

CIS551: Computer and Network Security

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04/14/2014

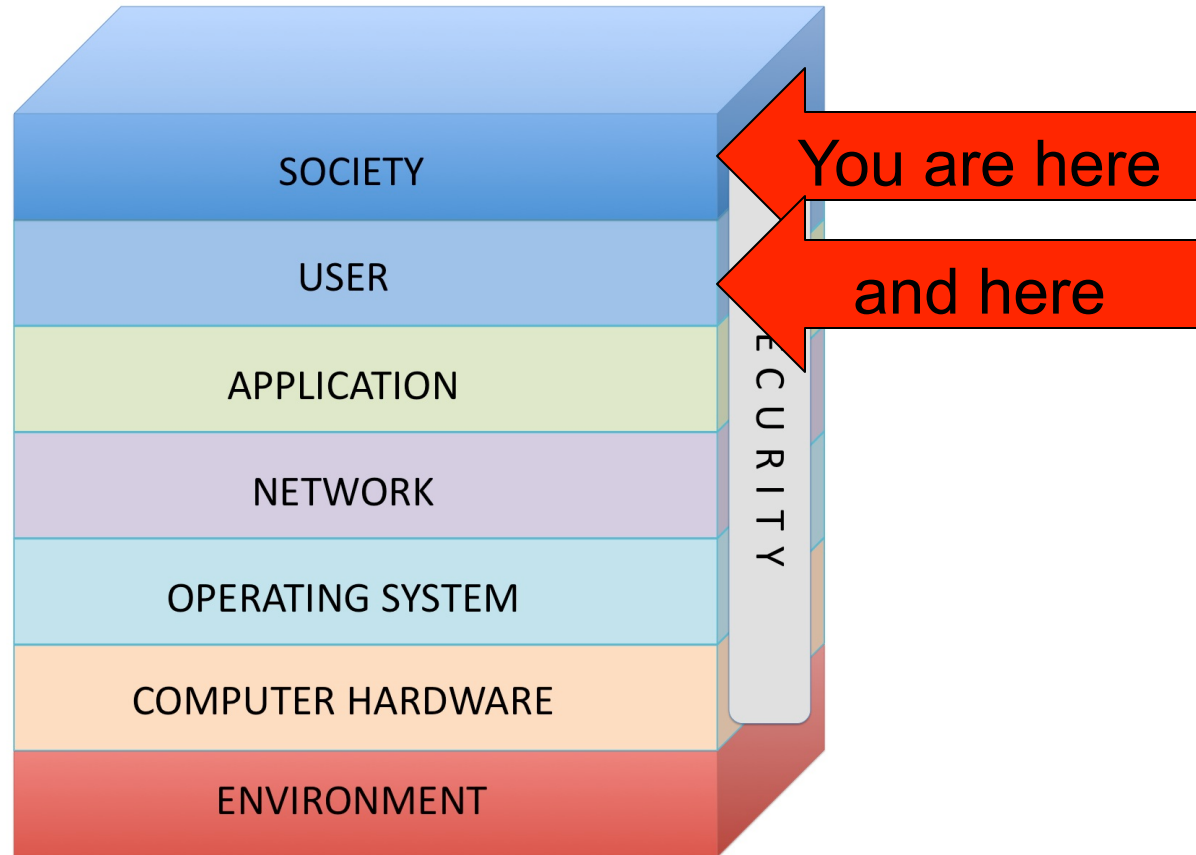
Administrative

- HW3 Extra Credit
 - You **must** request it in HW3 final document
 - Discuss how it goes above and beyond
 - We'll evaluate and add points (up to 10%)
- Final
 - Thu. 05/08/14 12:00 - 2:00 DRLB A2

Ca. 15-yr. old e-mail message related to HeartBleed bug:

