



# Security and privacy for dummies

20th September 2019

Rosa Castillo, Ph.D.  
Adrian Tineo, Ph.D.

# About Rosa

- Data Scientist at TWS
- PhD. in CS
- Senior SW Engineer
- Active member in WTM,  
R4DS, Py4DS and GDG



# About Adrian

- Freelance iOS Consultant
- Ph.D. in CS
- Background:
  - research scientist
  - parallel computing
  - test automation



# Goal of this talk

- Social project
- Collaborators



# Why Security AND Privacy?

- Liberty requires BOTH



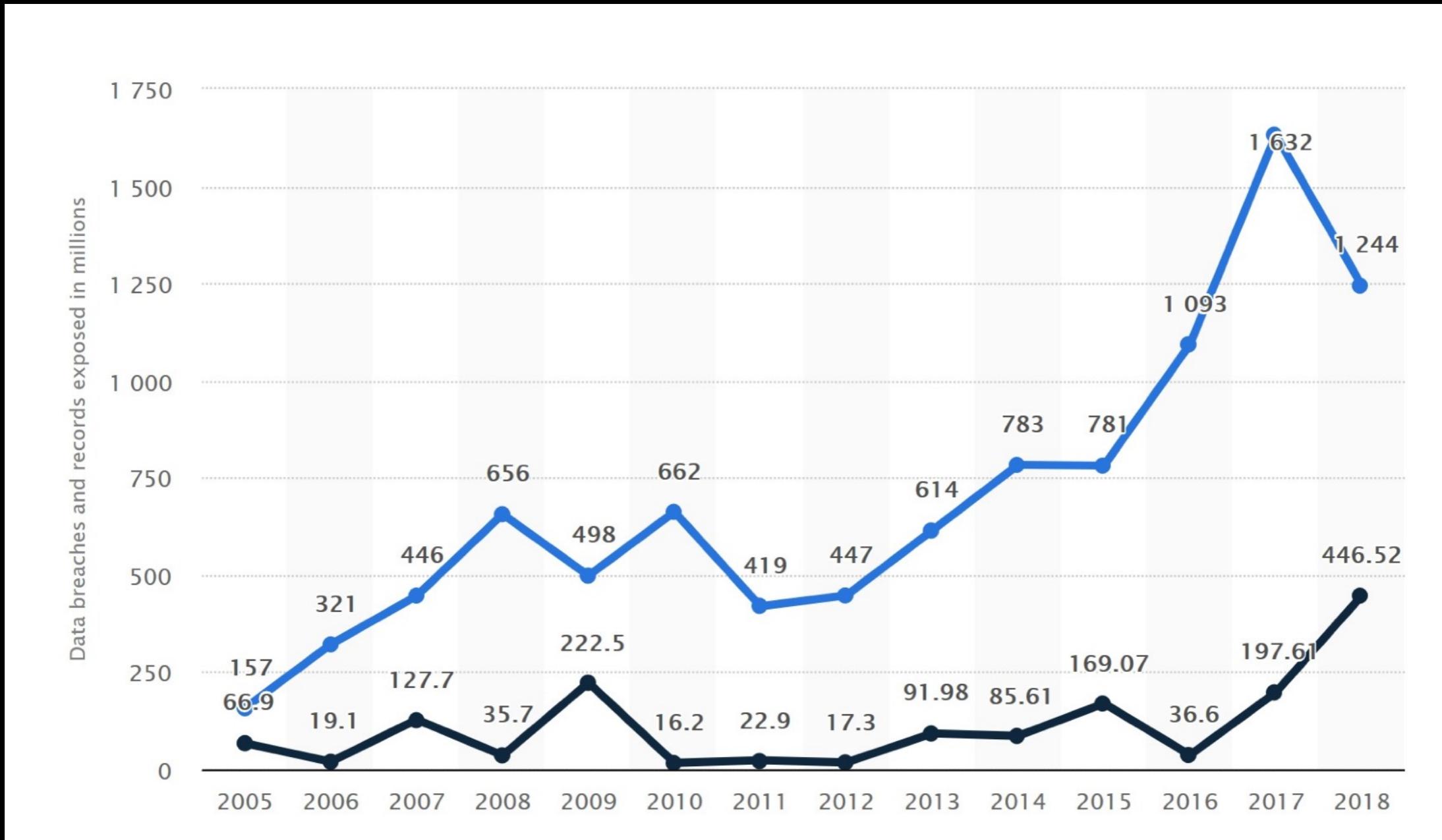
# Email: still an issue?

- 92% of malware is delivered by email
- 48% of malicious email attachments are MS Office files



# Data breaches

Number of annual data breaches & exposed records in the US (2005-2018) (in millions)



<https://www.statista.com/statistics/273550/data-breaches-recorded-in-the-united-states-by-number-of-breaches-and-records-exposed/>

# Check whether you've been affected

';-have i been pwned?

Check if you have an account that has been compromised in a data breach

pwned?

<https://haveibeenpwned.com>

# Best practices



- Never post sensitive data in public (Blogs, forums...)
- Strong passwords (passphrases, Diceware method,...)
- Password managers (1Password, Bitwarden and KeePass)
- Use 2FA whenever possible
- Important files to send? Encrypt or compress with password
- Use E2E Email providers

# Email alternatives

The image shows the ProtonMail homepage. The background is a photograph of a snow-capped mountain peak. On the left, there is white text: "Secure Email Based in Switzerland" and "Secure Your Communications with ProtonMail". Below this is a button with the text "GET YOUR ENCRYPTED EMAIL ACCOUNT". At the top, there is a navigation bar with links: "About", "Security", "Blog", "Careers", "Support", "Enterprise", "LOG IN", and "SIGN UP". On the right side of the image, a smartphone displays the ProtonMail inbox screen. The inbox shows several emails with subjects like "So much new", "Protonmail v1.0.10 is ready!", "I found a way back home", "Welcome on board", "High res images", "Das hast du prima gemacht", "I have a ticket for you", and "Ready to go!". Each email includes the sender's name, the time it was received, and small icons for importance and attachments.

