


Trust and privacy
Introduction

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016




Introduction: learning goals



- Understand two key concepts that affect people's behaviors online
- Understand different legal approaches to privacy protection: U.S. v. E.U.
- Familiarity with a number of important U.S. laws relating to privacy

2 Copyright © Scott Bradner & Ben Gaucherin 2016

Topics



- Trust – R
What is trust, why it is essential to life in general including life on-line
- Privacy – R
What is privacy, what it's not, and how cyber makes privacy difficult
- Privacy in the law – R
Where does the legal concept of privacy come from in the U.S. legal system

3 Copyright © Scott Bradner & Ben Gaucherin 2016

Topics, contd.



- Freedom from disclosure – R
U.S. laws that protect your privacy
- Laws requiring disclosure – R
U.S. laws that allow the government to get access to otherwise private information
- Freedom from nuisance – R
U.S. laws that protect you from invasion of your personal space

4

Copyright © Scott Bradner & Ben Gaucherin 2016

Topics, contd.



- Privacy in other legal regimes – R
Comparing the U.S. and the E.U. legal approaches to privacy protection
- Additional detail on U.S. laws – O
For the curious among you, more information on some U.S. laws

5

Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

2 https://commons.wikimedia.org/wiki/File:Checklist_Noun_project_5166.svg

3 <http://www.thepublicistnovel.com/wp-content/uploads/2015/01/stay-paranoid-and-trust-no-one.png>

3 "Privacy written in tiles" by Owen Moore - <https://www.flickr.com/photos/132053576@N03/17765606909/>. Licensed under CC BY 2.0 via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Privacy_written_in_tiles.jpg#/media/File:Privacy_written_in_tiles.jpg

3 <http://figures.boundless.com/9770/full/78px-right-to-privacy.djvu.jpeg>

4 http://www.outsidethebeltway.com/wiretaps_run_amok/

4 http://www.slate.com/content/dam/slate/archive/2003/09/1_123125_123087_2076353_2087983_030910_patriotact.gif.CROP.original-original.gif

6

Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits, contd.

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

4 "Spam can" by Qwertyxp2000 - Own work. Licensed under CC BY-SA 4.0 via Commons -

[https://commons.wikimedia.org/wiki/File:Spam_can.png#/media/File:Spam_c
an.png](https://commons.wikimedia.org/wiki/File:Spam_can.png#/media/File:Spam_can.png)

5 [http://enoise.s3.amazonaws.com/img/blog/eu-cookie-law/cookie-
monster-law.png](http://enoise.s3.amazonaws.com/img/blog/eu-cookie-law/cookie-monster-law.png)

5 <http://www.chadsturlaw.com/AboutUs.html>

7

Copyright © Scott Bradner & Ben Gaucherin 2016

Trust and privacy

Trust

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

Trust and people



Peg Streep

“Trust is the foundation of all human connections, from chance encounters to friendships and intimate relationships. It governs all the interactions we have with each other. No one would drive a car or walk down a sidewalk, or board a train or an airplane, if we didn’t “trust” that other people took their responsibilities seriously, and would obey whatever rules applied to the endeavor at hand.” – Peg Streep

2 Copyright © Scott Bradner & Ben Gaucherin 2016

The concept of trust



- **Belief** in the predictability of behaviors and outcomes within a given scope of activity
 - Believing is not Knowing
 - E.g., trust directions given to you by a stranger, trust that the priest won’t give away your secrets, trust that the bully will continue to be a bully, etc.
- Primarily studied by psychologists, sociologists, economists, philosophers ... and security people

3 Copyright © Scott Bradner & Ben Gaucherin 2016

The concept of trust, contd.

TRUST = Credibility + Reliability + Intimacy
Self-Orientation + Risk

$Risk = \frac{1}{Trust}$

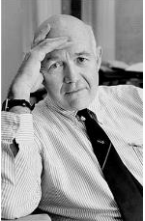
- Many attempts at modeling trust - none accepted as universal model
- The trust you put in a “complex” system is related to the trust you place in the component parts of the system, or a subset thereof

$$T_{SD}(S, m, c) = \alpha_1 \sum_{i=1}^n T_{SD}(S_i, m, c) + \alpha_2 \sum_{i=1}^n T_{SD}(S_i, m, c) + \alpha_3 \sum_{i=1}^n T_{SD}(S_i, m, c)$$

Composite trust metric in [2] (1)

4 Copyright © Scott Bradner & Ben Gaucherin 2016

Factors in trust (Coleman 1990)




James Samuel Coleman

- Why trust is important
Placement of trust allows actions that otherwise are not possible
A trusting person is better off if trust target is trustworthy, worse off if not
- Factors in trust
Trust places resources at disposal of trustee without real commitment from trustee
There is a time lag between extension of trust and the result

5 Copyright © Scott Bradner & Ben Gaucherin 2016

Camp's hypotheses



L. Jean Camp

- Camp, et. al., provide 3 hypotheses about people extending trust to computers
 1. No significant difference in people's reactions to betrayals caused by people or by computer failure
 2. Users tend to understand that different web sites should be treated differently when it comes to trust
 3. Users' ability to discern untrustworthy sites will improve over time as they gain experience

6 Copyright © Scott Bradner & Ben Gaucherin 2016

Trust in the digital world



- Theft, fraud, extortion, forgery, terrorism, unreliability, etc., were not created by the Internet
But many of these are made easier by the Internet
- But, the Internet offers
A global reach platform
A host of technologies that can be subverted to take advantage of the trust people put in it

7 Copyright © Scott Bradner & Ben Gaucherin 2016

Trust issues – How do you know that...



- ...is the device you are using trust worthy?
- ...the name of the resource you are trying to reach is the right name? Is it resolving to the right IP address?
- ...the host you are communicating with has not been compromised?
- ...no one is eavesdropping?

8 Copyright © Scott Bradner & Ben Gaucherin 2016

Trust issues – How do you know that...



- ...the person communicating with you (e.g., email) is who they say they are?
- ...the certificate, digital signature are trustworthy?
- ...the data has not been tempered with?
- ...the resource will be there when you need it?
- Etc, etc, etc.

