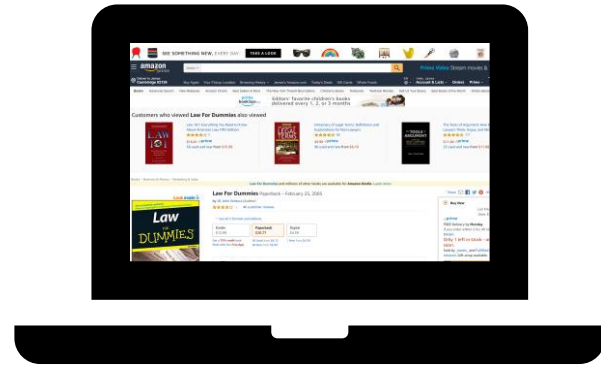


# Gathering People's Private Data

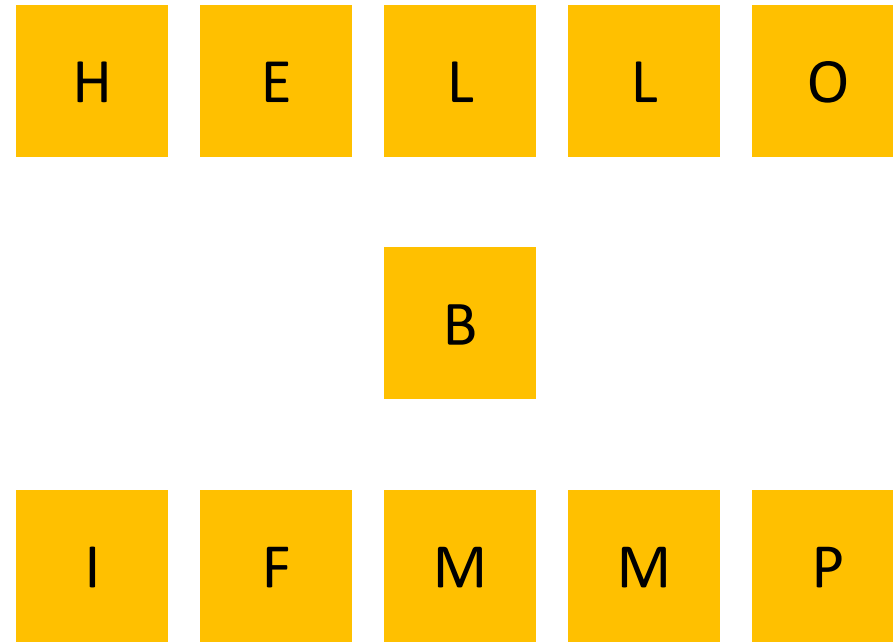
A very specially-priced cookie

# Data Privacy Recap



# Recapping Cryptography

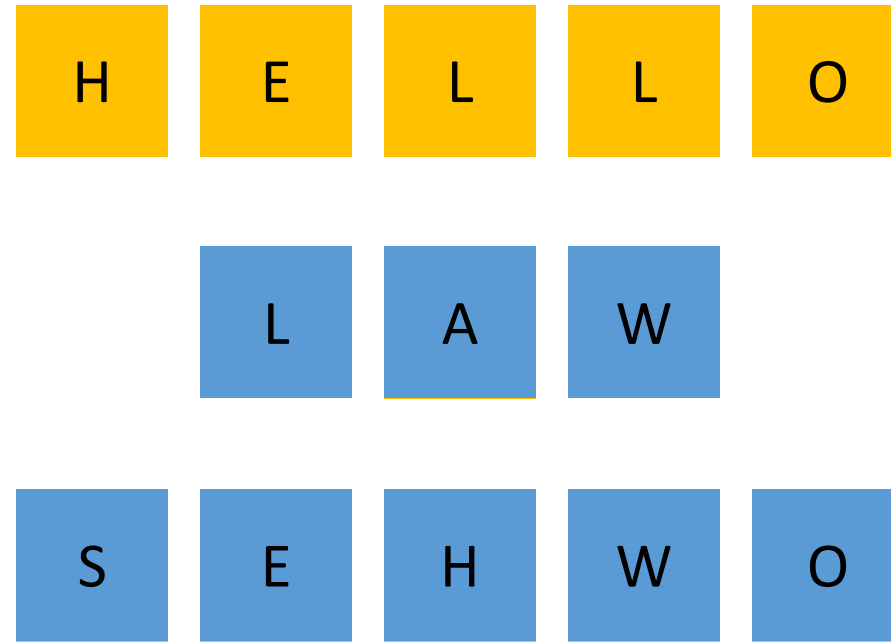
## Caesar Cipher



a = 0  
b = 1  
c = 2  
d = 3  
e = 4  
f = 5  
g = 6  
h = 7  
i = 8  
j = 9  
k = 10  
l = 11  
m = 12  
n = 13  
o = 14  
p = 15  