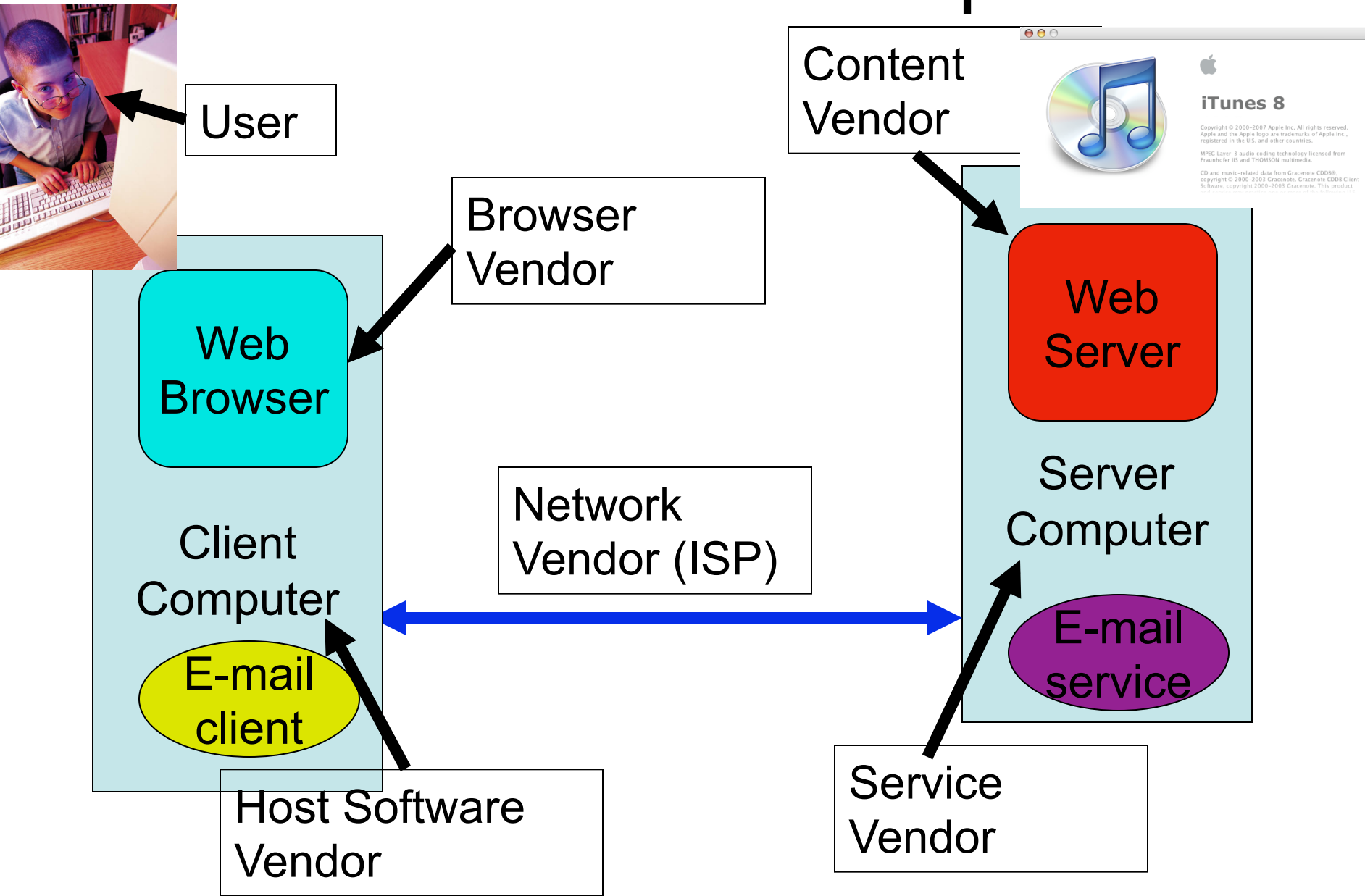
- *“... As an experiment I also planted a comment which should raise eyebrows in some code I released years ago and which is fairly widely used just to see if I'd get any reaction from anyone (the comment says, in effect, "Something really suspicious could happen here", although that's not the real text so you can't just grep for it to find it :-). Noone has ever asked me about this, from which I assume that noone's ever looked at the code they're using. That's kind of scary, because the comment isn't in there just to annoy people, you really could build a rather nasty backdoor in there. There may actually be products out there which are released in binary-only form where the vendor has built in a backdoor at that point, although I saw a posting from foo@anon.org in alt.2600 saying he'd looked at the product and it was fine, so it must be OK.”* — Peter Gutmann, on Peter Neumann's “Robust Open Source” mail exploder