Secure Email Based  
in Switzerland

Secure Your Communications with ProtonMail

GET YOUR ENCRYPTED EMAIL ACCOUNT

About Security Blog Careers Support Enterprise LOG IN SIGN UP

INBOX

So much new 1:30 pm  
P. Parker

Protonmail v1.0.10 is ready! 11:13 am  
ProtonMail via Crashlytics

I found a way back home Saturday  
Peter Pan IMPORTANT

Welcome on board Friday  
Invision App

High res images Friday  
Andy Yen PROTONMAIL

Das hast du prima gemacht Friday  
Angela Merkel

I have a ticket for you Thursday  
Willy Wonker ★

Ready to go! Thursday

# Email alternatives

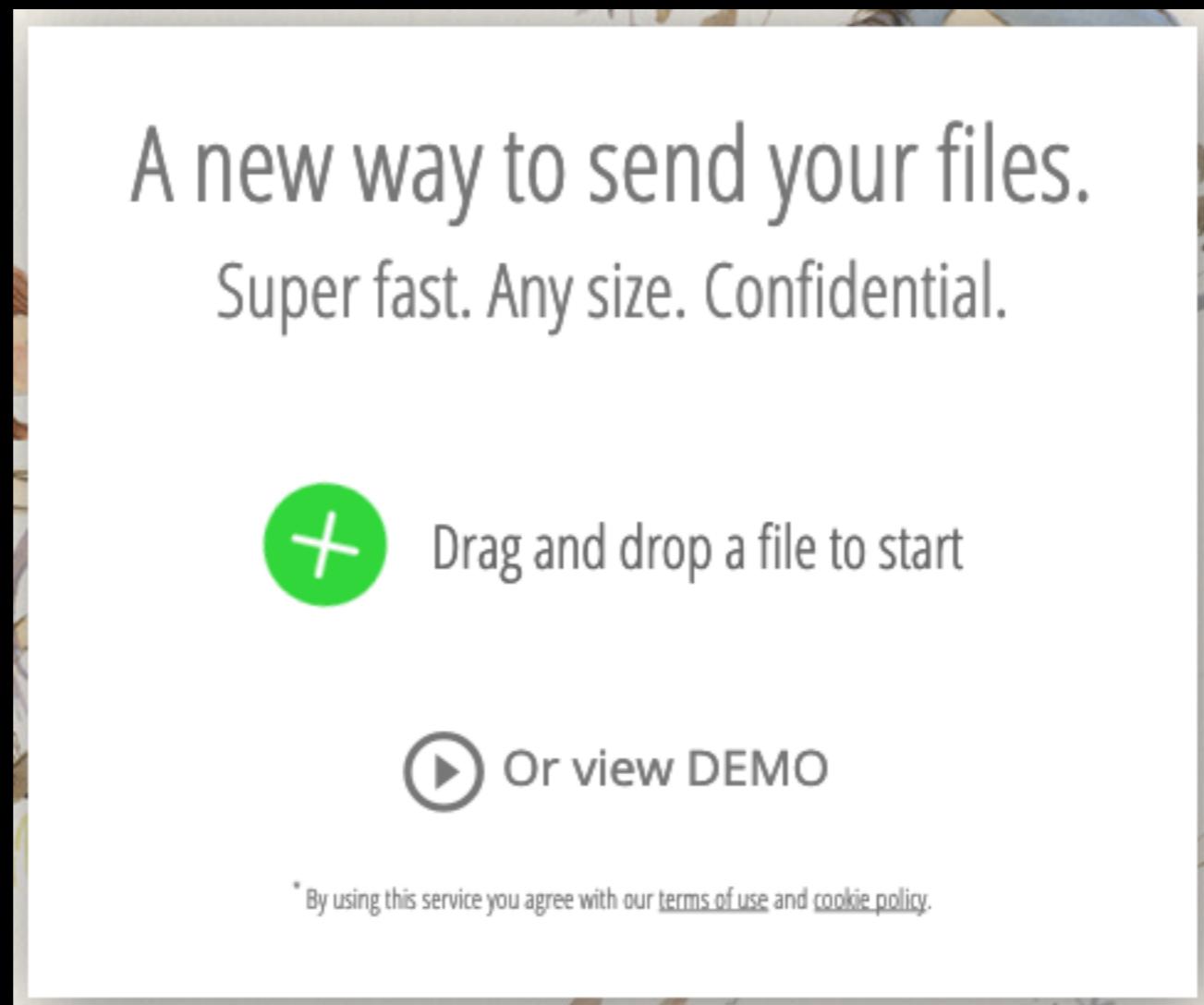
[YOU & US](#)[PRICING](#)[BUSINESS](#) ▾[FAQ](#)[BLOG](#)[LOGIN](#)

Secure email for  
everybody.

Tutanota is the world's most secure email service,  
easy to use and private by design. Sign up for free to  
take control of your mailbox.

[SIGN UP](#)

