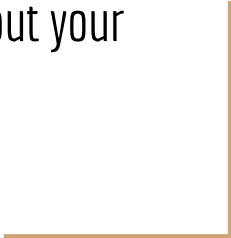




# Privacy online Workshop

What do others know about your  
activities online?



# Prerequisites

We assume that you have read the following prior to attending this workshop:

- Kernigan - Data, Information and Privacy (pp. 187-208)
- Juneday wiki - [http://wiki.juneday.se/mediawiki/index.php/ITIC:Privacy\\_on\\_the\\_web](http://wiki.juneday.se/mediawiki/index.php/ITIC:Privacy_on_the_web)

# Objectives

## Understand

- What sneaky stuff can be found in terms and conditions
- The risks of being tracked
- The importance of thinking about what you do online

## Know:

- That organizations track your activities (and sell information about you)
- That you can protect yourself (at least to some degree)

# What you have agreed to(?!)

In this section, we'll show you a couple of quotes from various platforms' terms and conditions.

This is to get you thinking about what permissions YOU give to companies.

# Who wrote this?

*If you use our services to make and receive calls or send and receive messages, we may collect telephony log information such as your phone number, calling-party number, receiving-party number, forwarding numbers, time and date of calls and messages, duration of calls, routing information and types of calls.*

# Who wrote this?

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For instance, [Google](#)

# Who wrote this?

*You grant XXX a **non-exclusive, transferable, sub-licensable, royalty-free, perpetual, irrevocable, fully paid, worldwide license** to use, reproduce, make available to the public (e.g. perform or display), publish, translate, modify, create derivative works from, and distribute any of your User Content in connection with the Service through any medium, whether alone or in combination with other Content or materials, in any manner and by any means, method or technology, whether now known or hereafter created.*

*[emphasis added by the teachers]*

# Who wrote this?

*You grant XXX a **non-exclusive, transferable, sub-licensable, royalty-free, perpetual, irrevocable, fully paid, worldwide license** to use, reproduce, make available to the public (e.g. perform or display), publish, translate, modify, create derivative works from, and distribute any of your User Content in connection with the Service through any medium, whether alone or in combination with other Content or materials, in any manner and by any means, method or technology, whether now known or hereafter created. [emphasis added by the teachers]*

For instance, [Spotify](#)



# Who wrote this?

*You give us permission to use your name and profile picture and information about actions you have taken on XXX next to or in connection with ads, offers, and other sponsored content that we display across our Products, without any compensation to you.*

# Who wrote this?

*You give us permission to use your name and profile picture and information about actions you have taken on XXX next to or in connection with ads, offers, and other sponsored content that we display across our Products, without any compensation to you.*

For instance, [Facebook](#)

# Who wrote this?

*You also agree that you will not use these products for any purposes prohibited by United States law, including, without limitation, the development, design, manufacture, or production of nuclear, missile, or chemical or biological weapons.*

# Who wrote this?

*You also agree that you will not use these products for any purposes prohibited by United States law, including, without limitation, the development, design, manufacture, or production of nuclear, missile, or chemical or biological weapons.*

For instance, [iTunes](#)

# Who wrote this?

*The Lumberyard Materials are not intended for use with life-critical or safety-critical systems, such as use in operation of medical equipment, automated transportation systems, autonomous vehicles, aircraft or air traffic control, nuclear facilities, manned spacecraft, or military use in connection with live combat.*

*However, **this restriction will not apply in the event of the occurrence (certified by the United States Centers for Disease Control or successor body) of a widespread viral infection transmitted via bites or contact with bodily fluids that causes human corpses to reanimate and seek to consume living human flesh, blood, brain or nerve tissue and is likely to result in the fall of organized civilization.*** (emphasis added by Juneday authors)

# Who wrote this?

*[...]However, **this restriction will not apply in the event of the occurrence (certified by the United States Centers for Disease Control or successor body) of a widespread viral infection transmitted via bites or contact with bodily fluids that causes human corpses to reanimate and seek to consume living human flesh, blood, brain or nerve tissue and is likely to result in the fall of organized civilization.** (emphasis added by Juneday authors)*

[AWS\(Amazon Web Services\)](#)

# Connecting the dots

These two articles (linked from the wiki) describe how Facebook knows who your contacts are.