9 Copyright © Scott Bradner & Ben Gaucherin 2016

Reflections on trusting trust



Ken Thompson

- 1984 ACM speech from Ken Thompson
- Implications:
 - No way to trust, unless you built everything yourself, including the tools (e.g., compiler)
 - Every element of the stack, and every tool is liable to be compromised
 - Trust is indeed a "leap of faith" and not practically verifiable

10 Copyright © Scott Bradner & Ben Gaucherin 2016

Trusting information



- How do you know the information you are getting is "the truth"
- Old vs. New fake news
 - Old fake news was easier to spot and aimed at selling tabloid newspapers
 - New fake news is harder to spot and aimed at affecting the viewer/reader

11 Copyright © Scott Bradner & Ben Gaucherin 2016

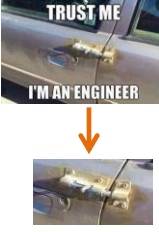
Trust in the digital world

- In spite of all this we all rely on the Internet itself and what it enables, for increasingly larger portions of our lives



12 Copyright © Scott Bradner & Ben Gaucherin 2016


Point solutions abound



- Public Key Infrastructure
- Digital certificates
- Web-of-Trust
- Laws to enforce disclosure and good business practices
Jurisdiction is a challenge
- Better user authentication
- Good encryption technology
- Etc.

13 Copyright © Scott Bradner & Ben Gaucherin 2016


Point solutions abound, contd.



- But no systemic, comprehensive solutions
- Problem is not just, or even primarily, technical
Motives, intent cannot be encoded into bits

14 Copyright © Scott Bradner & Ben Gaucherin 2016


Internet “driver’s license”



- Many people seem to think that perfect user identification/attribution will fix the trust problem
e.g., a universal public key infrastructure or national identity cards

15 Copyright © Scott Bradner & Ben Gaucherin 2016


Internet “driver’s license”, contd.



- Not clear that “perfect user identification” can be achieved
- Many dishonest people will find a way to have false identities
- Even mandatory injection of RFIDs would not be perfect
- Bribe the person giving the injections

16 Copyright © Scott Bradner & Ben Gaucherin 2016

Internet “driver’s license”, contd.



- But it sure would be a different world
- Omniscient governments and corporations
- And knowing who somebody is, is not necessarily sufficient
- e.g., Everyone knew Bernie Madoff was Bernie Madoff

17 Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
2	https://images-na.ssl-images-amazon.com/images/I/61u-cWt1gUL_UX250.jpg
3	http://www.thepublicistnovel.com/wp-content/uploads/2015/01/stay-paranoid-and-trust-no-one.png
4	http://www.scido.cl/fbpe/img/jae/v5n2/art07_esq1_p_ag105.jpg
4	http://criticalpathstrategies.com/sites/criticalpathstrategies.com/files/administrator/TR-Formula-image_3.jpg
4	http://imageslidesharecdn.com/mistrustinthe cyber era-131023013343-ppapp02/95/mistrust-in-the-cyber-era-10-638.jpg?b=1382492120
5	https://en.wikipedia.org/wiki/File:James_Samuel_Coleman.jpg
6	https://www.soc.indiana.edu/img/people/f/ca.mp.jpg
7	https://medium.com/dotblockchainmusic/building-identity-authority-trust-into-songs-one-link-at-a-time-b5ddd8a74613
8,9	https://en.wikipedia.org/wiki/Tin_foil_hat
10	http://www.computerhistory.org/fellowawards/media/img/felows/1997_ken_thompson.jpg
11	http://www.weeklyworldnews.com/headlines/3075/five-classic-weekly-world-news-covers/

18 Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
11	http://www.politicalcartoons.com/cartoon/ef06d4e3-5d48-4b4f-b33d-60f0f3ebb17d.htm
12	https://www.flickr.com/photos/cowyeow/5461162531
13, 14	http://www.funypica.com/wp-content/uploads/2015/12/Trust-Me-I-am-an-Engineer-1.jpg
15, 16, 17	http://static01.nytimes.com/images/2011/09/18/business/18stream-pic/18stream-pic-popup.jpg
17	http://www.trbimg.com/img-5626aef8/turbine/mc-bernie-madoff-victims-20151020

19

Copyright © Scott Bradner & Ben Gaucherin 2016

Trust and privacy
 Privacy

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

"Oh, look . . . they're reading '1984' in Ms. Smith's English class."

2 Copyright © Scott Bradner & Ben Gaucherin 2016

Privacy

- **pri·va·cy** (www.merriam-webster.com)
noun \ˈpri-və-sē, especially British ˈpri-\ : the state of being alone : the state of being away from other people
 : the state of being away from public attention

3 Copyright © Scott Bradner & Ben Gaucherin 2016

In the context of cyberspace



- Privacy is the ability to keep your personal information from being known by others
And by extension, that if the personal information becomes known, it cannot be tied to you
And meta-data is personal information just as much as the information itself
- Interesting question:
Does a breach of privacy happen (1) when the private data is collected, or (2) when it is used?

4 Copyright © Scott Bradner & Ben Gaucherin 2016

When privacy is lacking



- Ramifications of the exposure of personal matters and information
- Impersonation
- Hawthorne effect
Participants in behavioral studies change their behaviors when they know they are being observed
Social cooling
Inhibition of self-expression
E.g., ability to make personal decisions independently

5 Copyright © Scott Bradner & Ben Gaucherin 2016

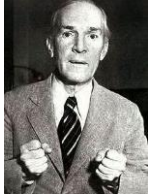
The power of privacy



- Privacy as a personal zone of protection
Peace of mind
Ability to break *some* rules without concern for punishment
- Belief of privacy as an engine of change
Sexual orientation, pot use
Revolutions (aka terrorism?)
e.g. US Revolution required the ability to organize in private

6 Copyright © Scott Bradner & Ben Gaucherin 2016

The "nothing to hide" argument



I recall the bland smile of a government official to whom I complained about this matter: "If you have nothing to hide you have nothing to fear." [...] [the agent provocateur] has familiarized himself with the affairs of his victim, and can make evidence which will be convincing

The Profits of Religion: An Essay in Economic Interpretation - Upton Sinclair

7 Copyright © Scott Bradner & Ben Gaucherin 2016

The "nothing to hide" argument, contd.



- Reduces privacy to hiding "wrong" doing
- The definition of "wrong" is subjective and time specific
Wrong according to laws, whose laws? Social norms, whose social norms?
E.g., the 30's and the 50's in the U.S.

8 Copyright © Scott Bradner & Ben Gaucherin 2016

How key actors relate to privacy




- Citizen privacy perceived as a threat by governments
China's citizen score
Moxie Marlinspike's argument about social democracy
Can we trust (future) governments?