Sincoskie NIS model



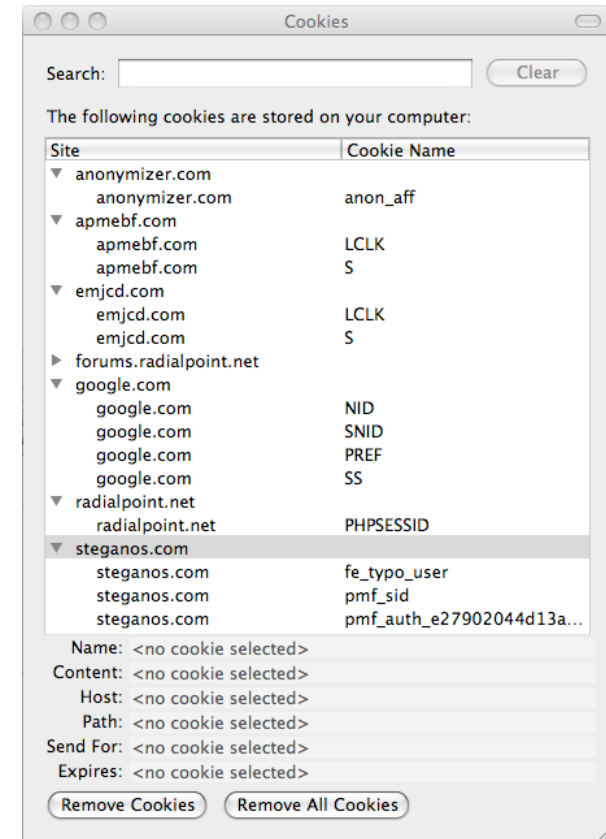
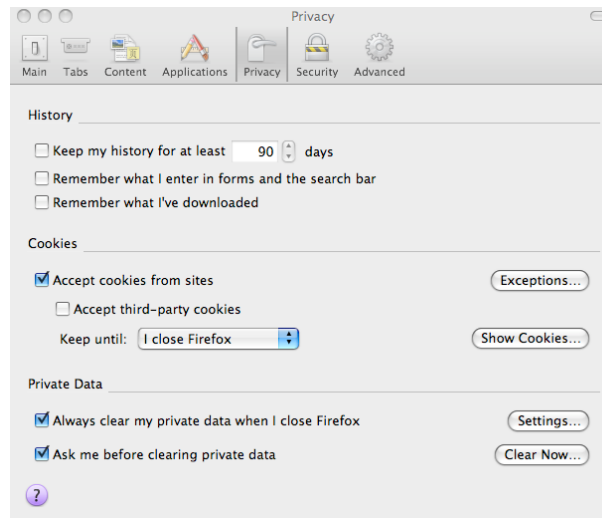
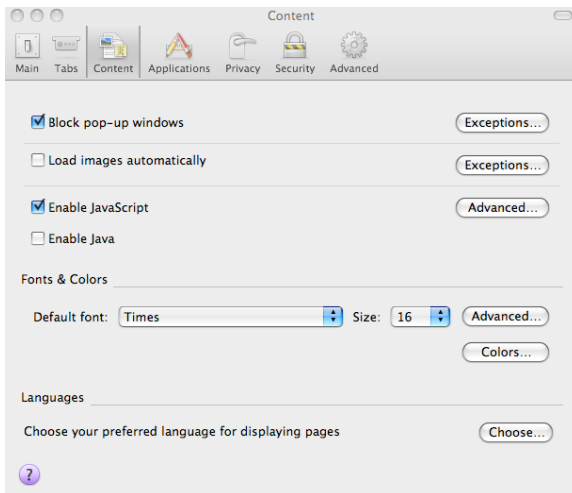
W.D. Sincoskie, *et al.* "Layer Dissonance and Closure in Networked Information Security" (white paper)

Some Internet Participants...

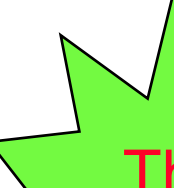


Symbolic World: The “InterWeb”

- Browsers:
 - Cookies, JS, Images & Behavior Tracking
- IP source address backtracks to user
- Aggregation of Data
 - Offline behavior w/on-line
 - Behavior/demographics