# Live file transfer



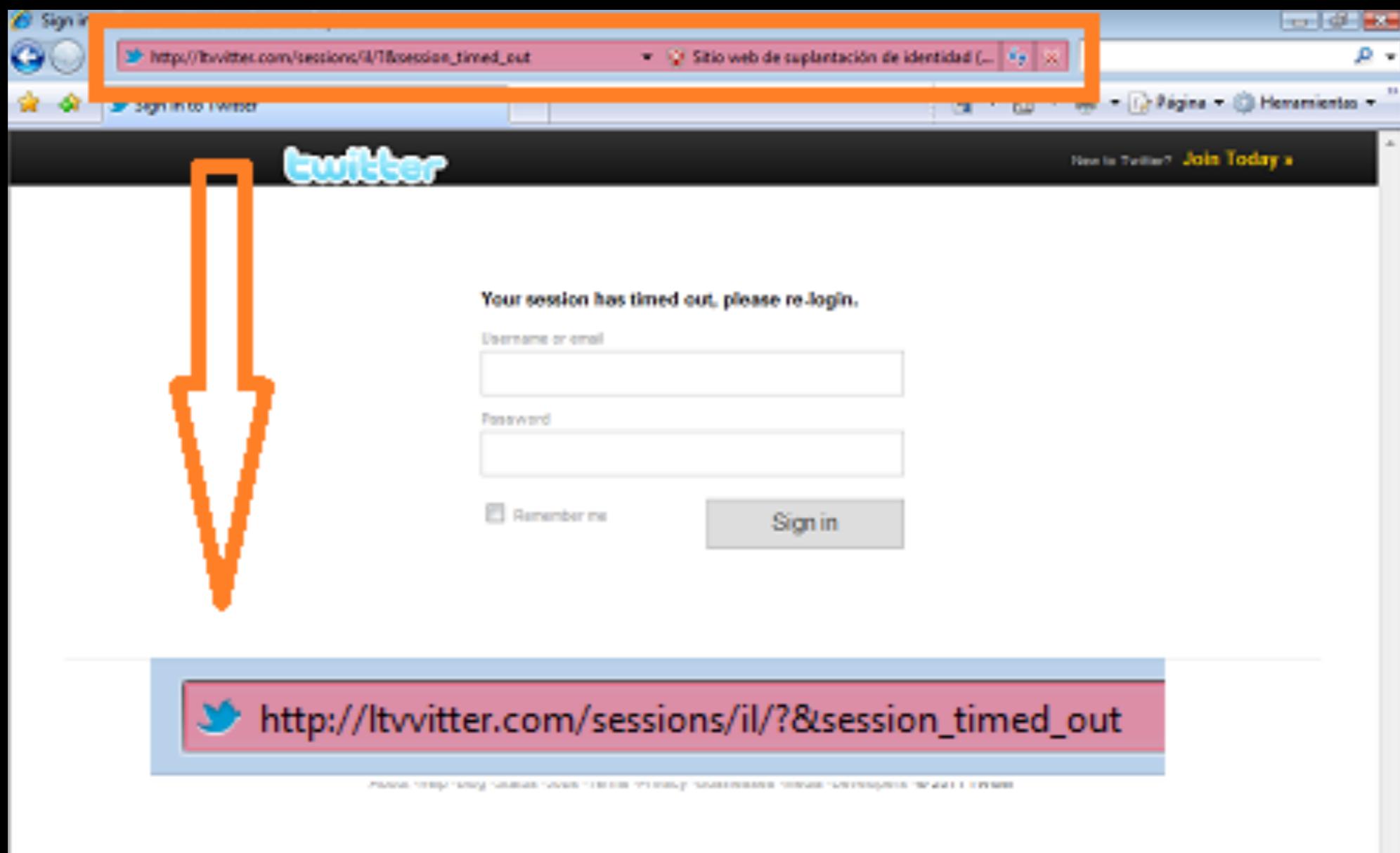
<https://takeafile.com/>



**Beware Of Phishing**

# Phishing

- Banking, Social media, IT Support, Elections...



# Spyware: one bad click away

- Adware, system monitors, tracking cookies, trojans...
- ...and mobile apps: 10,573 malicious mobile apps blocked per day (2018)



# Tools



Home

Blog

Trust Site

Risk Site



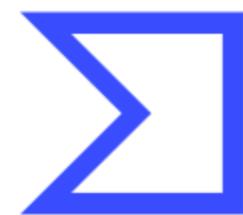
ANALYZE WHETHER THE WEBSITE IS A SCAM OR LEGITIMATE

Like Google.com, Yahoo.com, Bing.com and more

example.com



# Tools



## VIRUSTOTAL

Analyze suspicious files and URLs to detect types of malware,  
automatically share them with the security community