- <https://splinternews.com/facebook-recommended-that-this-psychiatrists-patients-f-1793861472>
- <https://gizmodo.com/how-facebook-figures-out-everyone-youve-ever-met-1819822691>

Do you think the information in the articles are true? Why/Why not?

Have you experienced anything like being recommended (via ads) products your friends have talked about?

# What about apps?

Do you know any apps or services owned by Facebook?



# What about apps?

Do you know any apps or services owned by Facebook?

- Instagram
- WhatsApp
- Oculus VR
- FriendFeed
- LiveRail

Source:

<https://www.investopedia.com/articles/personal-finance/051815/top-11-companies-owned-facebook.asp> (Jun 25, 2019)

# What about apps?

When you first use one of those apps, it asks you for access to your contacts. What do you think the app does with those contacts (i.e. your whole phone's contact list)?

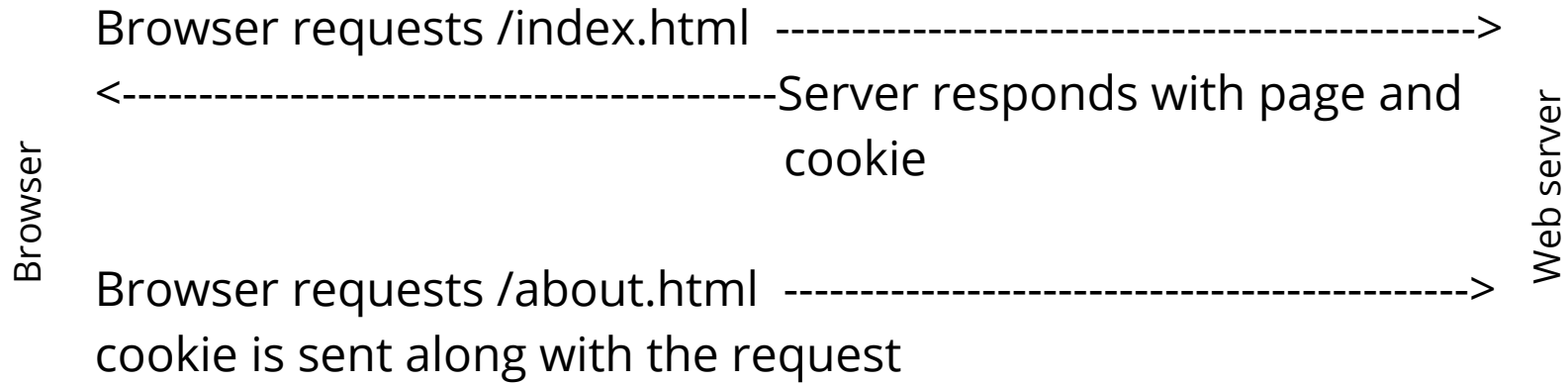
What does this mean for people in your contact book, who are not even on Facebook (or any of their apps)?

# Tracking your surfing

- Ad companies want to know what your interests are
- In order to know that, they track what pages you visit
- How can they do that?