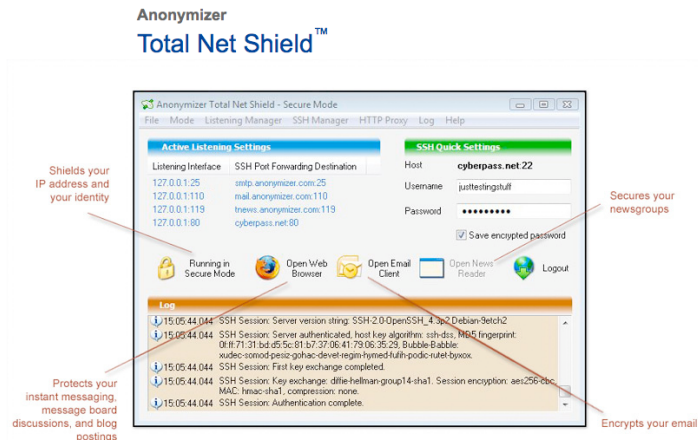
The screenshot shows a web browser window with the address bar displaying "http://www.junkbusters.com/". The page has a white background with a black border. At the top, there is a navigation bar with links: "Apple (104)", "Amazon", "eBay", "Yahoo!", and "News (1004)". Below this, the main heading "JUNKBUSTERS" is displayed in a large, bold, black serif font. Underneath the heading, the tagline "BUST THE JUNK MESSAGES OUT OF YOUR LIFE" is written in a smaller, bold, black serif font. The main content area features a list of links in a black serif font, including "Welcome (Non-USA)", "Benvenuto", "Bienvenido", "Bienvenue", "Hwan-young", "Kawwasorise", "Saluton", "Udvözlök", "Välkommen", "Velkommen", "Viteite", "Welkom", "Willkommen", and "Yokoso". Below this list, the heading "MASTER SELF-DEFENSE AGAINST PRIVACY-INVADING MARKETING" is displayed in a bold, black serif font. Underneath, the heading "Telemarketing · Spam · Junk Mail · Junk Faxes · Data About You · Web Ads" is written in a bold, black serif font. Below this, the heading "Block Banner Ads and Cookies with Guidescope · Or the Internet Junkbuster Proxy (TM)" is written in a bold, black serif font. Underneath, the heading "Our Mission · Media Coverage · Links · For Businesses · About Us · Contact Us · Search · News" is written in a bold, black serif font. Below this, the heading "Home · Next · Site Map · Legal · Privacy · Cookies · Banner Ads · Telemarketing · Mail · Spam · Opt Out" is written in a bold, black serif font. At the bottom, the copyright notice "Copyright © 1996-2002 Guidescope Inc. ®. Copying and distribution permitted under the [GNU](#) General Public License. 2007/05/24 http://www.junkbusters.com" is displayed in a small, black serif font.



The
Internet



Server Proxies:



Edit
HTTP
Stream

The
Internet

Source=Proxy

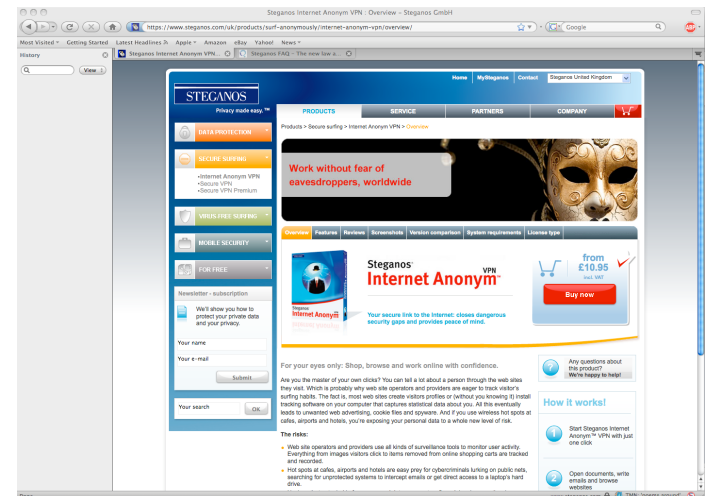
Destination=Proxy

User

"Browser"

"Device"