FILE

URL

SEARCH

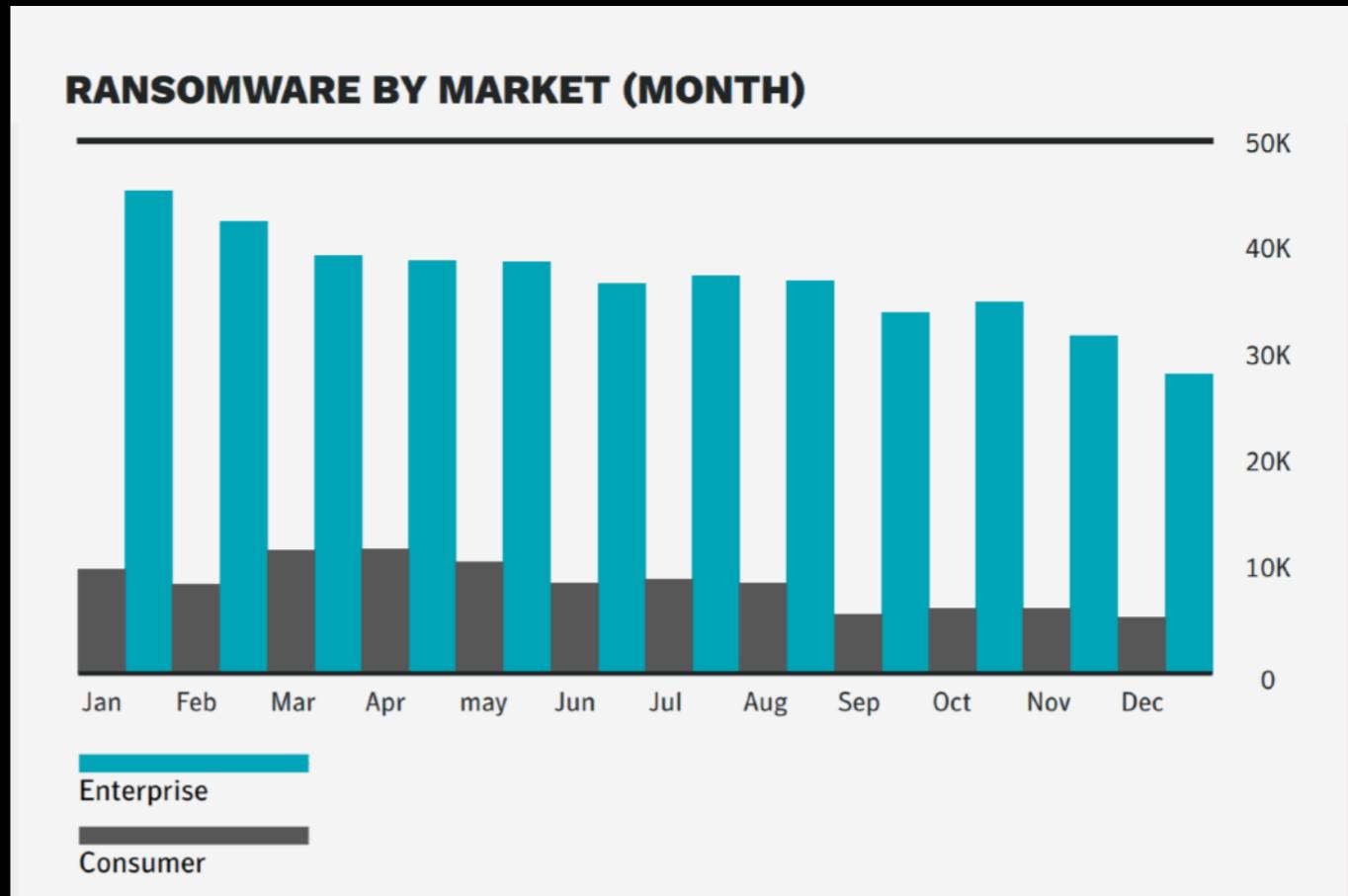


Choose file

<https://www.virustotal.com/gui/home/upload>

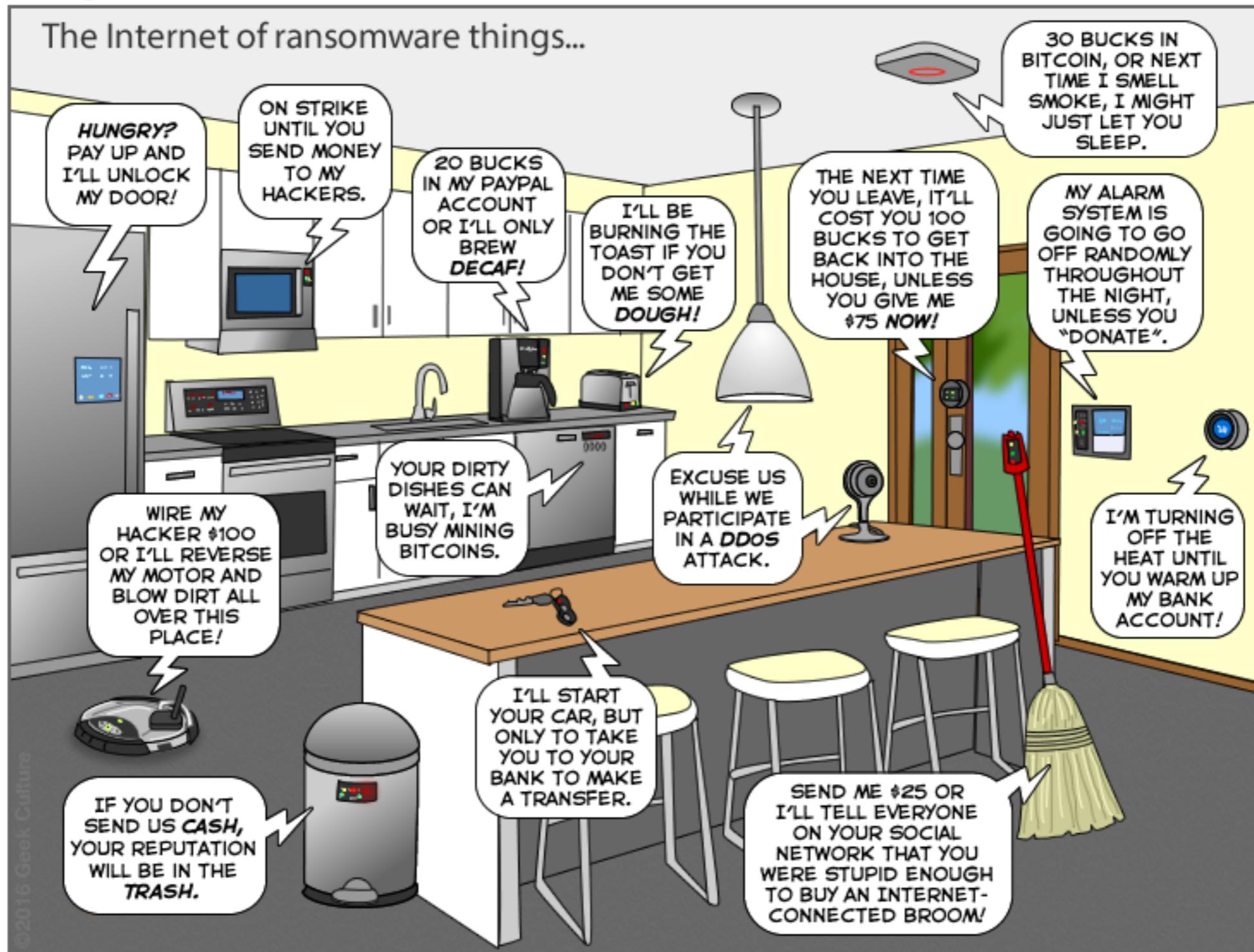
# Ransomware

- Shift to enterprises
- Decrease in activity in 2018
- Mobile users using the cloud = Cloud attacks
- Make backups & UPDATE!



# IoT

The Joy of Tech™ by Nitrozac & Snaggy



You can help us keep the comics coming by becoming a patron!  
[www.patreon/joyoftech](http://www.patreon/joyoftech)

[joyoftech.com](http://joyoftech.com)

# Cryptojacking

- Is your computer part of a botnet?
- Hackers prefer anonymous cryptocurrencies like Monero & Zcash

**kaspersky**

## SIMDA BOT FREE IP SCANNER

Is your computer a Simda Bot? Find out if your IP address is listed in the database of the tens of thousands of computers that make up the Simda\* botnet. If your computer has been infected with Simda, it may contain malware, spyware and adware.

<https://checkip.kaspersky.com/>

# Privacy: a story in 4 acts



# Act I:

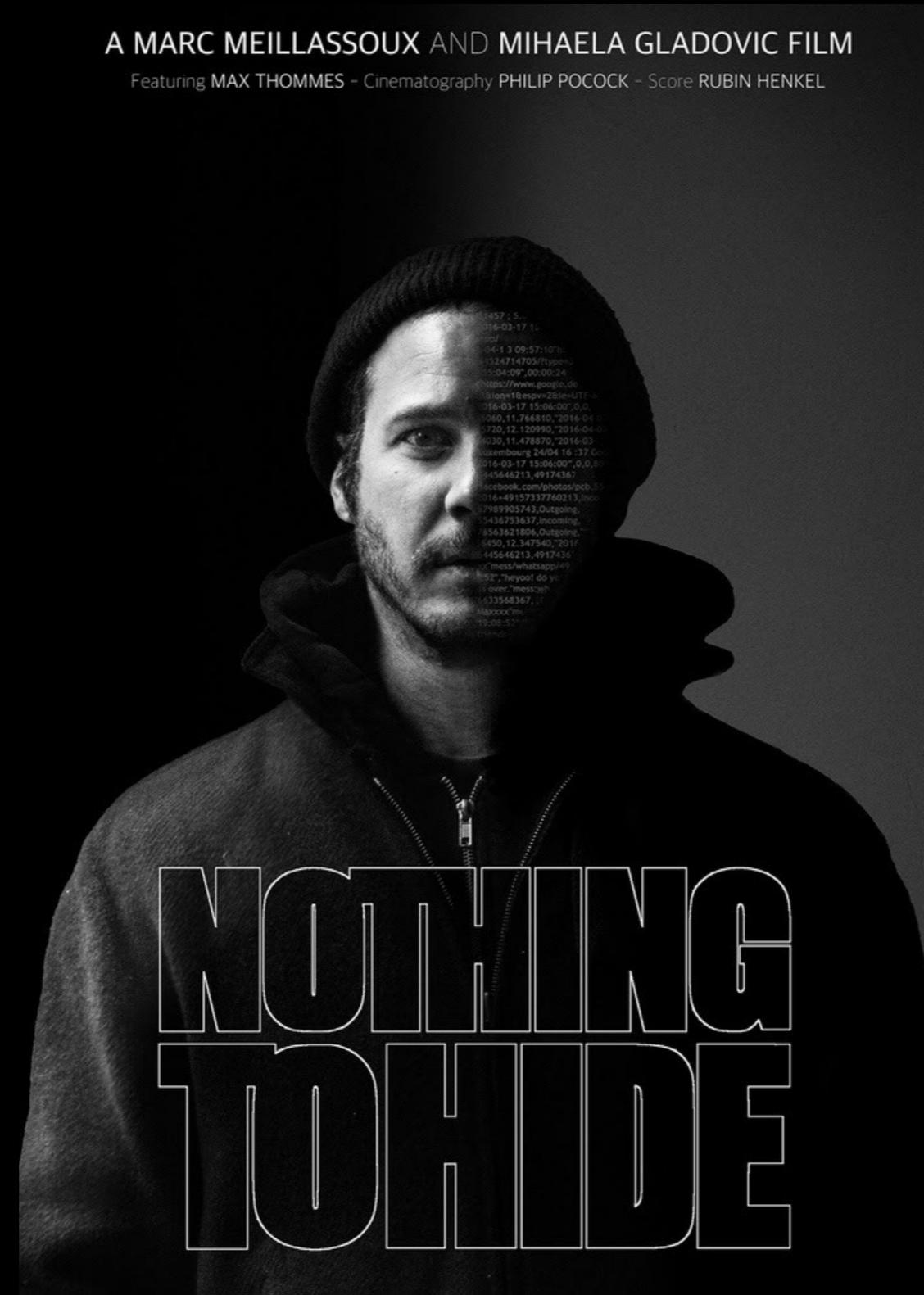
# “I don’t have anything to hide”



