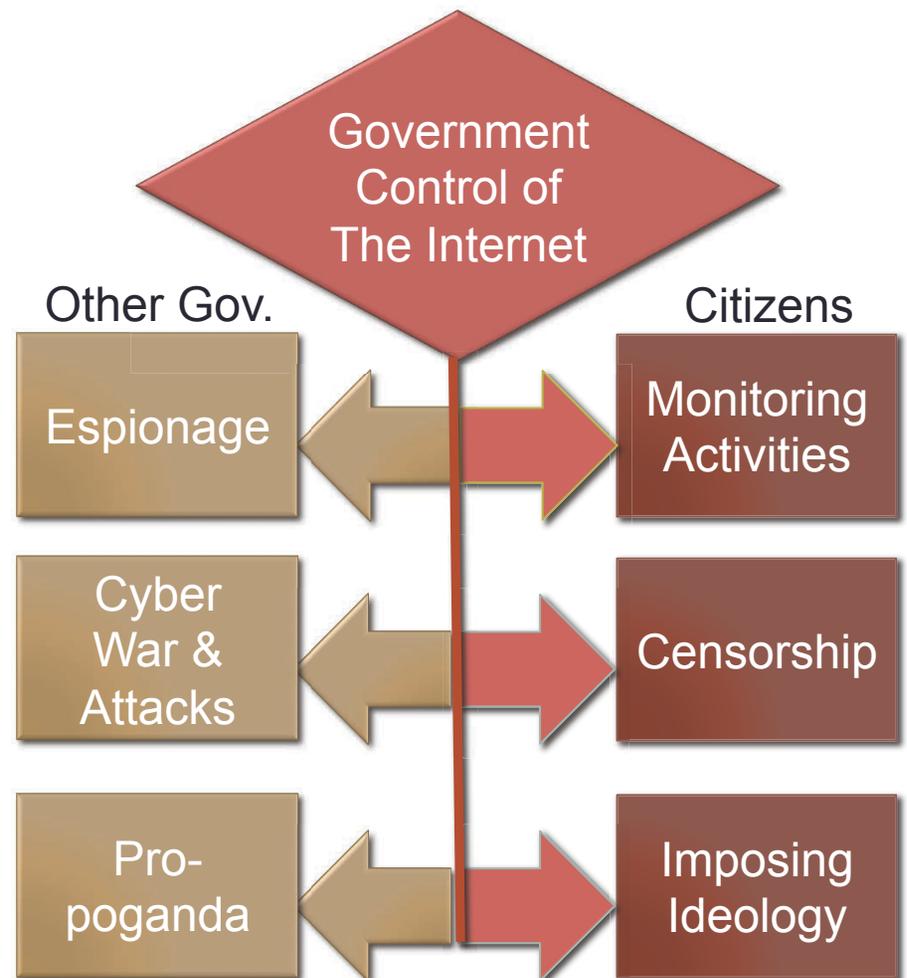
Internet has changed our lives!

Yet,
It is increasingly
becoming a tool of control!