- Trading on private information is a business opportunity

9 Copyright © Scott Bradner & Ben Gaucherin 2016


Privacy and public safety



- The right trade-off for society?
"Those who would give up essential Liberty, to purchase a little temporary Safety, deserve neither Liberty nor Safety." – Ben Franklin
- Unclear correlation
 Less privacy does not always imply safer
- NSA says it implements the right balance

10 Copyright © Scott Bradner & Ben Gaucher in 2016

The "all-knowing" world




- Governments and other entities knowing anything they want to know, about you and your actions
- Legal system's enforcement is inherently selective
 Everybody violates some laws multiple times a day
 What if all infractions can be known, at all times?
- Add "predictive models" to the mix
 Minority Report

11 Copyright © Scott Bradner & Ben Gaucher in 2016

Privacy ≠ Anonymity

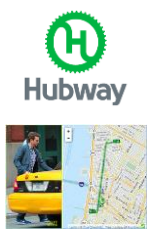
- **an-o-nym-i-ty** (www.merriam-webster.com)
noun \,a-nə-'ni-mə-tē\ : the quality or state of being unknown to most people : the quality or state of being anonymous
- An example – voting is an act where your privacy is protected, but not your anonymity
 The fact that *you* voted is known, but not who you voted for



12 Copyright © Scott Bradner & Ben Gaucher in 2016


Challenges to anonymity - Re-identification

- **Re-identification**
The ability to identify individual(s) by using "de-identified" data, combined with other sources of information
- **About My Ride**
Attempts to re-identify Hubway members using the data released for the Hubway Data Challenge, specifically member zip code, gender, and year of birth.
- **NYC Taxicab data reveals more than intended**



13 Copyright © Scott Bradner & Ben Gaucherin 2016


Social Security Numbers (SSNs)



- Identifiers originally assigned to track people for social security benefits
Authorized by Social Security Act of 1935
- Before 1986 people got SSNs when they started to work
After 1986 SSNs obtained at birth to identify dependents on tax returns

14 Copyright © Scott Bradner & Ben Gaucherin 2016


SSNs, contd.



- Until June 2011 the SSN number had structure
High order 3 digits indicated location of SS office
Next two digits issued in a pattern
Low 4 digits issued sequentially
- Thus high order 5 digits can be predicted for people who were born between 1986 and June 2011
Assuming date and location of birth are known
More random after June 2011

15 Copyright © Scott Bradner & Ben Gaucherin 2016

SSNs, contd.



- Federal regulations say that SSNs are not confidential when only the low order 4 digits are shown
Thus not that hard to figure out many SSNs
- But real problem is that SSNs are used for much more than they were designed for
Knowledge of a SSN is taken as an identity proof

16 Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
2	Beattie's cartoon from newsjournalonline.com
3	"Privacy written in tiles" by Owen Moore - https://www.flickr.com/photos/132053576@N03/17765606909/ , Licensed under CC BY 2.0 via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Privacy_written_in_tiles.jpg#/media/File:Privacy_written_in_tiles.jpg
4	http://thedailydose.com/wp-content/uploads/2011/11/2011-08-16-this-is-your-privacy-online.jpg
5	https://www.forbes.com/sites/jacobmorgan/2014/08/19/privacy-is-completely-and-utterly-dead-and-we-kill-it/#29c8006931a7
6	https://www.youtube.com/watch?v=K0X-c5B1NFk
7	https://en.wikipedia.org/wiki/File:Upton_Beall_Sindair_Jr.jpg
8	https://en.wikipedia.org/wiki/File:scos_eph_McCarthy.jpg
9	http://www.wired.co.uk/article/chinese-government-social-credit-score-privacy-invasion
10	http://mrlowaggsid.weebly.com/social-9-bloggen#/individual-or-collective-rights
11	https://en.wikipedia.org/wiki/Information_Awariness_Office

17 Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
12	http://www.justicegov/sites/default/files/crt/field/able-panel-panels/basic-panels/images/2015/08/07/voting_banner.png
13	Hubway logo
13	http://research.neustarbiz/2014/09/15/riding-with-the-stars-passenger-privacy-in-the-nyc-taxi-dataset/
14,16	"Social security card john q public" by Social Security Administration - Social Security Administration. Licensed under Public Domain via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Social_security_card_john_q_public.png#/media/File:Social_security_card_john_q_public.png
15	https://www.flickr.com/photos/chriswoodal/2868912589/


18 Copyright © Scott Bradner & Ben Gaucherin 2016

Trust and privacy
 Privacy in the law

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

History of privacy: English law



- Not much privacy in small towns/settlements
 ‘everyone knows what everyone is doing’
- Not much privacy from kings, etc.
 e.g., Magna Carta required due process but not privacy
- Some privacy in early English law
 ‘home is castle’ (1499)
 Eaves-droppers that spread “mischievous tales” “are a common nuisance” & can be fined
 Blackstone: book 4, chap 13 (1769)

2 Copyright © Scott Bradner & Ben Gaucherin 2016

The right to privacy

HARVARD
 LAW REVIEW.

Vol. 24, DECEMBER 15, 1896 No. 5

THE RIGHT TO PRIVACY

“The right to privacy is a personal right, and its protection is a matter of public concern.”

“THAT the individual shall have a right to be left alone and that the government shall not invade the sphere of his privacy.”

- “The Right to Privacy” Warren & Brandeis Harvard Law Review article - 1890

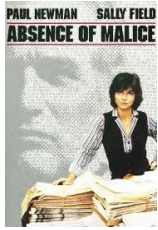
Inspired by press excesses -
 ‘gossip as a trade’
 “right to be left alone” not just by government

Privacy is a personal right (not a property right)

3 Copyright © Scott Bradner & Ben Gaucherin 2016

The right to privacy, contd.

- Six “general rules” on privacy
 - 1: Public interest overrides the right to privacy
 - 2: Privileged communication does not void right to privacy
 - 3: Generally no redress for talking (without publication)
 - 4: Publication of facts by subject voids a right to privacy
 - 5: Truth is not a defense against a breach of a right to privacy
 - 6: An absence of malice not a defense against a breach of a right to privacy



4

Copyright © Scott Bradner & Ben Gaucherin 2016

Argument for what the Law should be



“That the individual shall have full protection in person and in property is a principle as old as the common law; but it has been found necessary from time to time to define anew the exact nature and extent of such protection. Political, social, and economic changes entail the recognition of new rights, and the common law, in its eternal youth, grows to meet the new demands of society.”

Warren & Brandeis - The Right to Privacy, 1890

5

Copyright © Scott Bradner & Ben Gaucherin 2016

US Constitution & Privacy



- Word “privacy” is not in the U.S. Constitution
- But the Supreme Court has found that a right of privacy is implied by a number of the amendments in the Bill of Rights

6

Copyright © Scott Bradner & Ben Gaucherin 2016

US Constitution & Privacy, contd.



- Amendments in the Bill of Rights:
 - 4th amendment – protection against unreasonable searches and seizures
 - 5th amendment – self incrimination, due process, etc.
 - 9th amendment
 - “The enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people.”

7

Copyright © Scott Bradner & Ben Gaucherin 2016

US Constitution & Privacy, contd.