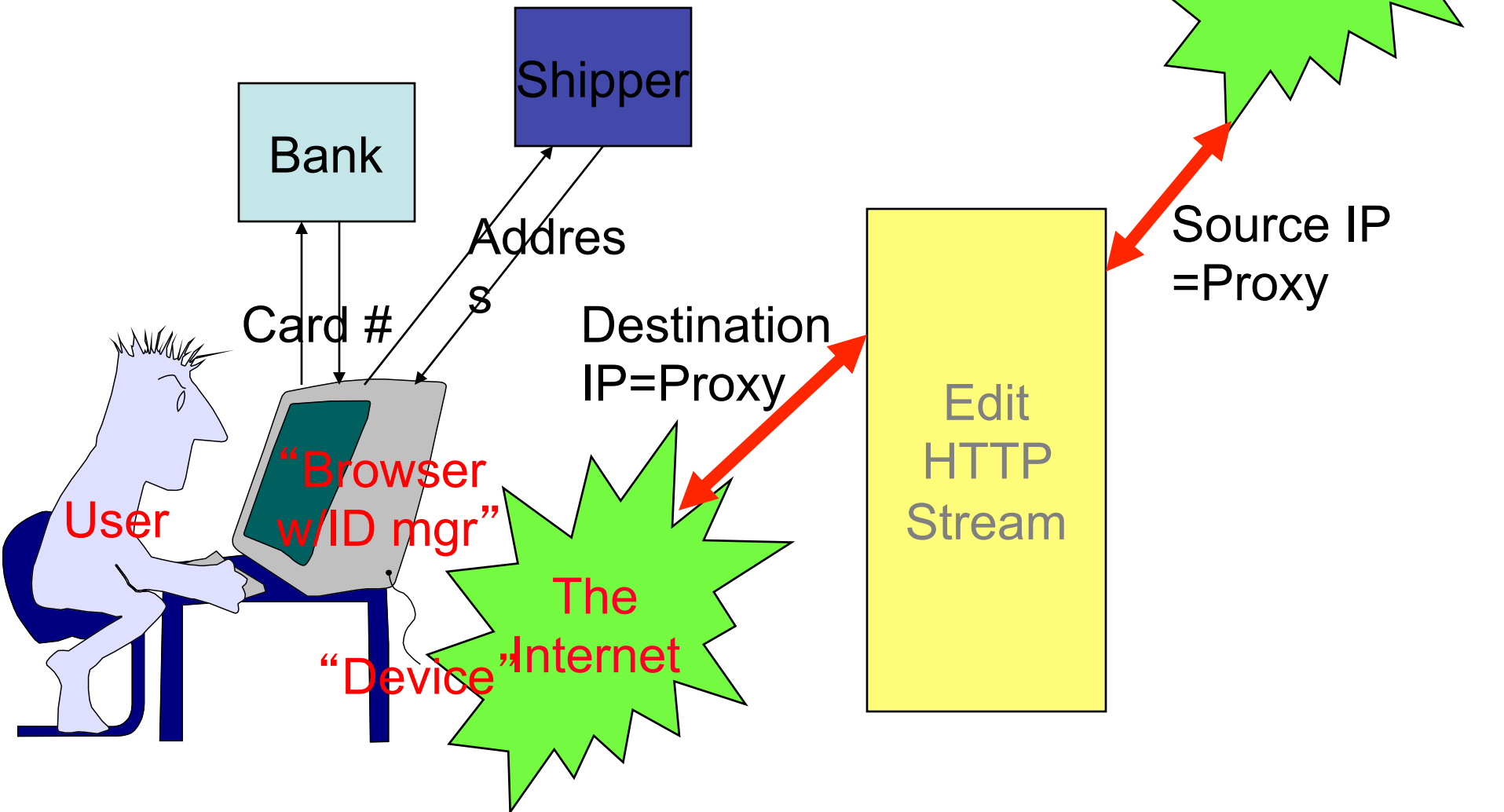
The
Internet



Virtual/Real Identity Boundary?

- CCs connect on-line and off-line identities
- Ditto for shipping address
- Likewise for telephone number
- There are economic advantages to targeted advertisements
- Also advantages for discriminatory pricing (although consumers dislike it)

Purchasing Proxies:



The Symbolic World: Assessment

- Engineers have enabled arms race
- Symbolic data can be transformed
 - Proxies/Identity Management
 - Cryptography
- Or simply “just say no” to I.T. use 😞
- But can we relax?
 - Social networks, picasa, riya.com

The Sensory World:

Many types of sensors

- Chemical / Biochemical
 - Affymetrix, others.
- Motion / Compression / Audio
- Electromagnetic / Radio
- Optical / Infrared / UV / Video



The Sensory World: Privacy Challenges

- May not know sensors are there
 - small enough to be invisible: “smart dust”
 - possibly passive until stimulated
 - can only “just say no” by avoiding...
- May not be able to inhibit their location
 - MEMS nanorobots + sensors
- Coordination with other resources
- “1984” meets Moore’s law curves...