# The power of metadata

A MARC MEILLASSOUX AND MIHAELA GLADOVIC FILM

Featuring MAX THOMMES - Cinematography PHILIP POCOCK - Score RUBIN HENKEL



<https://vimeo.com/189016018>

# The power of metadata

- Just metadata (location, searches, URLs visited, time stamps, social connections)
- 1 month window
- Enough to accurately derive social status, income level, sexual orientation, home location, habits, friends, ...
- Accurate profile for precise segmentation, available to dozens of partners unknown to the user

# Follow-up documentary



**Successful Kickstarter campaign: €30,631 raised / €19,600 goal**

**Premiere May 2020**

<https://www.kickstarter.com/projects/1587081065/disappear-the-documentary>

# Act II: “How bad can it be?”



# Your Apps Know Where You Were Last Night, and They're Not Keeping It Secret

Dozens of companies use smartphone locations to help advertisers and even hedge funds. They say it's anonymous, but the data shows how personal it is.

DEC. 10, 2018



0.5 - 2  
cents/  
user/  
month

“

**These companies sell, use or analyze the data** to cater to advertisers, retail outlets and even hedge funds seeking insights into consumer behavior. It's a hot market, with sales of location-targeted advertising reaching an **estimated \$21 billion this year**.

# I Gave a Bounty Hunter \$300. Then He Located Our Phone

T-Mobile, Sprint, and AT&T are selling access to their customers' location data, and that data is ending up in the hands of bounty hunters and others not authorized to possess it, letting them track most phones in the country.

“

There's a **complex supply chain** that shares some of American cell phone users' most sensitive data, with the **telcos potentially being unaware** of how the data is being used by the eventual end user, or even whose hands it lands in.

TECHNOLOGY >

# I spy: How Android phones keep tabs on our every move

A study by two Spanish academics reveals the scope and lack of control over pre-installed apps



JORDI PÉREZ COLOMÉ

25 MAR 2019 - 08:46 CET



The study authors Juan Tapiador (left) and Narseo Vallina-Rodríguez. KIKE PARA

“

The **pre-installed apps** are an indication of another reality: agreements between actors (manufacturers, data traders, mobile operators and advertisers) for added value, but also for commercial ends.

# Act III: “Who is left to trust?”



# The Cambridge Analytica scandal changed the world - but it didn't change Facebook



▲ Mark Zuckerberg testifies before on Capitol Hill in 2018 following the privacy scandal. Photograph: Xinhua / Barcroft Images

<https://www.theguardian.com/technology/2019/mar/17/the-cambridge-analytica-scandal-changed-the-world-but-it-didnt-change-facebook>



## WhatsApp lied, of course it will share user data with Facebook



Chris Smith  @chris\_writes

August 25th, 2016 at 11:25 AM

 Share

 Tweet

WhatsApp users were rattled more than two years ago when they heard Facebook was ready to pay \$19 billion to buy the popular messaging app. The worry was that WhatsApp will share data with Facebook, which would learn even more details about you. At the time, WhatsApp made it clear that something like that won't happen. But as it turns out, WhatsApp lied.