- Privacy was called a “**penumbra right**” in *Griswold v. Connecticut* (1965)
 - Penumbra: “a body of rights held to be guaranteed by implication in a civil constitution” Merriam-Webster Dictionary

8

Copyright © Scott Bradner & Ben Gaucherin 2016

US Constitution & Privacy, contd.



Justice William O Douglas

- The Supreme Court has found that the Constitution protects a “**zone of privacy**” in two areas
 - Independence in making certain types of decisions
 - Avoiding disclosure of personal matters

9

Copyright © Scott Bradner & Ben Gaucherin 2016

US Constitution & Privacy, contd.



- Key case: Katz v. U.S. (1967)
Government wiretapped a phone booth w/o warrant
Court found that government violated the Fourth Amendment (unreasonable searches and seizures)
In doing so, moved the right to privacy from a place (e.g., home) to a person
Added the 'reasonable assumption of privacy' test
 - 1: Did person exhibit personal expectation of privacy?
 - 2: Does society recognize the expectation as reasonable?

10

Copyright © Scott Bradner & Ben Gaucherin 2016

Prosser on privacy



William Prosser

- William Prosser survey of privacy cases (1960)
- Showed 4 classes of charges
 1. Intrusion on the seclusion or private affairs of another
 2. Appropriation of name or likeness of another
 3. Public disclosure of private facts
 4. False light (presenting a false impression of subject)

11

Copyright © Scott Bradner & Ben Gaucherin 2016

Prosser on privacy, contd.



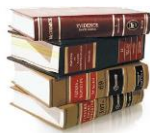
William Prosser

- Note - privacy applies to 'natural persons'
People, not corporations
Reinforced in U.S. Supreme v. AT&T - 1 March, 2011

12

Copyright © Scott Bradner & Ben Gaucherin 2016

U.S. privacy laws



- Laws supporting **freedom from disclosure**
i.e., restrict public disclosure of private facts
- Laws **requiring disclosure of private information**
i.e., empower law enforcement
- Laws supporting **freedom from nuisance**
i.e., restrict intrusion on the seclusion of another

13

Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

2 http://www.archives.gov/exhibits/feturd_documents/magna_carta/images/after-restoration-m.jpg

3 <http://figures.boundless.com/9770/full/78px-right-to-privacy.djvu.jpg>

4 "Absence of malice" -Columbia Pictures Corporation

5 "Samuel Dennis Warren by William Notman, c1875" by William Notman - Harvard Art Museum. Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:Samuel_Dennis_Warren_by_William_Notman_c1875.jpg#/media/File:Samuel_Dennis_Warren_by_William_Notman_c1875.jpg

5 "Branded" by Harris & Ewing - Library of Congress Prints and Photographs Division, Reproduction number LC-DIG-pmsca-06024 This image is available from the United States Library of Congress's Prints and Photographs division under the digital ID cph.3a31794. This tag does not indicate the copyright status of the attached work. A normal copyright tag is still required. A normal copyright tag is still required. See Commons:licensing for more information. English | Español | Français | Italiano | Magyarosok | Nederlands | Polski | Português | Pycckий | Slovenščina | Türkçe | Tiếng Việt | 中文 (简体) | 中文 (繁體) | 𑌆- Licensed under Public Domain via Commons - <https://commons.wikimedia.org/wiki/File:Branded1.jpg#/media/File:Branded1.jpg>

14

Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

6 "Privacy written in tiles" by Owen Moore - <https://www.flickr.com/photos/132053576@N03/17765606909/>, Licensed under CC BY 2.0 via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Privacy_written_in_tiles.jpg#/media/File:Privacy_written_in_tiles.jpg

7 "Bill of Rights Pg of 1 AC" by 1st United States Congress - This media is available in the holdings of the National Archives and Records Administration, cataloged under the ARC Identifier (National Archives Identifier) 1408042. This tag does not indicate the copyright status of the attached work. A normal copyright tag is still required. See Commons:licensing for more information. English | Español | Français | Italiano | Magyarosok | Nederlands | Polski | Português | Pycckий | Slovenščina | Türkçe | Tiếng Việt | 中文 (简体) | 中文 (繁體) | 𑌆- Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:Bill_of_Rights_pg1of1_AC.jpg#/media/File:Bill_of_Rights_pg1of1_AC.jpg

8 © 2015 Bettmann/Corbis / Associated Press

10 http://www.dpchallenge.com/image.php?IMAGE_ID_923158

11, 12 https://charlottealibrary.files.wordpress.com/2013/04/william_miloydpross.jpg?w=165&h=229

13 <http://www.chadsteuerlaw.com/AboutUS.html>

15

Copyright © Scott Bradner & Ben Gaucherin 2016


Trust and privacy
Freedom from disclosure

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure



- Mainly to protect from government intrusion
Most based on 4th amendment protection against unreasonable search & seizures
- Privacy of postal mail (1782 & 1825)
- Warrant required to open postal mail (1877)
- State laws against disclosure of telegraphs (1880s)



2 Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.

- Privacy of census (1919)
Also to ensure cooperation
- Communications Act of 1934
Prohibited federal officials from disclosing info about intercepted communications
- Omnibus Crime and Control Act of 1968
“wiretap act”
Extended wiretap restrictions to state officials and private parties
But only applied to “aural” communications



3 Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.



- Fair Credit Reporting Act of 1970 (FCRA)
 - Information supplied to credit agencies must be accurate
 - Restrict who can get private information
 - How long a credit agency can use negative information
 - Customers are required to be notified about adverse conditions
 - Customer can access credit record & challenge errors
 - Civil action against credit agencies possible in some cases

4

Copyright © Scott Bradner & Ben Gaucher in 2016

Freedom from disclosure, contd.



James L. Buckley

- Privacy Act of 1974
 - Only applies to federal government
 - Regulates collection of information about individuals
 - Gives individuals right to access & correct their records in federal databases
- Family Educational Rights and Privacy Act of 1974 (FERPA)
 - Protects student records

5

Copyright © Scott Bradner & Ben Gaucher in 2016

Freedom from disclosure, contd.

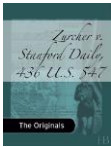


- The National Research Act of 1974
 - Mandates use of institutional review boards (IRBs)
 - Includes protection of human subject data
- Right to Financial Privacy Act of 1978
 - Response to Supreme Court decision
 - Requires federal government to get a warrant or subpoena to access financial records in a financial institution

6

Copyright © Scott Bradner & Ben Gaucher in 2016

Freedom from disclosure, contd.



Aaron Swartz

- Privacy Protection Act of 1980
Requires subpoena for news media work product materials
- Computer Fraud and Abuse Act of 1984
Unlawful to access a 'federal interest computer' without authorization

7

Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.