Sensory World: Sensor *Networks*

- Wireless, small, low-power
- Real-time requires interconnection
 - Merging with other data: face recognition...

Home > Surveillance & Spy Cam > Mini Wireless SpyCam

RAIDEN TECH INC. SURVEILLANCE FROM ANYWHERE IN THE WORLD

SAVE BIG \$\$\$

1-8 Channel DVR416

\$79.95

Security Solution
Highest Quality
Lowest Price

Wireless Spy Cam Dome Security Weather Proof Wireless Security IP Camera Hi-Resolution DVR Cards

Mini Wireless SpyCam

SPY ON WHAT? WHO? ANYWHERE!

THE SMALLEST VIDEO SPY CAMCORDER in the world!
So small that you can virtually hide it anywhere undetected!



SALE \$55

-Includes FREE 2GB Memory Card - Record up to 2 Hours!

- High Quality 648x480 Video
- Can support up to 4GB /4-6 Hours
- The Perfect Hidden Camera
- For RC Airplane
- For RC Helicopter
- For RC Cars

BEST SPY GADGET OF THE YEAR!
Only Weights 18 Grams!

Micro-Size 2.4 Ghz Long Distance Hidden Spy Camera - This can be very fun if you decide to mount this gadget on your dog, a radio controlled airplane or helicopter, or maybe on your rc car or boat. To record the action, simply connect the supplied av cable to any VCR or Camcorder! Our sale price is normally \$74.95 but now we are giving out for just **\$44.95!** Where else can you find something this fun and this cheap!

Wireless 2.4 Ghz Spy Cam

There are Tons of Uses for this Micro Camera...

Normally \$74.95

SPECIAL \$44.95

comes with everything in the box

Nanny Cam Front Door Cam Child Room Cam Employee Cam Back Yard Cam

SPYCAM
Powered by WebCamStore.com

• Wireless NannyCam

Fully Functional Baby Monitor with built-in Covert Color Surveillance Camera and 2.4 GHz transmitter. Includes receiver housed in a metal enclosure. Also included is an 80GB Network DVR.

4 Channels, User Selectable
Field of vision: Horizontal: 70° Vertical: 60°
Lens: 3.7mm, Auto Iris .05lux f1.2

Hardwired Camera Systems

- Fire Strobe
- Video Baby Monitor
- Video Clock Radio
- Video Wall Clock
- MemoCam

Wireless Camera Systems

- NannyCam
- Video Clock Radio
- Spyder Smoke Detector
- Video Baby Monitor
- Video Wall Clock

• Wireless Covert Wall Clock System

Wireless Covert System with a built-in color camera and 2.4 GHz transmitter delivers wireless video.

Color cameras available with 3.7mm, Auto Iris lens, .05lux
Field of vision: Horizontal: 70° Vertical: 60°
Wireless Unit w/2.4 GHz Transmitter (will not interfere w/ 900 MHz devices)

• Wireless Spyder Smoke Detector System

Non-functional Smoke Detector with built-in Covert Surveillance Camera and Transmitter. Camera mounted for downward vision.

Wireless Covert System contains a 2.4 GHz transmitter and color camera built inside the unit. Receiver unit can be connected to either a TV, monitor or VCR

Sensory World: Detection?

- Ping responses?
 - Pro: know they're there, easy
 - Con: noncompliance, cost, power
- Radio traffic
 - When sensors are networked
 - But you're already "on candid camera" ...

[Home](#) » [The Camera Detector](#)

The Camera Detector

Quickly, easily, and discreetly conduct sweeps of your home, office, or hotel room to locate hidden wireless cameras. Simply point the compact camera towards walls and ceilings; and alarm will sound when a frequency of 50MHz to 3GHz is detected.

 **Add to Cart** (Select Quantity Below)

Advanced circuitry eliminate background noise to minimize false alarms, and an adjustable sensitivity tuner allows you to scan variable distances and check multiple channels. The size of a small cigarette lighter, this detector can be stored and transported anywhere.