GOOGLE

# Google Removes 'Don't Be Evil' Clause From Its Code of Conduct



Kate Conger

5/18/18 5:31pm • Filed to: EVIL IS FINE NOW ▾



368



28



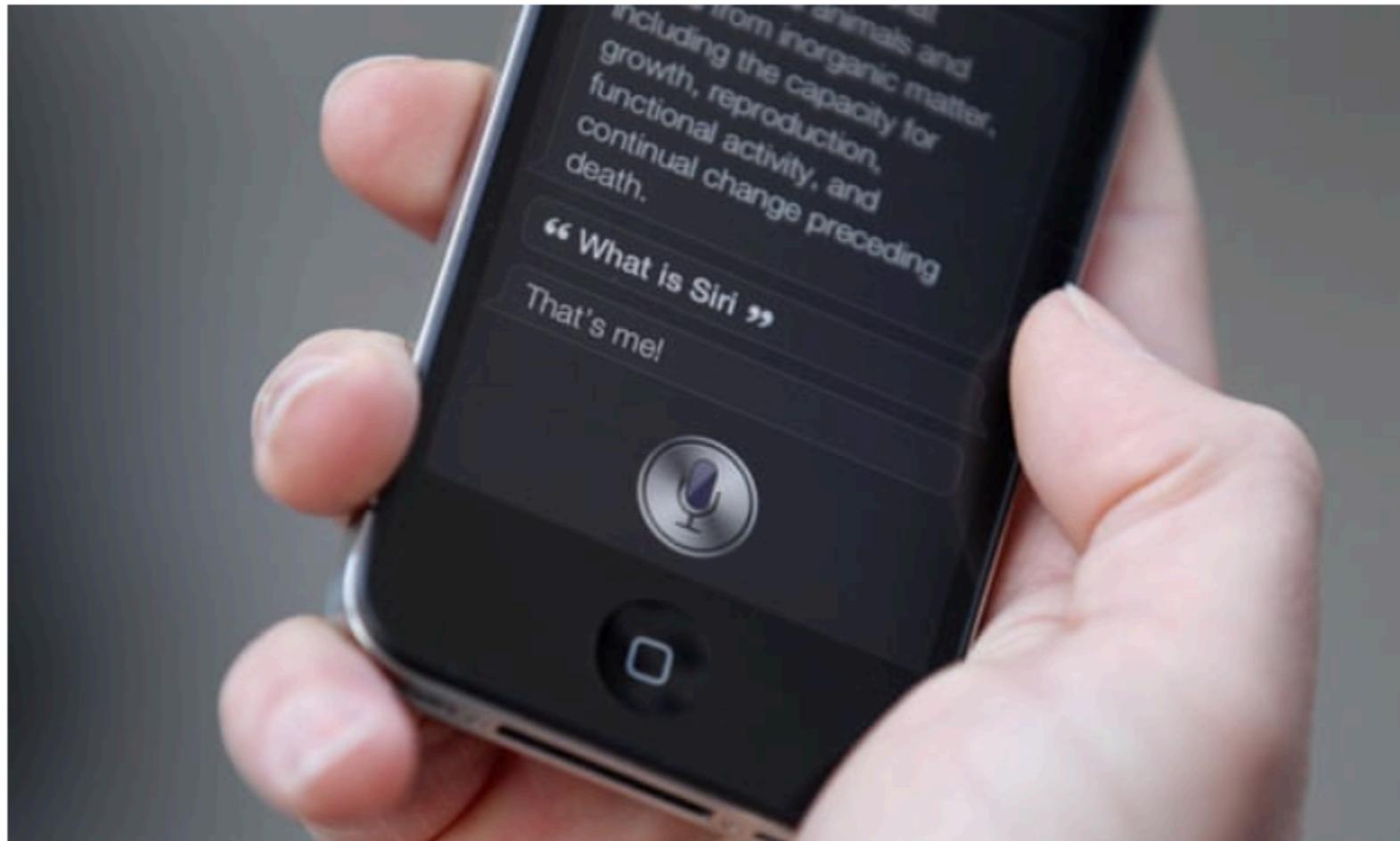
Google CEO Sundar Pichai delivers the keynote address at the Google I/O 2018 Conference

Photo: Justin Sullivan (Getty Images)

<https://gizmodo.com/google-removes-nearly-all-mentions-of-dont-be-evil-from-1826153393>

# Apple contractors 'regularly hear confidential details' on Siri recordings

**Workers hear drug deals, medical details and people having sex, says whistleblower**



▲ Workers heard the information when or providing quality control for Apple's Siri voice assistant. Photograph: Oli Scarff/Getty Images

**Apple** contractors regularly hear confidential medical information, drug deals, and recordings of couples having sex, as part of their job providing quality control, or “grading”, the company’s Siri voice assistant, the Guardian has learned.

# Act IV: “I will quietly resist”



“

Like a stone in the river, against the floods of spring  
I will quietly resist  
Like the willows in the wind, or the cliffs along the ocean  
I will quietly resist

— Neil Peart (Rush)

# Know your basics



# Best practices summary

- Use E2E encryption
- Use a password manager
- Be mindful about what you share in social media
- Patch your systems aggressively

# Exercise your rights

**GDPR.EU**

This project is co-funded  
by the Horizon 2020 Framework  
Programme of the European Union



Search...

Search

[Home](#)   [Checklist](#)   [FAQ](#)   [GDPR](#)   [News & Updates](#)



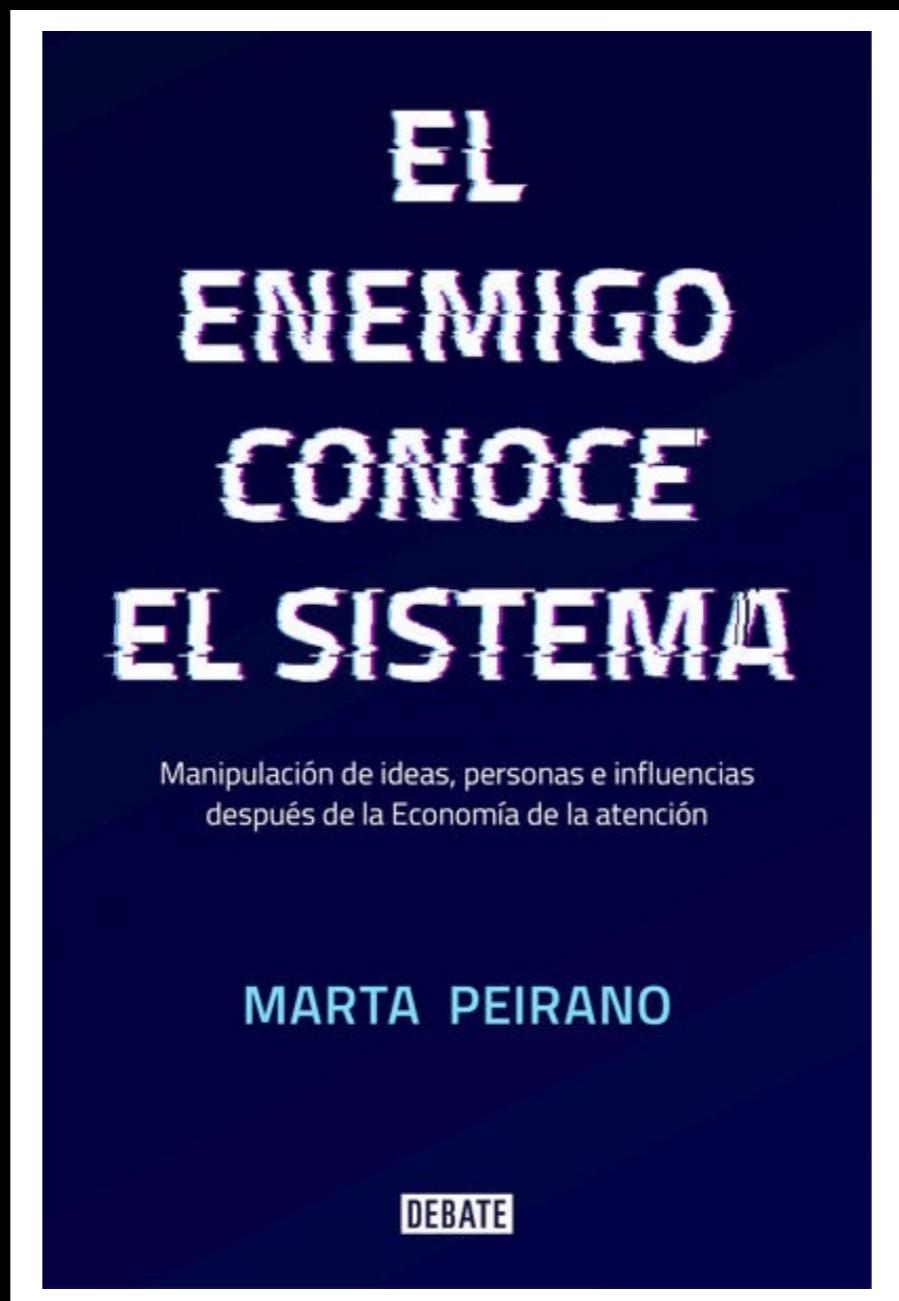
What is GDPR, the EU's new data protection law?