Sec. 631



- Cable Communications Policy Act of 1984
Restricts cable companies in collecting personal info
Protects privacy of cable records (including viewing habits)

8

Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.



John S. Alice Martin

- Electronic Communications Privacy Act of 1986
Extends wiretap act (Omnibus Crime and Control Act of 1968)
All forms of communications now included
Restricts access to stored communications
Restricts access to telephone toll records
Restricts government & private access to communications

9

Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.



Robert Bork

- **Employee Polygraph Protection Act of 1988**
Generally blocks use of polygraphs by private sector
- **Video Privacy Protection Act of 1988**
Protects privacy of video tape rental & purchase records (c.f. Robert Bork)

10

Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.



Rebecca Schaeffer

- **Computer Matching & Privacy Protection Act of 1998**
Controls government coordinating info on individuals
- **Driver's Privacy Protection Act of 1994**
State must get driver's consent before releasing license info (e.g., before selling the info)

11

Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.



- **Health Insurance Portability and Accountability Act of 1996 (HIPAA)**
Protect medical records
- **Children's Online Privacy Protection Act of 1998**
Web sites targeted at kids must post privacy statements and get parent's OK to collect data about kids under 13
Not same as Child Online Protection Act (unconstitutional)

12

Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.



- Identity Theft Assumption and Deterrence Act of 1998
Crime to use another's identity with intent to commit a crime
- Federal Trade Commission—1998
Decided that companies violating their published privacy statements are engaging in *“unfair or deceptive acts or practices in or affecting commerce”* (Section 5 of the FTC Act)

13

Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from disclosure, contd.



- Gramm-Leach-Bliley Act of 1999
Protects privacy & security of financial information
- Health Information Technology for Economic and Clinical Health Act (HITECH) 2009

14

Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
2	http://newshour-tc.pbs.org/newshour/wp-content/uploads/2014/10/RT3DF8V.jpg
3	http://extrcdn.exremenetworks.com/wp-content/uploads/2014/11/Comm_Act.png
3	http://www.outsidethebeltway.com/wiretaps_run_a_mok/
4	https://cckcredit.com/wp-content/uploads/2015/07/FCRA-fair-credit-reporting-act-e1436794708398-300x205.png
5	https://gnbooktalk.files.wordpress.com/2013/06/overview-of-the-privacy-act-of-1974-2012-edition-9780160914481.jpg?w=236&h=360
5	"JamesBuckley" by US Congress - http://bioguide.congress.gov/scripts/biodisplay.pl?index=B001026 . Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:JamesBuckley.jpg#/media/File:JamesBuckley.jpg
6	http://tuskegestudy.weebly.com/uploads/2/4/3/2/24321511/5177805_orig.jpg/448
7	http://edu.glogster.com/media/4/18/81/5/18810546.jpg
7	"Aaron Swartz profile" by Fred Benenson - User: Meccridis - http://www.flickr.com/photos/creativecommons/3111021669/ . Licensed under CC BY 2.0 via Commons - https://commons.wikimedia.org/wiki/File:Aaron_Swartz_profile.jpg#/media/File:Aaron_Swartz_profile.jpg

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

- 8 Cable companies logos
- 9 <http://www.cnn.com/ALLPOLITICS/1997/01/13/tape/martins.jpg>
- 10 "Robert Bork". Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:Robert_Bork.jpg#/media/File:Robert_Bork.jpg
- 11 "Rebecca Schaeffer 86-88" by CBS Network - ebay.com, front of photo, back of photo. Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:Rebecca_Schaeffer_86-88.JPG#/media/File:Rebecca_Schaeffer_86-88.JPG
- 12 <http://www.macrastr.com/wp-content/uploads/2012/08/child-with-lpad.jpg>
- 13 FTC shield
- 14 http://www.clipart.com/cliparts/C/N/g/H/E/y/ban_ksvg



Trust and privacy
Laws requiring disclosure

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016



Laws requiring disclosure

- Bank Secrecy Act of 1970
Requires banks to keep records on customers
- Foreign Intelligence Surveillance Act of 1978 (FISA)
Created separate court for 'foreign intelligence gathering'
Looser restrictions than for normal wiretapping
- Garbage is not private - Supreme Court - 1988



2 Copyright © Scott Bradner & Ben Gaucherin 2016

Laws requiring disclosure, contd.



- Communications Assistance for Law Enforcement Act (CALEA) of 1994
Required support for wiretapping in telecom carriers
- USA-PATRIOT Act of 2001
Surveillance support

3 Copyright © Scott Bradner & Ben Gaucherin 2016

Laws requiring disclosure, contd.



- CALEA expansion (2005-2006)
FCC (not Congress) extended CALEA rules for wiretapping to Internet service providers

Interconnected VoIP service. An interconnected Voice over Internet protocol (VoIP) service is a service that:
(1) Enables real-time, two-way voice communications;
(2) Requires a broadband connection from the user's location;
(3) Requires Internet protocol-compatible customer premises equipment (CPE); and
(4) **Permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.**

From 47 CFR Sec. 9.3

Because the Internet is a "substantial replacement" for old Telco infrastructure
At the request of law enforcement

Note: CALEA requires setting up backdoors that others can exploit

4

Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
2	http://www.history-matters.com/store/images/CdChurch.jpg
2	http://2.wp.com/brookhaenpost.co/wp-content/uploads/2015/03/Dekab-Trash.jpg
3	http://www.ndcxcjs.gov/images/final_ca_lea_logo.jpg
3	http://www.slate.com/content/dam/slate/archive/2003/09/1_123125_123087_2076353_2087983_030910_patriotact.gif.CROPoriginal-original.gif
4	Skype logo

5


Copyright © Scott Bradner & Ben Gaucherin 2016

Trust and privacy
Freedom from nuisance


CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from nuisance



- Fair Debt Collection Practices Act of 1978 (FDCPA)
Restricts actions of debt collectors
- Telephone Consumer Protection Act of 1991
Telemarketer “do not call” list (implemented in 2003)



2 Copyright © Scott Bradner & Ben Gaucherin 2016

Freedom from nuisance, contd.