q = 16  
r = 17  
s = 18  
t = 19  
u = 20  
v = 21  
w = 22  
x = 23  
y = 24  
z = 25

# Recapping Cryptography

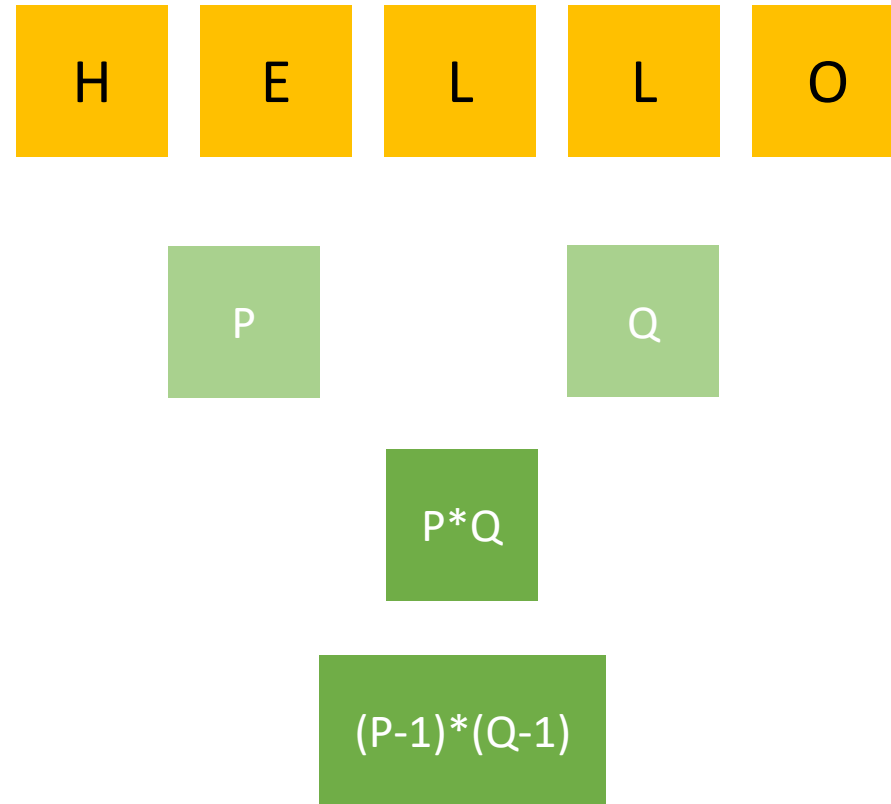
## Vigenere Cipher



a = 0  
b = 1  
c = 2  
d = 3  
e = 4  
f = 5  
g = 6  
h = 7  
i = 8  
j = 9  
k = 10  
l = 11  
m = 12  
n = 13  
o = 14  
p = 15  
q = 16  
r = 17  
s = 18  
t = 19  
u = 20  
v = 21  
w = 22  
x = 23  
y = 24  
z = 25