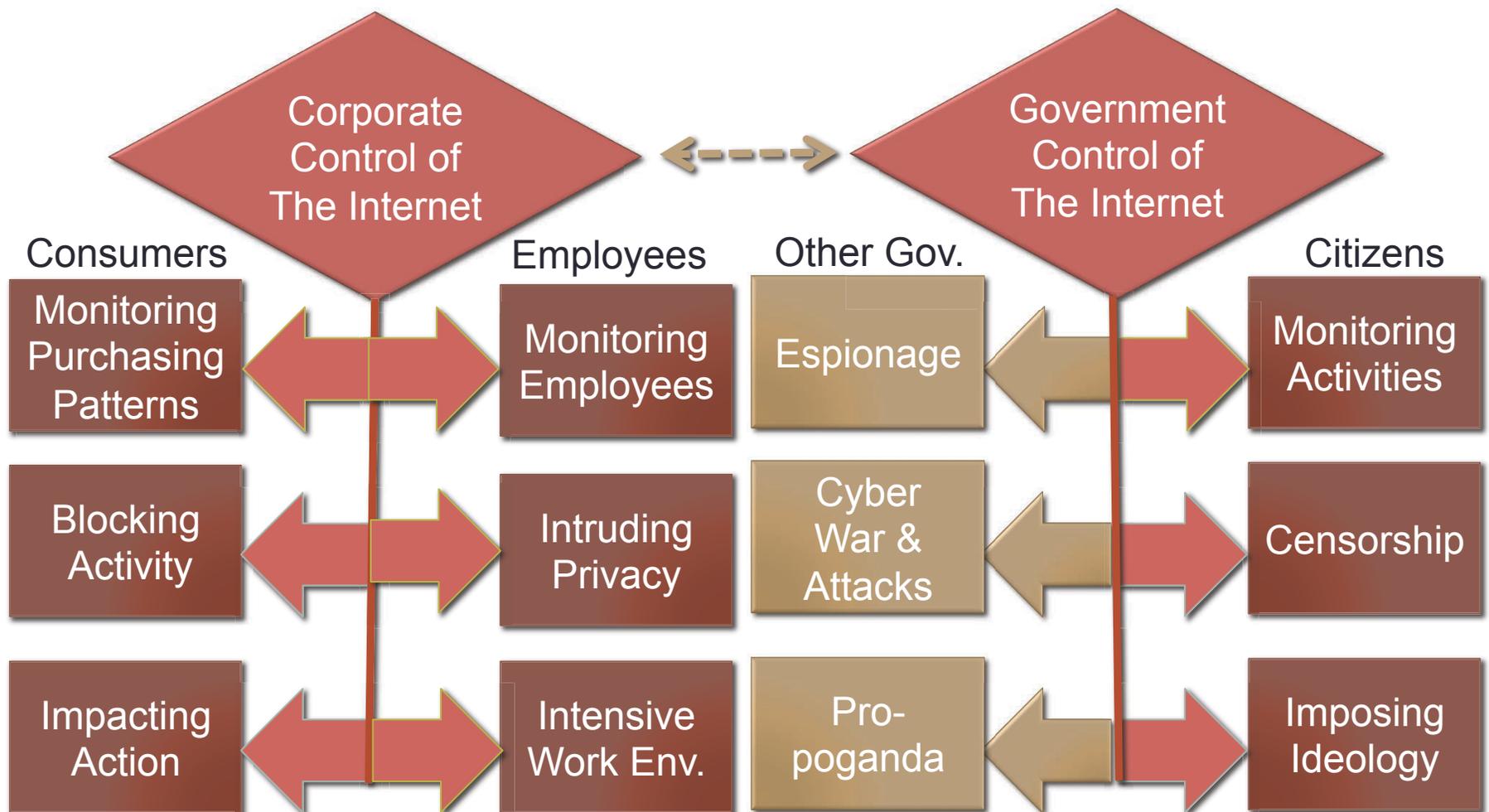
Internet: Enabling Technology of Control



