Three wars affecting privacy
Timeline of privacy regulation

1948  Universal Declaration of Human Rights (UDHR)
1953  European Convention on Human Rights (ECHR)
1959  European Court of Human Rights (ECtHR)
1980  OECD’s recommendations: Principles on privacy and personal data
1985  Convention 108 (Protection of Individuals with regard to Automatic Processing of Personal Data)
2000  Safe Harbour agreement (Privacy Principles)
2012– General Data Protection Regulation (under construction)
2013  Snowden revelations
2015  Safe Harbour invalidated by the European Court of Justice
Various aspects of privacy

Differences between EU and US

- EU: Privacy is a fundamental right
- US: Privacy requires others to refrain from infringements
  - Legally based on reasonable expectation of privacy: e.g. it does not exist when you voluntarily give information to third parties, like banks, ISPs, etc. (“third party doctrine”)
  - Hence the US government can claim such data without warrant

Privacy versus data protection (in EU)

- Privacy: Right for citizens
- Data protection: Right for data controllers, i.e., if they stick to certain rules, then they can process data
Solove’s Taxonomy

DATA SUBJECT

INFORMATION COLLECTION
- Surveillance
- Interrogation

INVASIONS
- Intrusion
- Decisional Interference

INFORMATION PROCESSING
- Aggregation
- Identification
- Insecurity
- Secondary Use
- Exclusion

DATA HOLDERS

INFORMATION DISSEMINATION
- Breach of Confidentiality
- Disclosure
- Exposure
- Increased Accessibility
- Blackmail
- Appropriation
- Distortion
Web cookies

- Lou Montulli\(^1\) (Netscape) in 1994
- No memory of original websites, thus each transaction is unlinkable
  - no shopping, no log in, no personalised content
- Idea: unique browser id
  - total traceability → privacy unfriendly
  - wanted: memory mechanism without cross-site tracking
- Cookie: a small file only accessible by the web server that created it in a browser
  - relation identifier (and some small piece of information)
- Problem: a web page is an html file with additional objects from possibly different web servers
  - cookies from various servers from one web site

\(^1\) [http://www.montulli-blog.com/2013/05/the-reasoning-behind-web-cookies.html](http://www.montulli-blog.com/2013/05/the-reasoning-behind-web-cookies.html)
Third-party cookies

- A web server can link various web-site visits of a user (unlike the original intention): third-party cookie
- Main application: targeted advertising
  - users don’t see the same ad again and again
  - to track the number of unique users
  - to customise advertising based on browsing habit: profile
- By 1996 users wanted change, but it has never really happened ever since
- Lou’s “uncomfortable decision”: keep third-party cookies
  (1) Publicly visible companies
  (2) If 3rd party cookies were disabled, businesses would find other, more surreptitious, mechanisms
- Result: cookies exist but with more transparency (visibility, control)
- But now: we don’t know many tracking and advertising companies (Lightbeam) and there do exist more surreptitious mechanisms
Online behaviour

- How revealing our behaviour on the web?
- Search queries

- **AOL search data release in 2006**
  - e.g. [http://www.not-secret.com/](http://www.not-secret.com/)

- Currently, **Google** is the main player in profiling
  -DoubleClick was established in 1996. In 2007-2008 Google acquired it, making it possible for Google to aggregate knowledge about people from searches and browsing habits
  - Google unifies its privacy policy for all its services in 2012
  - “It will know you better than your intimate partner does. Better, perhaps, than even yourself.” – Ray Kurzweil (Google, 2014)
Application: Price discrimination

Booking.com hotel offer using my own (Chrome) browser: €174

Same hotel, 40 seconds later, accessed via Tor: €154
P&I course (together with prof. Bart Jacobs)

Topics:
- Fundamental rights and the notion of privacy
- Nothing-to-hide argument
- Tracking
- Solove’s Taxonomy and Technology
- Medical privacy
- Anonymous communication
- Attribute-based authentication
- Guest lecture by Peter Koop: The NSA – Myth and Reality

Must-do’s:
- Experiments and simple technical tasks
- Short essays
- Talks, reading
- Computation
Conclusions

▶ We are still learning how to achieve privacy
  ● Is privacy important? Can privacy be achieved?

▶ We are still learning how to teach it
  ● Is privacy not only for the bad guys?

▶ Many students liked it, or at least learnt something
  ● “I haven’t thought that search queries are that revealing!”
  ● “Thank you for a great course and being so considerate on the language front!”

THANK YOU!