 **Gift Wrap Available**

[Click here to tell a friend about this item.](#)

[View larger photo](#)

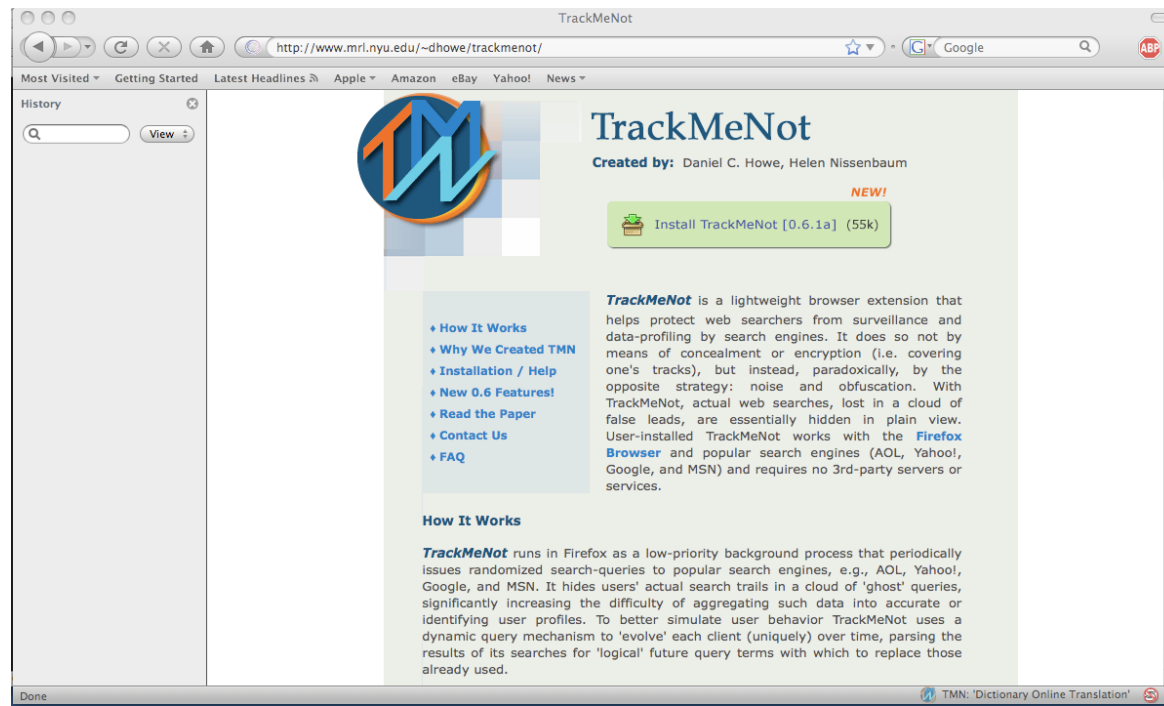
Browse:
[More Tech Geek...](#)

☆☆☆☆☆ (0 customer reviews)