- Telemarketing and Consumer Fraud and Abuse Prevention Act of 1994
Puts requirements on telemarketers
- Controlling the Assault of Non-Solicited Pornography and Marketing Act of 2003 (CAN-SPAM)
Marking and content requirement for unsolicited email

3 Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

2,3 <https://transition.fcc.gov/egb/forconsumers/donotcallarticle.jpg>

2

https://bulkorderftc.gov/sites/bulkorderftc.gov/files/styles/publications_node/public/images/585a-pdf-0097-fair-debt-collection-practices-act.jpg?itok=clZ5vejy

3 "Spam can" by Qwertyop2000 - Own work. Licensed under CC BY-SA 4.0

via Commons -

https://commons.wikimedia.org/wiki/File:Spam_can.png#/media/File:Spam_can.png

4

Copyright © Scott Bradner & Ben Gaucherin 2016

Trust and privacy
Privacy in other legal regimes

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

California as pace setter




- California Constitution
Originally ratified May 7, 1879

Article 1: Declaration of Rights
Section 1: All people are by nature free and independent and have inalienable rights. Among these are enjoying and defending life and liberty, acquiring, possessing, and protecting property, and pursuing and obtaining safety, happiness, and privacy.

2 Copyright © Scott Bradner & Ben Gaucherin 2016

California as pace setter, contd.



- At least 90 privacy related laws since 1999
- Many laws impact all who interact with, or have data about, California residents
Some laws permit individual legal action
- Including the most important breach disclosure law – first and, for a long time, only state
The only reason we knew about major breaches
Initially just covered financial data, extended to medical

3 Copyright © Scott Bradner & Ben Gaucherin 2016

California as pace setter, contd.



- Including laws blocking use, printing, or displaying of SSN without legal requirement to do so

4

Copyright © Scott Bradner & Ben Gaucherin 2016

U.S. legal approach to privacy



- The US does espouse some privacy principles
e.g., Health, Education, Welfare (HEW): “fair information practices” from 1972

HEW renamed Department of Health and Human Services (HHS) in 1979



- No systematic approach or basic concepts
Even in California
- Point solutions
e.g., video tape rentals

5

Copyright © Scott Bradner & Ben Gaucherin 2016

U.S. legal approach to privacy, contd.



- Little regulation of the collection or use of information in private hands
e.g., credit card, supermarket loyalty card & Internet tracking data

- Other parts of the world approach the issue differently
e.g., early US privacy laws primarily focused on protecting people from the government. Early EU privacy laws, focused on protecting people from each other

6

Copyright © Scott Bradner & Ben Gaucherin 2016

OECD's 8 principles



1. Collect data with individual's consent
2. Data should be relevant to purpose and accurate
3. State purpose for collection and limit use to purpose
4. No other use for data w/o individual's consent

7

Copyright © Scott Bradner & Ben Gaucherin 2016

OECD's 8 principles, contd.



5. Protect collected data
6. Disclose practices & policies of those who access data
7. The data is correct & individual understands what data is collected
8. Entities that control data held accountable for above

8

Copyright © Scott Bradner & Ben Gaucherin 2016

Convention on human rights (1950)



Signing of the European Convention on Human Rights (4 November 1950)

- European Convention on Human Rights – article 8
*"Everyone has the right to respect for his private and family life, his home and his correspondence
There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others."*

9

Copyright © Scott Bradner & Ben Gaucherin 2016

E.U. data protection directives (1995)



- Comprehensive approach to privacy
“... Member States shall protect the fundamental rights and freedoms of natural persons, and in particular their right to privacy with respect to the processing of personal data.” Data Protection Directive: Object of the Directive
- Passed at EU level, implemented by each country
- Applies to all, not just governments
Note: “natural persons”

10

Copyright © Scott Bradner & Ben Gaucherin 2016

E.U. data protection directives, contd.



- Data only permitted to be moved outside of EU to places that ‘provide an adequate level of protection’
The US does not meet this requirement!

11

Copyright © Scott Bradner & Ben Gaucherin 2016

US “Safe Harbor”



- US negotiated a deal with the EU to let US companies do business in the EU
- US company self-certifies that they adhere to a set of **7 principles**
 - Notice:** inform individuals of data collected
 - Choice:** must offer opt-out opportunity of some uses
 - Onward transfer:** only transfer to compliant organizations

12

Copyright © Scott Bradner & Ben Gaucherin 2016

US "Safe Harbor", contd.



- Security:** take "reasonable precautions" to protect info
- Data integrity:** info must be relevant and accurate
- Access:** individuals must have access to their own info
- Enforcement:** must have enforcement mechanisms
- **"Safe Harbor" declared invalid by EU courts on 10/6/2015 in Schrems v. Facebook**

E.U. Directive on Privacy and Elec. Comm.



- Directive 2002/58 - ensure "the right to privacy, with respect to the processing of personal data in the electronic communication sector"
- Protect the privacy of confidential data in transit and in storage
- Users should be "offered the opportunity to refuse" a cookie
- Data on subscribers can only be stored long enough to provide service
- Prior consent for email marketing

General Data Protection Regulations

European data protection for the digital era

Better protection for personal data

- Clear consent required to process data
- Right to rectify and erase data, including the "right to be forgotten" for data collected as a child
- More and clearer information about processing
- Right to move data from one service provider to another
- Limit on the use of automated processing of data to make decisions, for example in the case of profiling
- Right to modification if data is compromised
- Stricter safeguards for transfers of personal data outside the EU
- Easy access to personal data

General Data Protection Regulations

16 Copyright © Scott Badner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

2-4 "Flag of California" by Devin Cook- Own work, Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:Flag_of_California.svg#/media/File:Flag_of_California.svg

5 <http://mediagzmodo.co.uk/wp-content/uploads/2012/01/USLaw.jpg>

5,6 <http://www.first-takeuk.com/portfolio-view/video/>

7,8 OECD logo

7,8 "OECD member states map" by cflm (talk) - Own work, Derived from by Emuzesto, released under CC-BY-SA 2.0, Map derived from as of version 14 August 2014. Coloured using Inkscape! The source code of this SVG is valid. This vector image was created with Inkscape. Licensed under CC BY-SA 2.0 via Commons - https://commons.wikimedia.org/wiki/File:OECD_member_states_map.svg#/media/File:OECD_member_states_map.svg

9 http://www.ec.europa.eu/obj/signing_of_the_european_convention_on_human_rights_november_1950-en-9c1a7f14-7af0-4273-b316-47536ed0ed6d.html

10-11 http://europaeu/about-eu/basic-information/symbols/images/flag_white_high.jpg

12-13 <https://www.truste.com/resources/privacy-research/safe-harbor-vs-gdpr-infographic/>

14 <http://en0ises3.amazonaws.com/img/blo/g/eu-cookie-law/cookie-monster-law.png>


15,16 <http://www.consilium.europa.eu/en/policies/data-protection-reform/data-protection-regulation-infographics/> Copyright © Scott Badner & Ben Gaucherin 2016

Trust and privacy
 Additional detail on US law

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

Section 5 of the FTC Act



“Unfair methods of competition in or affecting commerce, and unfair or deceptive acts or practices in or affecting commerce, are hereby declared unlawful.”