# Tracking your surfing

- Cookies



# Tracking your surfing

- Cookies

Part of the HTTP headers from Wikipedia:

```
$ HEAD 'https://en.wikipedia.org/wiki/HTTP_cookie'
```

```
200 OK
```

```
Connection: close
```

```
Date: Thu, 27 Jun 2019 07:29:23 GMT
```

```
Age: 87641
```

```
Server: mw1250.eqiad.wmnet
```

```
Content-Language: en
```

```
Content-Type: text/html; charset=UTF-8
```

```
Last-Modified: Thu, 20 Jun 2019 09:50:09 GMT
```

```
Client-Date: Thu, 27 Jun 2019 07:29:24 GMT
```

```
Client-Peer: 91.198.174.192:443
```

```
Set-Cookie: WMF-Last-Access=27-Jun-2019;Path=/;HttpOnly;secure;Expires=Mon, 29 Jul 2019 00:00:00 GMT
```

```
Set-Cookie:
```

```
WMF-Last-Access-Global=27-Jun-2019;Path=/;Domain=.wikipedia.org;HttpOnly;secure;Expires=Mon, 29 Jul 2019 00:00:00 GMT
```

```
Set-Cookie: GeoIP=SE:0:Gothenburg:57.72:11.97:v4; Path=/; secure; Domain=.wikipedia.org
```

# Tracking your surfing

- Cookies

Take the time to review your browser's cookies. How many were there?

# Tracking your surfing

Here's Rikard's 20 most common origins for his chrome cookies:

```
sqlite> SELECT count(*), host_key FROM cookies GROUP BY host_key ORDER BY count(*) DESC LIMIT 20;  
46|www.cio.com  
28|.servebom.com  
27|.flickr.com  
25|.acint.net  
23|.paypal.com  
19|.pubmatic.com  
18|.vimeo.com  
17|.amazon.com  
17|.google.com  
17|.shutterstock.com  
17|www.dustin.se  
16|.atlassian.com  
16|.oracle.com  
16|.twitter.com  
15|.wordpress.com  
15|.zdnet.com  
15|webmail.gu.se  
14|.reddit.com  
14|ads.stickyadstv.com  
13|.dustinhome.se
```

# Tracking your surfing

Here's Rikard's 20 most common origins for his chrome cookies (work):

```
sqlite> SELECT count(*), host_key FROM cookies GROUP BY host_key ORDER BY count(*) DESC LIMIT 20;  
46|www.cio.com  
28|.servebom.com  
27|.flickr.com  
25|.acint.net  
23|.paypal.com  
19|.pubmatic.com  
18|.vimeo.com  
17|.amazon.com  
17|.google.com  
17|.shutterstock.com  
17|www.dustin.se  
16|.atlassian.com  
16|.oracle.com  
16|.twitter.com  
15|.wordpress.com  
15|.zdnet.com  
15|webmail.gu.se  
14|.reddit.com  
14|ads.stickyadstv.com  
13|.dustinhome.se
```