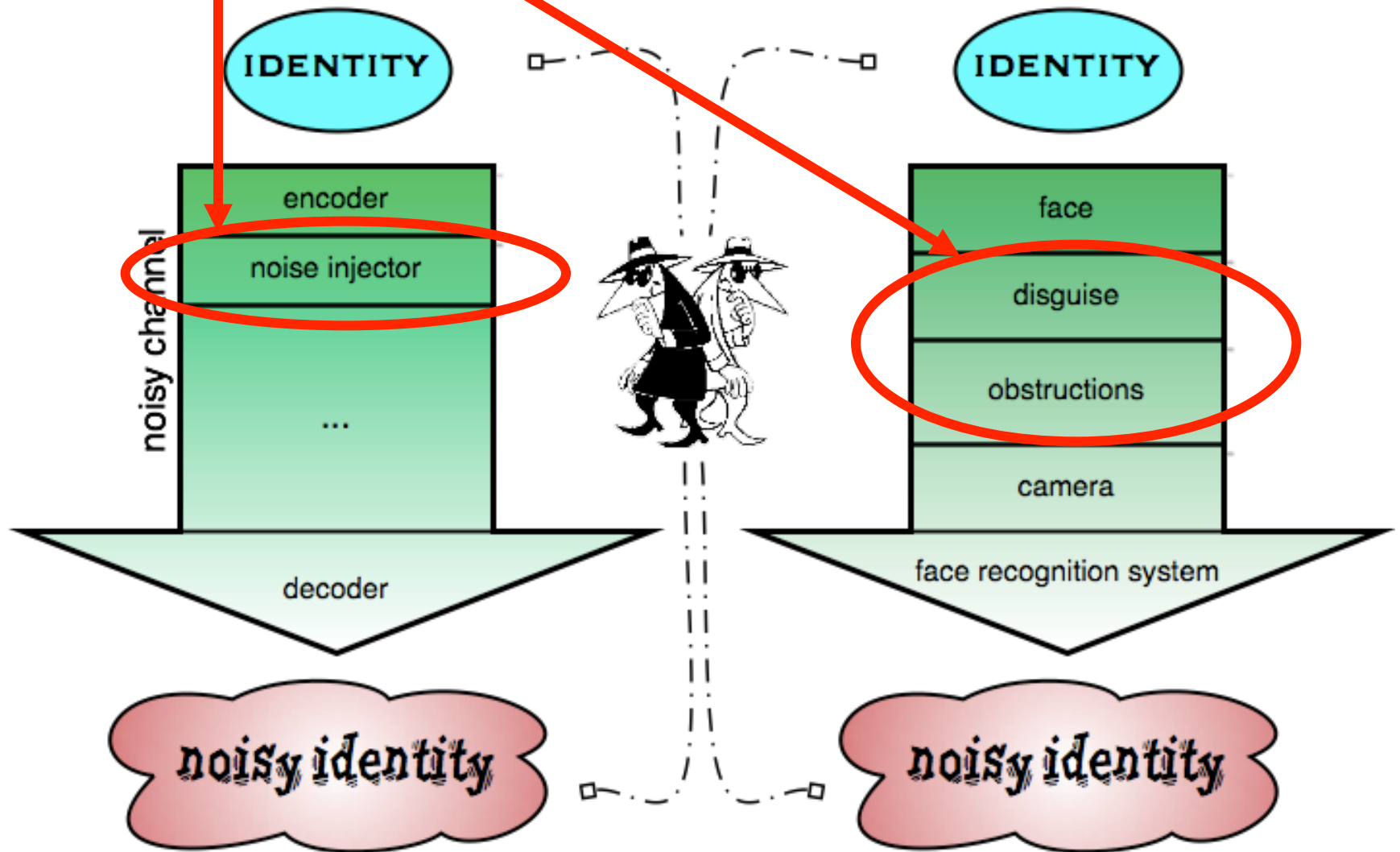
Item #	Description	Price	Qty
3102560	The Camera Detector	\$29.95	
In stock and ships immediately			

Confusing the Sensors!

- Masking, e.g., active sound attenuation, other
 - Pros: general, wearable, computable
 - Cons: audio, transients (“chirps”), incomplete 3D coverage
 - More on this in next few slides...
- Increase Entropy: chaff, fog, white noise
 - Turn identity to “something”/”nothing”



Sabotaged Communications Channel



Ineffective



See Alexander & Smith, “Engineering Privacy in Public: Confounding Face Recognition”, Proc. PET 2003.

Ineffective



Ineffective



Ineffective



Ineffective



Ineffective



Effective



Effective



Effective



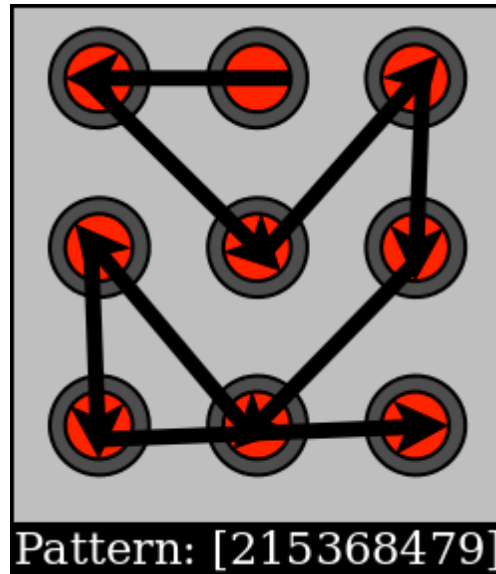
Effective



James Alexander, “MASKS: Maintaining Anonymity by Sequestering Key Statistics” Ph.D. Thesis (CIS, U Penn) 2009.

Smartphones are computers

- Tracking with locations (GPS)
- New UI attacks (see “*Smudge Attacks on Smartphone Touch Screens*”, by Aviv, *et al.*)



Phones as credit cards

- Single device for payment and networking and ...
- Incredible target for “bad guys” – why do work of identity theft, etc.