- FTC authority challenged, and upheld by Supreme Court by refusing to take the appeal
 FTC v. Wyndham 2014

2 Copyright © Scott Bradner & Ben Gaucherin 2016

Section 5 of the FTC Act

- Used by the FTC in many situations
 - Failure to protect private customer information
 - Failure to follow own web privacy statements
 - False claims of information security
 - Using data for reasons not disclosed when data collected
 - Improper disclosure of private information
 - Deceptively collecting personal information
 - e.g., it is unfair competition to cheat on data protection

Oracle Agrees to Settle FTC Charges It Deceived Consumers About Java Software Updates (December 21, 2015)

LifeLock to Pay \$100 Million to Consumers to Settle FTC Charges it Violated 2010 Order (December 17, 2015)

Wyndham Settles FTC Charges It Unfairly Placed Consumers' Payment Card Information At Risk (December 9, 2015)

Thirteen Companies Agree to Settle FTC Charges They Falsely Claimed To Comply With International Safe Harbor Framework (August 17, 2015)

FTC Requests Bankruptcy Court Take Steps to Protect RadioShack Consumers' Personal Information (May 18, 2015)

Retail Tracking Firm Settles FTC Charges it Misled Consumers About Opt-Out Choices (April 23, 2015)

FTC Settles with Two Companies Falsely Claiming to Comply with International Safe Harbor Privacy Framework (April 7, 2015)

3 Copyright © Scott Bradner & Ben Gaucherin 2016

CALEA



- Communications Assistance for Law Enforcement Act of 1994
- Established requirement that phone carriers must be able to perform some lawful intercept functions
 - Actual functions defined by industry
 - Telecommunications Industry Association (TIA)
 - With input from law enforcement

4

Copyright © Scott Bradner & Ben Gaucherin 2016

CALEA, contd.



- CALEA does not limit what law enforcement can ask for in a subpoena
 - CALEA is a floor not a ceiling
- Did not apply to “private networks” or “information services”
 - the Internet was an “information service” in the eyes of the FCC in 1994

5

Copyright © Scott Bradner & Ben Gaucherin 2016

CALEA, contd.



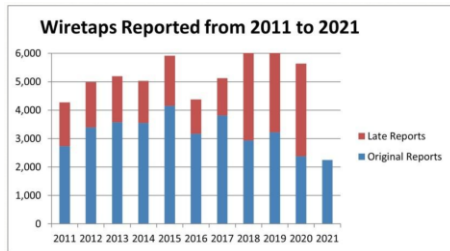
- General standard: ANSI / TIA J-STD-025
 - Covers:
 - Pen**trace: call metadata (e.g. called number) and actions (e.g., hang up, post call dialed digits)
 - Wire**tap: the communication itself
 - Subject must not be able to detect tap

6

Copyright © Scott Bradner & Ben Gaucherin 2016

Title III wiretaps

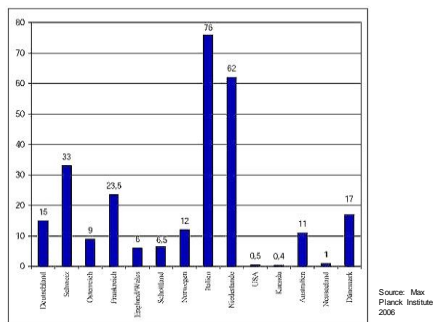
- 51 % for drugs
- Average length 44 days
- 16% encrypted



7

Copyright © Scott Bradner & Ben Gaucher in 2023

Legal wiretaps per 100,00 people



8

Copyright © Scott Bradner & Ben Gaucher in 2016

Source: Max Planck Institute 2006

HIPAA



- Health Insurance Portability and Accountability Act of 1996
- Covers:
 - Health care providers
 - Health plans
 - Health care clearinghouses
- Covered activities at a university (also enterprise)
 - Health services
 - Benefit services

9

Copyright © Scott Bradner & Ben Gaucher in 2016

Parts of HIPAA



- Title 1
Health Care Access, Portability, and Renewability
Regulates availability of health insurance
- Title 2
Preventing Health Care Fraud and Abuse
Administrative Simplification
Medical Liability Reform

10

Copyright © Scott Bradner & Ben Gaucherin 2016

HITECH (updates to HIPAA)



- Health Information Technology for Economic and Clinical Health (HITECH) Act
- Many tweaks
Expanded definition of & rules for "business associate"
Prohibition on sale of PHI without authorization
Additional privacy rights
Enhanced enforcement provisions
Right to electronic copy of PHI
...

11

Copyright © Scott Bradner & Ben Gaucherin 2016

GLBA



- Gramm-Leach-Bliley Act of 1999
- Applies to organizations providing some types of "financial services"
Banking or loan services, money transfer, tax return preparation, financial advice, credit counseling, real estate settlement services, debt collection, credit reporting services, etc.

12

Copyright © Scott Bradner & Ben Gaucherin 2016

GLBA, contd.



- Includes
 - Financial Privacy Rule - requires disclosure of use
 - Safeguards Rule - requires written security plan
- University faculty and employee loan programs are covered by GLBA
 - Student loan programs are covered by FERPA

13

Copyright © Scott Bradner & Ben Gaucherin 2016

Massachusetts breach notification



- *An Act Relative to Security Freezes and Notification of Data Breaches*
 - Mass. residents can get a security freeze
 - Data “owner” must protect personal data
 - “personal data” includes SSN, credit card, license #, etc.
 - Data “owner” must notify individual and state if personal data is compromised
 - Not conditional on risk to individual
 - Must destroy old personal data in a way that blocks recovery

14

Copyright © Scott Bradner & Ben Gaucherin 2016

Massachusetts breach notification, contd.

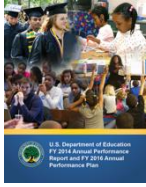


- State developed regulations detailing exact technical and process requirements
 - Went into effect 1 March, 2010
 - Only state to have such explicit technical and process requirements

15

Copyright © Scott Bradner & Ben Gaucherin 2016

FERPA



- Family Educational Rights and Privacy Act of 1974

Federal law that protects the privacy of student education records

Also gives a student access to their own "education record" and request errors be corrected, and the right to put a note in the record if corrections are not made

16

Copyright © Scott Bradner & Ben Gaucherin 2016

FERPA, contd.



Permits a student to opt-out of the institution disseminating directory information

Cloak of invisibility



Permits a student to appeal to the federal government if they feel the school is not complying with FERPA

17

Copyright © Scott Bradner & Ben Gaucherin 2016

FERPA Directory Information



- School must list what it considers "Directory Information"

e.g., name, picture, email address, etc.