Internet: Enabling Technology of Control

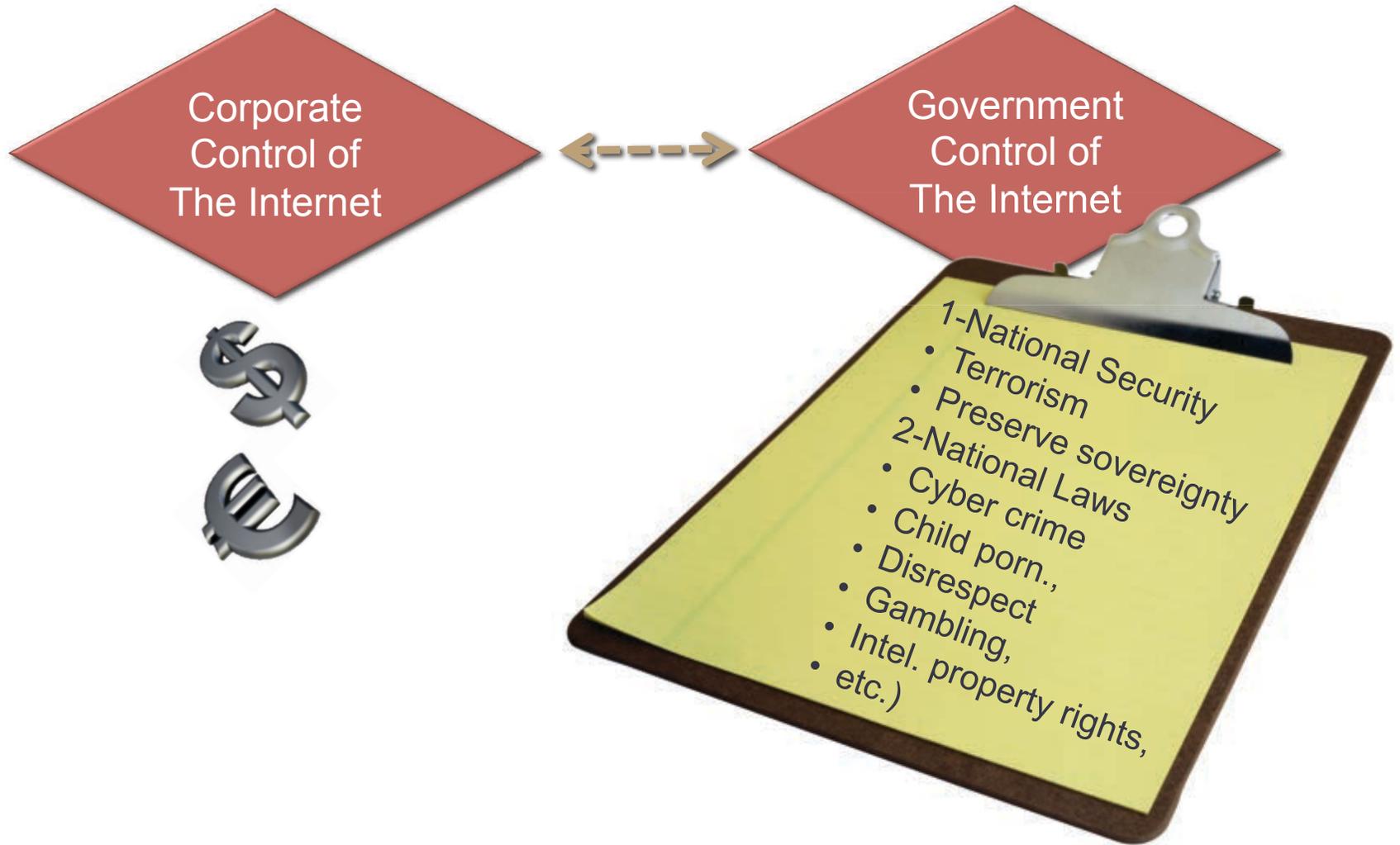


Internet: Enabling Technology of Control



Internet: Enabling Technology of Control

...for very good reasons!



Internet allows freedom of expression!

Yet,
It is increasingly
becoming a tool of control
by the **governments**

EXAMPLES.....

Examples of Government Censorship...

(Requests from Google in 2011)

- In the second half of 2011 the total number of government requests to Google jumped by 103 percent
 - Google complied with 63 percent of the requests
- **France**: violating its **copyrights Law**
- **Spain**: **improper** blogs and sites
- **Canada**: **disfiguring** a public document
- **Thailand**: **insulting** the monarchy
- **Turkey**: **insulting** the founder

Government Control

More developed Countries



- **U.K.**
 - Seeking a **kill-switch** to shut down the Internet during major demonstrations
 - The parliament introduced a new data communication bill requiring all ISPs to keep tabs on their users (cost=\$1.8bn over 10 years)
- **Denmark**
 - Wikileaks has released the list containing 3863 sites blocked by Danish ISPs (voluntarily) as of February 2008
 - A “human error” carried out by the police resulted in 8000 websites being blocked – marked as sites offering child pornography

Watch What You Say.....