A blue-tinted background image showing a computer keyboard and a pair of glasses. The text 'What is GDPR, the EU's new data protection law?' is overlaid in white.

<https://gdpr.eu/what-is-gdpr/>

# Educate yourself

- Read books, join groups, discuss online, ...



# Explore alternatives



# Search alternatives



DuckDuckGo



The search engine that doesn't track you. [Help Spread DuckDuckGo!](#)

# Maps alternatives

The image shows a split-screen view of the Apple Maps application. On the left, a search results page for 'malaga' is displayed. It features a header with a back arrow, a search bar containing 'malaga', and a magnifying glass icon. Below the search bar are three thumbnail images of Málaga's skyline at different times of day. A 'See Photos' button is located at the bottom right of these thumbnails. The main content area contains the city name 'Málaga' in bold, followed by the URL 'malaga.eu'. A detailed description of Málaga follows, mentioning it is a municipality, capital of the Province of Málaga, in the Autonomous Community of Andalusia, Spain. It notes its population of 569,130 in 2015, its status as the second-most populous city in Andalusia, and its position as the sixth-largest city in Spain. It also highlights its location on the Costa del Sol of the Mediterranean Sea, east of the Strait of Gibraltar, and north of Africa. A 'Wikipedia' link is provided for further reading. Below this, several descriptive labels are listed: 'Province: Málaga', 'Comarca: Málaga-Costa del Sol', 'Founded: 8th century BC', 'Type: Ayuntamiento', and 'Body: City Council of Málaga'. On the right side of the screen is a map of Málaga. The map shows the coastline, major roads like AP-46, A-357, A-7, A-404, A-366, A-45, A-7000, MA-20, MA-22, and MA-24, and local landmarks such as the Río Campanillas, Río Guadalmedina, Universidad de Málaga - Facultad de Medicina, Alhaurín de la Torre, and Malaga Airport (AGP). A red location pin marks the center of Málaga city. A scale bar at the top of the map indicates distances of 0, 1.25, 2.5, and 3.75 km.

Apple Maps, now on the web too

# Drive alternatives

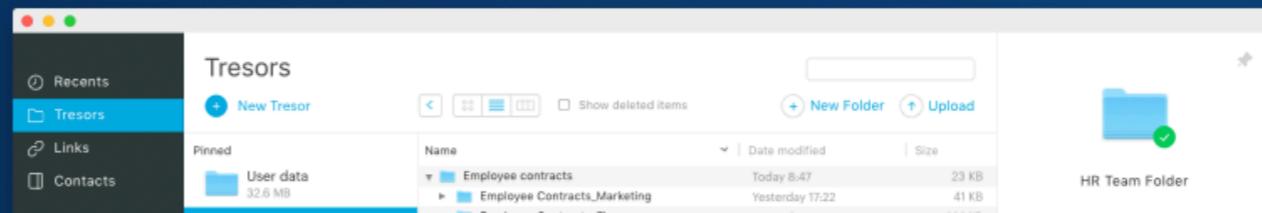


Products ▾ Solutions ▾ Resources ▾ Pricing GDPR Compliance

## End-to-End Encrypted File Sync & Sharing

Tresorit is the ultra-secure place in the cloud to store, sync and share files easily from anywhere, anytime.

Get started



# OS alternatives



BLOG ENGINEERING ABOUT COMMUNITY LEGAL STATUS WIKI

## LineageOS Android Distribution

A free and open-source operating system for various devices, based on the Android mobile platform.

DOWNLOAD

BLOG



# Explore alternatives

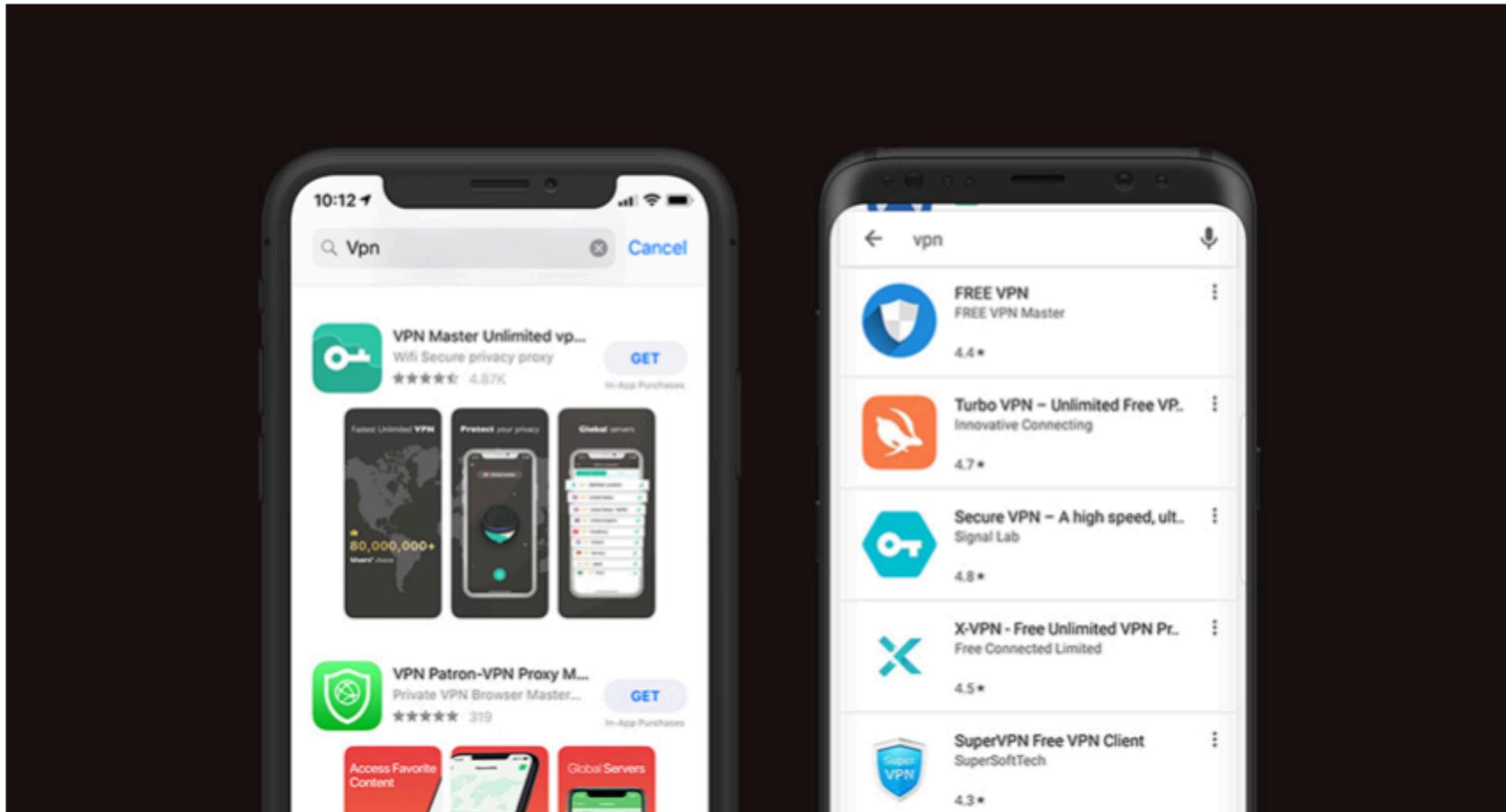
- We don't mean to promote a particular solution
- It's up to you to decide
- More options than you'd think
- Check for end-to-end encryption and zero-knowledge