# Tracking your surfing

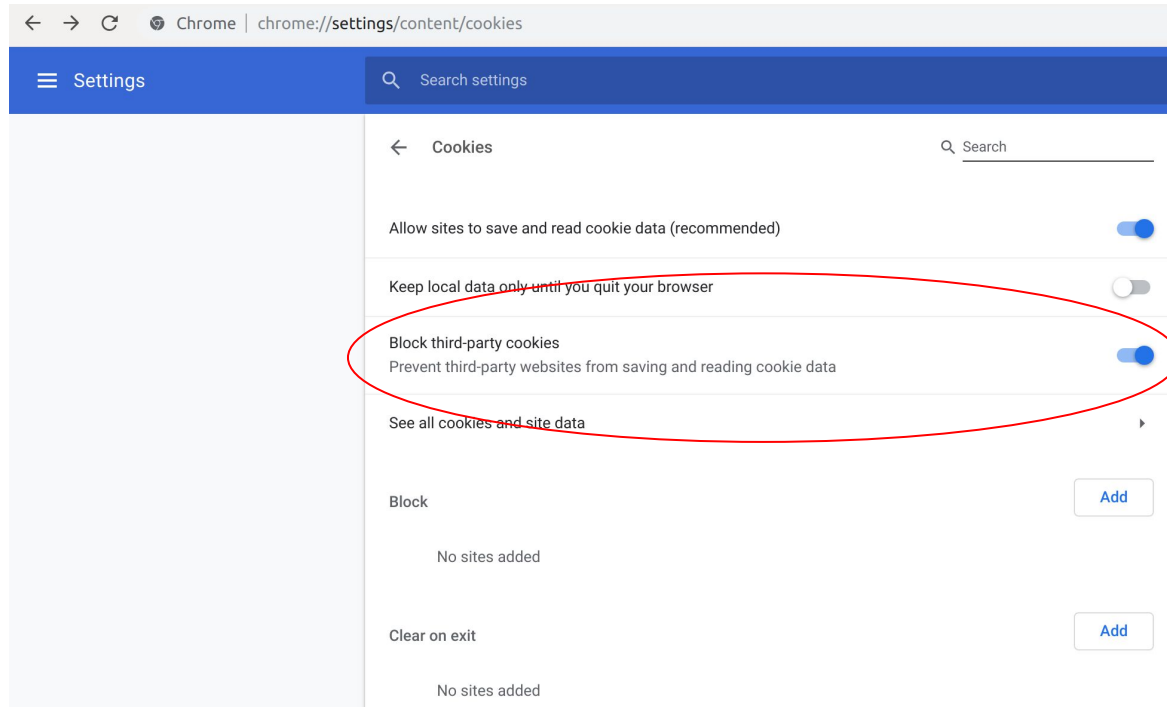
After installing some protection against tracking:

```
sqlite> SELECT count(*), host_key FROM cookies GROUP BY host_key ORDER BY count(*) DESC LIMIT 20;  
46|www.cio.com  
30|.norton.com  
27|.flickr.com  
23|.paypal.com  
19|.pubmatic.com  
18|.vimeo.com  
17|.amazon.com  
17|.google.com  
17|.shutterstock.com  
16|.atlassian.com  
16|.oracle.com  
16|.twitter.com  
15|.wordpress.com  
15|.zdnet.com  
15|webmail.gu.se  
15|www.dustin.se  
14|.reddit.com  
13|mail.google.com  
13|www.dev2qa.com  
12|.google.se
```

# Third-party cookies

- Browsers need only accept cookies from the server they are talking to
- ...but... trackers use an image on a page linked to their own server
- when the image is loaded from the tracker's server, cookies can be set and read
- Some browsers disallow third-party cookies by default, others don't
- Most browsers can be configured to disallow them

# Third-party cookies



# Tracking your surfing

- Cookies
- Zombie cookies
  - Use various places on your computer to store cookie information - all of which need be detected and deleted, or the cookie is recreated
- Browser fingerprinting
- Use Tor? Does it protect you (from whom?)?
  - <https://edwardsnowden.com/docs/doc/tor-stinks-presentation.pdf>

# Tracking your surfing

- Cookies
- Zombie cookies

Read up on Zombie cookies:

- Wikipedia
- <https://www.maketecheasier.com/supercookies-zombie-cookies-evercookies/>
- <https://www.reputationdefender.com/blog/privacy/how-to-delete-flash-cookies-permacookies-and-zombie-cookies>
- Google it (or use duckduckgo.com etc)

# Tracking your surfing

- Cookies
- Zombie cookies
- **Browser fingerprinting**

Use a search engine to find some online tools for fingerprinting your browser.  
Suggested keywords for the search:

- browser fingerprinting
- browser sniffing
- browser fingerprinting test

# Browser fingerprint test

Follow the instructions here:

[http://wiki.juneday.se/mediawiki/index.php/ITIC:Privacy on the web - Exercise](http://wiki.juneday.se/mediawiki/index.php/ITIC:Privacy_on_the_web_-_Exercise) (the sections about fingerprinting: *How unique is your browser?*).

In particular, install a few additional browsers and test their default settings fingerprints. Did anyone get the same fingerprint? In particular, if you have the same (or similar) laptop model and operating system!

We suggest you visit <https://panopticklick.eff.org/> and test your new browsers.

# Conclusion and discussion

Have you learned anything about:

- Terms and conditions?
- Implications of tracking?
- How tracking works?
- How to defend yourself (to a certain degree)?