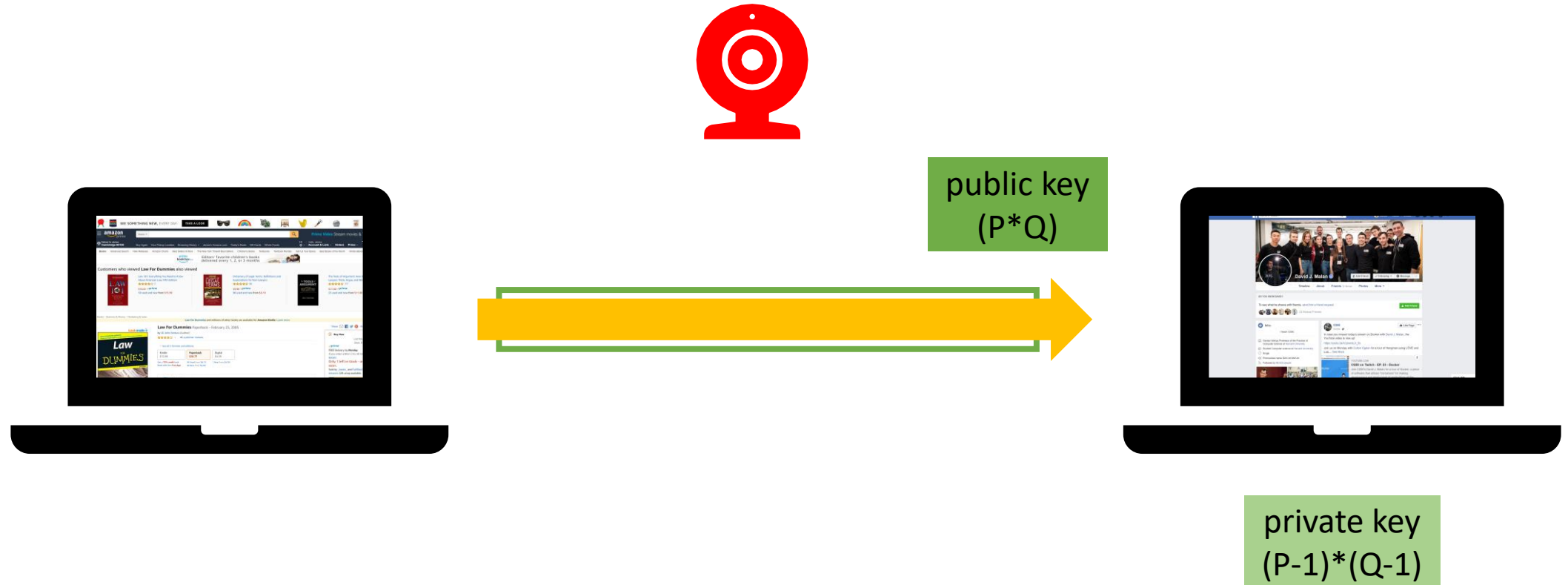
# Recapping Cryptography

RSA

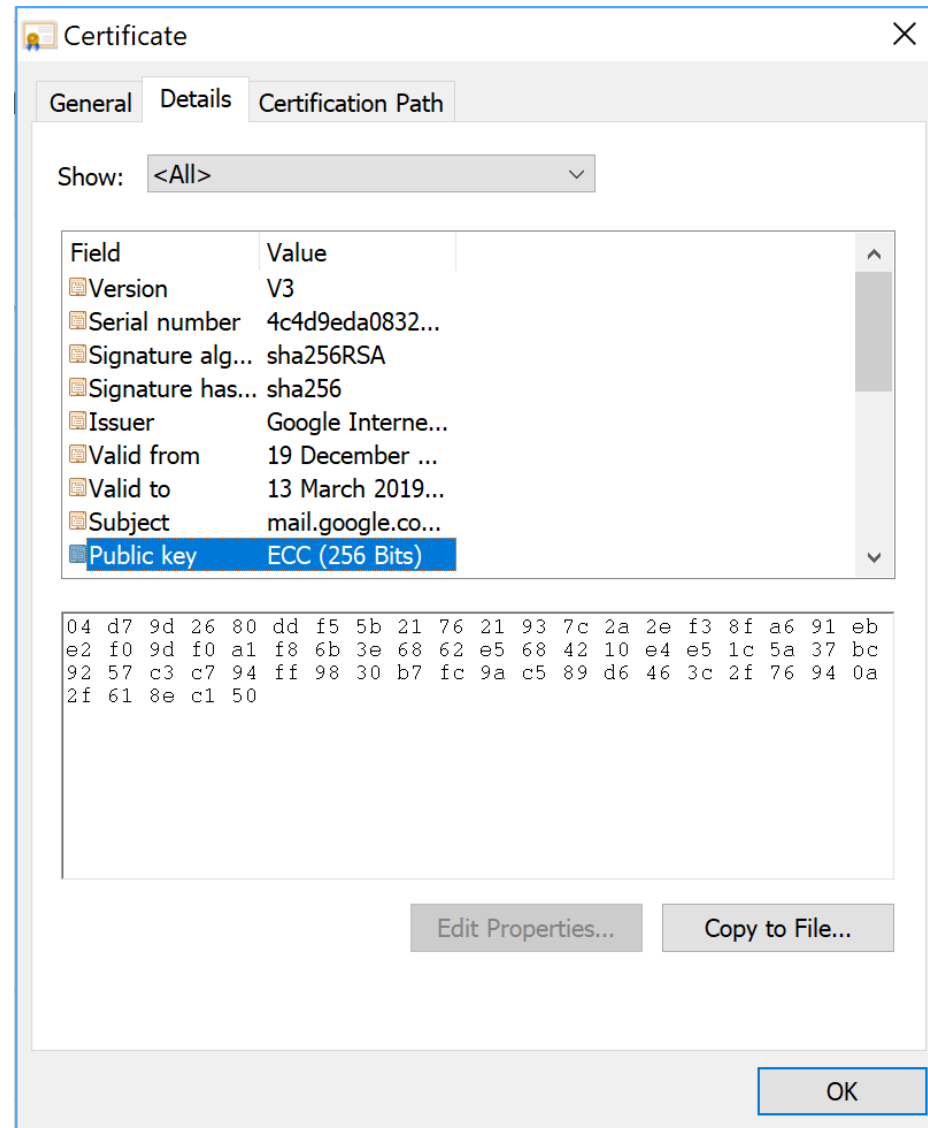


a = 0  
b = 1  
c = 2  
d = 3  
e = 4  
f = 5  
g = 6  
h = 7  
i = 8  
j = 9  
k = 10  
l = 11  
m = 12  
n = 13  
o = 14  
p = 15  
q = 16  
r = 17  
s = 18  
t = 19  
u = 20  
v = 21  
w = 22  
x = 23  
y = 24  
z = 25

# Data Privacy Recap



# HTTPS



# MTM Attacks



# Packet Sniffing

- A form of Man-in-the-Middle attack (MTM) used on LANs to sniff data packets coming from machines on the network
- Used in promiscuous mode to obtain all data transmitted rather than that data only directed to that machine

≡ **MOTHERBOARD** Moveable Hacking Environment Space Gaming Health Tech Science Influence

SECURITY | By Michael Byrne | Jan 24 2016, 1:30pm

## How To Go From 0 to Sniffing Packets in 10 Minutes

Meet Wireshark.