2012

- **Saudi Arabia:**
 - Authorities receive over 1,200 requests everyday to have web pages blocked

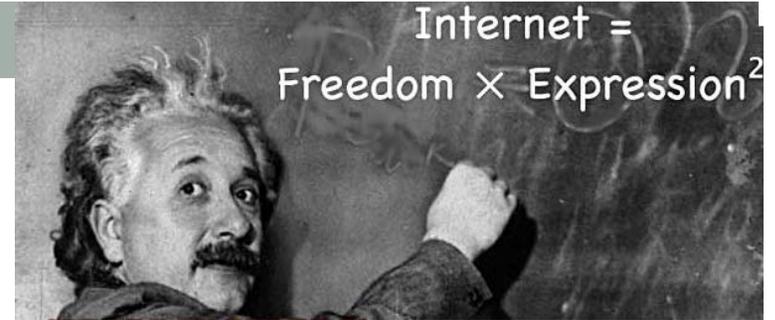
Dear User, عزيزي المستخدم,

Sorry, the requested page is unavailable. عفوآ، الموقع المطلوب غير متاح.

If you believe the requested page should not be blocked please [click here](#). إن كنت ترى أن هذه الصفحة ينبغي أن لا تُحجب تفضل [بالضغط هنا](#).

For more information about internet service in Saudi Arabia, please click here: www.internet.gov.sa لمزيد من المعلومات عن خدمة الإنترنت في المملكة العربية السعودية، يمكنك زيارة الموقع التالي: www.internet.gov.sa

Watch What You Say..... 2012



Kuwait:

10 years in prison for a **Facebook** post defaming the Saudi & Bahraini government

Bahrain:

president of the Bahrain Center for Human Rights was sentenced to 3 months in prison for a **tweet**

Oman:

Four people received 3-6 months in prison for posting **on social networks**

Israel:

"**Facebook posts and Twitter feed**" matter of state security

Remember London Uprising? (August 6-11, 2011)

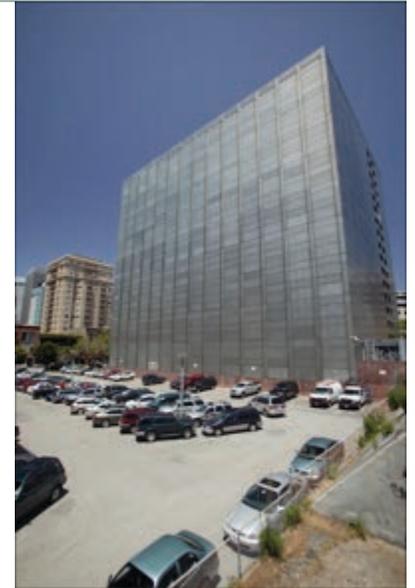
- BBC:
 - People use BlackBerry to determine the riot locations
- Research in Motion:
 - Complied with the Government allowing law enforcement to gain access to private messages



Britain has 1 ½ times as many surveillance cameras as China! One per every 14 people"

Government Monitoring in U.S. National Security Agency

- AT&T's **regional switching center** in San Luis Obispo
- 80 percent of all communications from Asia enters the United States
- In 2003 NSA mirrored all the cables carrying domestic and international calls entering the seventh floor and rerouted them to a secret room one floor below



- AT&T's regional switching center in San Luis Obispo, 611 Folsom Street, Seventh floor

PBS: NOVA: <http://www.pbs.org/wgbh/nova/military/spy-factory.html>

“Less Democratic” Governments & the Internet

The Myth

“Once the Internet reaches a country it is an unstoppable liberating force”

- Color Revolutions of the **former Soviet Union**, it was mobile phones
- Saffron Revolution in **Burma**, it was YouTube
- Green Movement in **Iran**, it was Twitter

Connectivity + Device →
Liberty & Democracy!