- Some things can never be directory information

e.g., SSN

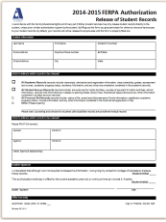
- School can make public directory information about its students

Remember, students can opt-out

18

Copyright © Scott Bradner & Ben Gaucherin 2016


FERPA non-Directory Information



- Non-directory info cannot be released without student's written permission
- Some of the exceptions
 - For "legitimate educational interest" within school
 - To other schools where student is trying to enroll
 - student must be notified of data transfer
 - To a government agency in response to a legit request
 - In conjunction with financial aid
 - State agencies under certain conditions

19 Copyright © Scott Bradner & Ben Gaucherin 2016

FERPA Directory Information, contd.



- Some of the exceptions
 - Organizations conducting studies on improving education
 - Accrediting organizations
 - To protect health or safety of student or others
 - In response to subpoena

20 Copyright © Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
2	FTC shield
4, 5, 6, 9, 10	http://www.ndcaccjs.gov/images/final_calca_logo.jpg
11-14	Department of Human Health Services shield
15, 16	"GrammLeachBliley" by PhilGramm.jpg: Original uploader was RickK at en.wikipedia im_Leach.jpg: Original uploader was WillowGrove at en.wikipedia TomBliley.jpg: US House of Representatives derivative work: Adam sk (talk) - PhilGramm.jpg im_Leach.jpg g TomBliley.jpg Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:GrammLeachBliley.jpg#/media/File:GrammLeachBliley.jpg
14, 15	"Seal of Massachusetts" by Adaptation by User:Sagredo - derived from http://www.sectate.ma.us/cis/cism/af/mf1a.htm , coat of arms redrawn based on the original artwork by E. H. Garrett, published in (1901). "The Coat of Arms and Great Seal of Massachusetts". The New England Magazine XVIII (6): 623-635. Boston: Warren E. Kellogg. This vector image was created with Inkscape. This vector image includes elements that have been taken or adapted from this: Flag of Massachusetts.svg. Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:Seal_of_Massachusetts.svg#/media/File:Seal_of_Massachusetts.svg
16	http://www.performancegov/sites/default/files/report_thumbnail/Rapor1%20Thumbnail-2014-2016-apr-app-plan.jpg
21, 27	Department of Education logo

© Scott Bradner & Ben Gaucherin 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide# credit

18 <http://www.gps1979.com/yearbookPhotos.html>

19 <http://alameda.peralta.edu/financial-aid/financial-aid-programs-at-coa/student-privacy-notice-ferpa/>


20 Virginia Tech logo; <https://www.mvt.edu/research/urban-regeneration/sc2/vt-logo/>

Trust and privacy
Conclusion

CSCI E 45b: The Cyber World – part B

1 Copyright © Scott Bradner & Ben Gaucherin 2016

IETF & Wiretapping: RFC 2804




- Came after long IETF discussion
- Decided to not standardize wiretapping technology

Wiretap laws vary between countries, not one definition
Safest to keep standards free of security loopholes
Adding wiretapping will make protocol more complex & introduce vulnerabilities
End systems should be using end-to-end encryption, so wiretapping not that useful

The IETF discussion was called Raven because in Edgar Allan Poe the raven comes tapping at your window

2 Copyright © Scott Bradner & Ben Gaucherin 2016

IETF & Wiretapping: RFC 2804, contd.



- Good idea to publish (for information) wiretapping technologies for public review and information

3 Copyright © Scott Bradner & Ben Gaucherin 2016

Just because you can...

- Governments seem to feel that if they can technically do something it is OK to do even if it is pushing the limits of what is permitted to do



e.g., use a thermal imaging device to look inside a building
Overruled by Supreme Court *Kyllo v US* (2001)

e.g., track anyone 24x7 with GPS device

e.g., install fake cell base station

4

Copyright © Scott Bradner & Ben Gaucherin 2016

The Supremes & GPS



Justice Samuel Alito

- From arguments on 11/8/11

Justice Alito: *"I would say most of the privacy -- that people enjoyed was not the result of legal protections or constitutional protections; it was the result simply of the difficulty of traveling around and gathering up information. But with computers, it's now so simple to amass an enormous amount of information about people that consists of things that could have been observed on the streets, information that was made available to the public."*

5

Copyright © Scott Bradner & Ben Gaucherin 2016

Snowden and expectations of privacy



Edward Snowden

- *Katz v. US* identifies test for reasonable expectation of privacy
- Snowden told the world the NSA is monitoring everything
- How can the *Katz* test still be right?

6

Copyright © Scott Bradner & Ben Gaucherin 2016

More privacy matters

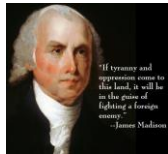


- Will come up again in the Surveillance module
- The issues with the “I have nothing to hide” argument
 - Everyone has something to hide
 - The definition of right/wrong is not static, and is context dependent
 - Remember the Lessig model
- Behavioral, societal change resulting from the knowledge of being watched

7

Copyright © Scott Bradner & Ben Gaucher in 2016

More privacy matters, contd.



- When does the breach of privacy happen: when the data is being collected, or when the data is being looked at
 - Big Pipe
- Once the data has been collected, how do you enforce privacy principles
 - Prevent use beyond stated purpose
 - Protecting now, and for the future

8

Copyright © Scott Bradner & Ben Gaucher in 2016

More privacy matters, contd.



- Freedom (privacy) of choice
 - Griswold v. Connecticut
- Privacy vs. security trade-off
- The historical importance of privacy/anonymity
 - Birth of the U.S. as a nation
 - The 30's vs. the 50's
 - J. Edgar Hoover
- A friction-less society
 - The late night “rolling stop”

9

Copyright © Scott Bradner & Ben Gaucher in 2016

Image credits

All drawings and photos by Ben Gaucherin unless noted

Slide#	credit
2,3	http://cdn8.openculture.com/wp-content/uploads/2014/04/TheRaven2.jpg
4	http://www.x20.org/wp-content/uploads/2014/08/thermal-imaging-camera-scan-heat.jpg
5	"O10 alto" by Collection of the Supreme Court of the United States, Photographer: Steve Petteway - http://www.supremecourthistory.org . Licensed under Public Domain via Commons - https://commons.wikimedia.org/wiki/File:O10_alto.jpg#/media/File:O10_alto.jpg
6	"Edward Snowden-2" by Laura Poitras / Praxis Films. Licensed under CC BY 3.0 via Commons - https://commons.wikimedia.org/wiki/File:Edward_Snowden-2.jpg#/media/File:Edward_Snowden-2.jpg
7	http://www.pennlive.com/opinion/2013/07/if_youre_not_doing_anything_wrong_a_ted_all_cartoon.html
9	https://www.pinterest.com/pin/508977195364803013/