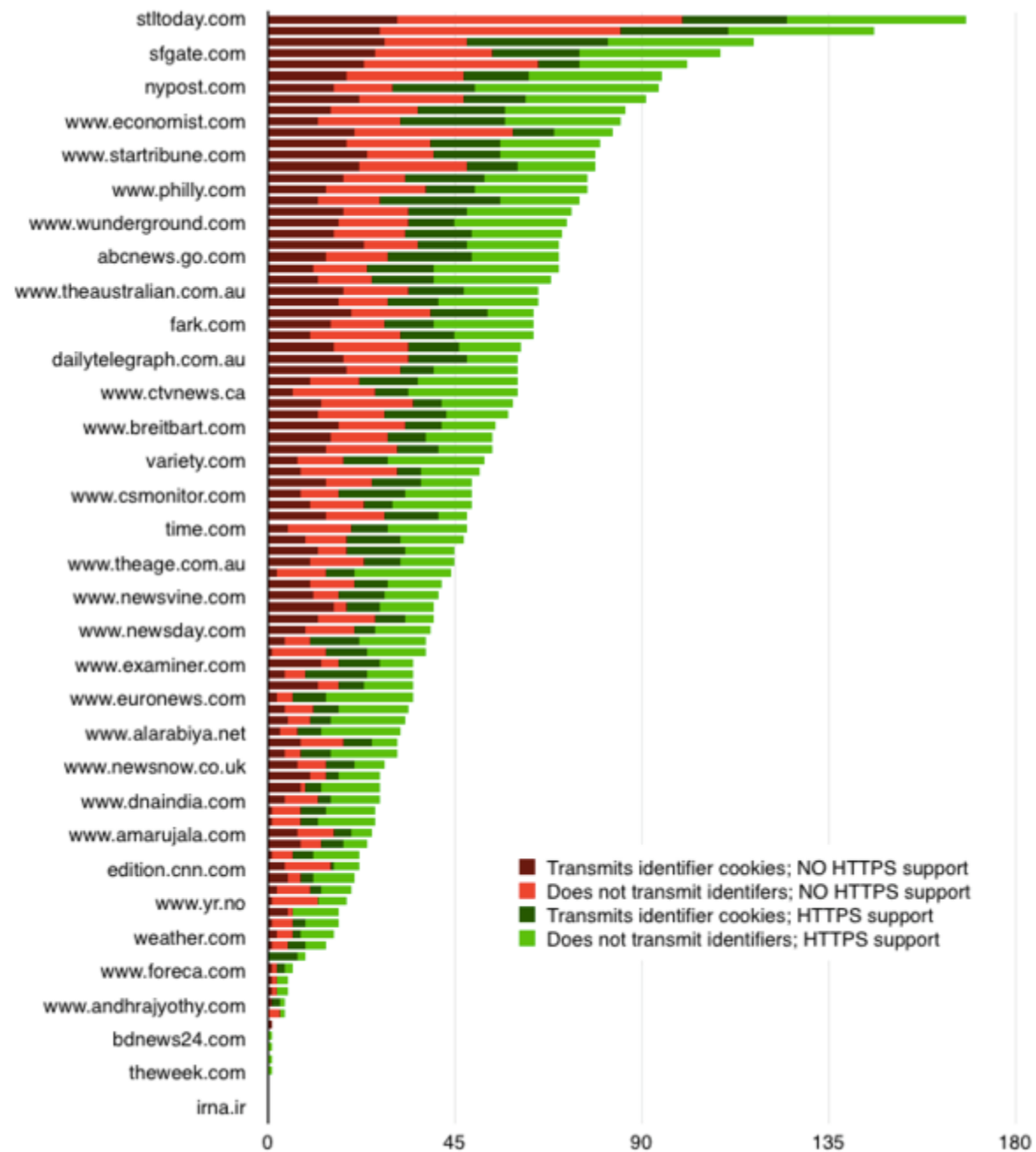
# The \$10 Wifi Pineapple

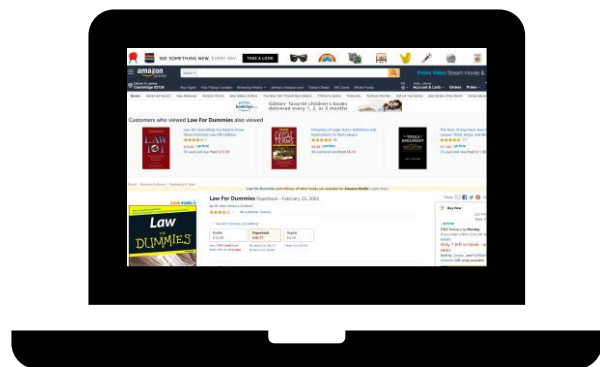


- Hackers set up a parallel wifi network and give it a name that devices will likely autoconnect to
  - “Harvard University” “Google Starbucks”
- Provide them with wifi internet access and send malicious install data or monitor/change all of the data they send to you
- Send them the Cyrillic Alphabet