“Less Democratic” Governments & the Internet

The Reality



- Over the years these governments have become more powerful to control their Domestic Internet!
 - Sophisticated filtering technology
 - Subtle removal of Web requests
 - Arrest bloggers
 - Trace emails
- Taking the entire country off the Internet
 - Creating Intranet (Chinternet)
 - Iran (March 2013)

Illusion of liberating the world one tweet at a time is actually turning the Internet into a tool for world's subjugation -Evgeny Morozov



The Internet Control

A New War Zone

- **U.S. & Iran:**
 - A computer virus created to sabotage Iran's nuclear program designed by American and Israeli experts (**Stuxnet & Flame**)
 - Iranian hackers intent on disrupting the United States' financial sector (**Capital One Financial Corp. and BB&T Corp**)
- **U.S. & China:**
 - Chinese made laptops reportedly have pre-installed viruses, according to Microsoft
 - American designed Chinese made ACTEL chip (PA3 FPGA) was shown to have a backdoor deliberately built in it
- **Egypt & Israel:**
 - Israeli crippled Egypt's Internet in 2008, according to an alleged Mossad agent
- **India & Bangladesh:**
 - Bangladeshi hackers hacked hundreds of government in India
 - Indian hackers hacked 50 government websites and up to 3,000 other websites in Bangladesh

Final Remarks.....



- Smart Devices are becoming powerful & convenient tools with potentially diverse consequences
- Any technology, ultimately, moves along the existing socio-economic structure of the society
- Technological progress is not like a force of nature – we must exercise control
- The most dangerous aspect of technology is becoming like a *black box*!
- Ask the right questions!
 - How is your privacy protected? How can we preserve public access? Who is monitoring? Who owns the technology?

What We Did NOT Discuss...

Food for thought

- Impact of Information Technology on **modern warfare** (indoor/out door drone technology, robotics, etc.)
- What happens to us when we extensively **rely on technology** (creativity, thinking process, etc.)
- How does technology impacts **social inequality** (more jobless, more concentration of wealth)
- What technologies are being used to **monitor and control** internet users (face recognition, crowd-sourcing, distributed knowledge)
- How is **Open Source** Software paradigm impacting greater control over the Internet
- **Singularity**: when man becomes immortal (2045?)
- **Smart Cities**: Best environmental practice; ultimate way to control!

Further Research



- Why is Net-neutrality so important?
- What are examples of technologies that protect public interest?
- How educated are we when it comes to protecting our privacy over the Internet?
- Why is public broadcasting important?
- Investigating teens' attachment to their cell phones
- What happens if two people act as republican and democrat try to learn about social security. What kind of information they get from Google based on their background collected by their browser
- Why should the UN control the global Internet and not a single country
- Summarize ways we can protect our security (technical)
- Some statistical information: income, phone type, plan, how much you use it, what you use it for, what kind of car you drive, do you use it for studying, etc.
- How cell phones are being used for learning

References

- Registering your domain name:
 - http://www.quackit.com/domain-names/how_to_register_a_domain_name.cfm
- How TCP works:
 - <http://www.tech-faq.com/understanding-microsoft-tcp-ip.html>
- TOR Project
 - <https://www.torproject.org/about/overview>
- AOL Scandal
 - <http://aolscandal.com/>
- Book: What Google Has on you
- Book: The Big Switch
- The Net Delusion: http://www.wired.com/magazine/2010/12/st_essay_totalitarians/ ; See his talk on TED
- Wireless in America: http://files.ctia.org/pdf/WirelessInAmerica_Jan2011.pdf
- Hacking back sites:
http://redtape.nbcnews.com/_news/2012/10/23/14624198-why-your-banks-website-might-go-down-soon-and-why-hackers-seem-unstoppable?chromedomain=openchannel&lite
- Crowd Sourcing: <http://www.crowdsourcing.org>

Any Questions?

For more Information Contact:
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farid.farahmand@sonoma.edu

<http://www.sonoma.edu/users/f/farahman/>

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Please complete the survey