65	41	А	Upper case A
97	61	а	Lower case a
160	A0	а	Cyrillic lower case a

Category	Percent of Sites that <i>Do Not</i> Encrypt Browsing by Default	Example URLs for Unencrypted Web Sites
Health	86%	<a href="http://webmd.com/hiv-aids/guide/">http://webmd.com/hiv-aids/guide/...</a> <a href="http://mayoclinic.org/...cancer...">http://mayoclinic.org/...cancer...</a> <a href="http://medicinenet.org/...eczema...">http://medicinenet.org/...eczema...</a> <a href="http://health.com/sexual-health">http://health.com/sexual-health</a> <a href="http://who.int/...childhood-hearing-loss...">http://who.int/...childhood-hearing-loss...</a>
News	90%	<a href="http://nytimes.com/...tax-tips...">http://nytimes.com/...tax-tips...</a> <a href="http://huffingtonpost.com/divorce">http://huffingtonpost.com/divorce</a> <a href="http://video.foxnews.com/...sex-after-50...">http://video.foxnews.com/...sex-after-50...</a> <a href="http://time.com/...gay-rights...">http://time.com/...gay-rights...</a> <a href="http://bankrate.com/debt-management...">http://bankrate.com/debt-management...</a>
Shopping	86%	<a href="http://ikea.com/...bathroom...">http://ikea.com/...bathroom...</a> <a href="http://target.com/...study-bible...">http://target.com/...study-bible...</a> <a href="http://macys.com/...maternity-clothes...">http://macys.com/...maternity-clothes...</a> <a href="http://bedbathandbeyond.com/...acne-wash...">http://bedbathandbeyond.com/...acne-wash...</a> <a href="http://toysrus.com/...Toddler-Toys...">http://toysrus.com/...Toddler-Toys...</a>





DNS Failure

# Content Providers



Fourth Amendment  
To the U. S. Constitution

The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.



**ARTICLE 8**

**Right to respect for private and family life**

1. Everyone has the right to respect for his private and family life, his home and his correspondence.
2. 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.

Syllabus

NOTE: Where it is feasible, a syllabus (headnote) will be released, as is being done in connection with this case, at the time the opinion is issued. The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States v. Detroit Timber & Lumber Co.*, 200 U. S. 321, 337.

**SUPREME COURT OF THE UNITED STATES**

Syllabus

**CARPENTER *v.* UNITED STATES**

**CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR  
THE SIXTH CIRCUIT**

No. 16–402. Argued November 29, 2017—Decided June 22, 2018

# I

*(Legislative acts)*

## REGULATIONS

**REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL**

**of 27 April 2016**

**on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)**

**(Text with EEA relevance)**

# International Law on Data Protection

## **US Law**

- Mixed requirements for different states and industries
- No need to notify about cookies

## **EU Law (GDPR)**

- Uniform for all companies that operate in the EU
- Must notify of cookies use

# Cookies

- 1) You visit Amazon and pick up a tracking cookie
- 2) You visit a website with a Google Ad on it
- 3) The Google Ad sees the cookie and sends it to Google which recognizes it's from Amazon
- 4) Google shows you more Ads for what you were shopping for

Cookies store in order and can store search queries, purchases, zip code, location, how many times you've seen an ad and/or clicked on it

In the EU, all websites must notify of cookies unlike the US

# Impacts of Data Gathering

- Price Discrimination/Customization
- Business Monopoly Information Assymetries
- Database Hacking

# Gathering People's Private Data

A very specially-priced cookie