# Use a VPN

- ProtonVPN, OpenVPN, ExpressVPN, ...
- Whatever you do, don't use a free VPN
- Don't be the product

# Free VPN App Investigation

Over half of the most popular free VPN apps are run by secretive companies with hidden Chinese ownership. Very few do enough to earn the trust of the privacy-conscious.



By Simon Migliano  
17 Dec 2018 12:00 GMT



# Don't use a VA (yet)

- Still early days and all of them have privacy issues
  - Alexa, Google Home, Siri



# Facebook Portal 2

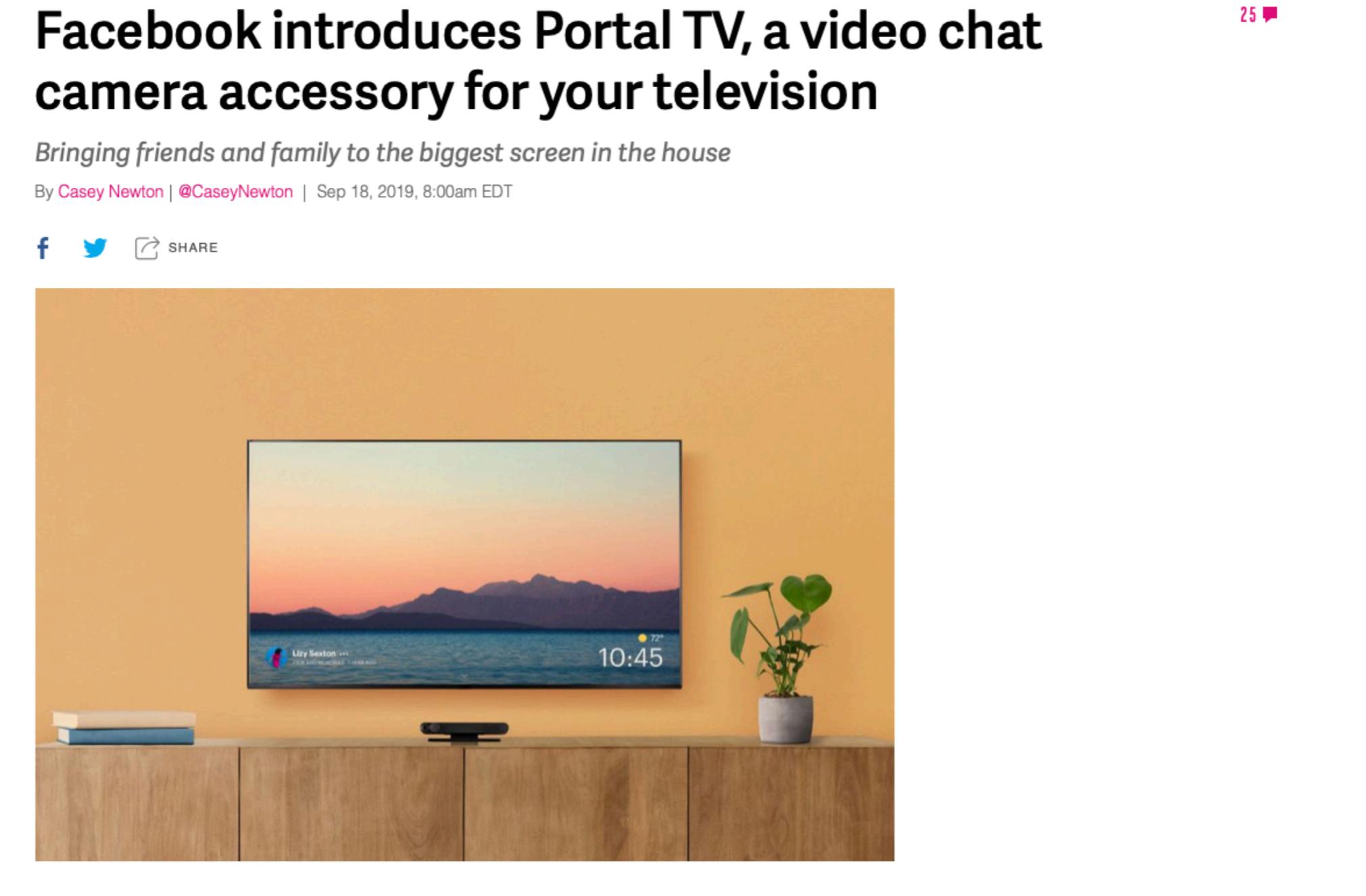
- Just announced!

**Facebook introduces Portal TV, a video chat camera accessory for your television**

*Bringing friends and family to the biggest screen in the house*

By Casey Newton | @CaseyNewton | Sep 18, 2019, 8:00am EDT

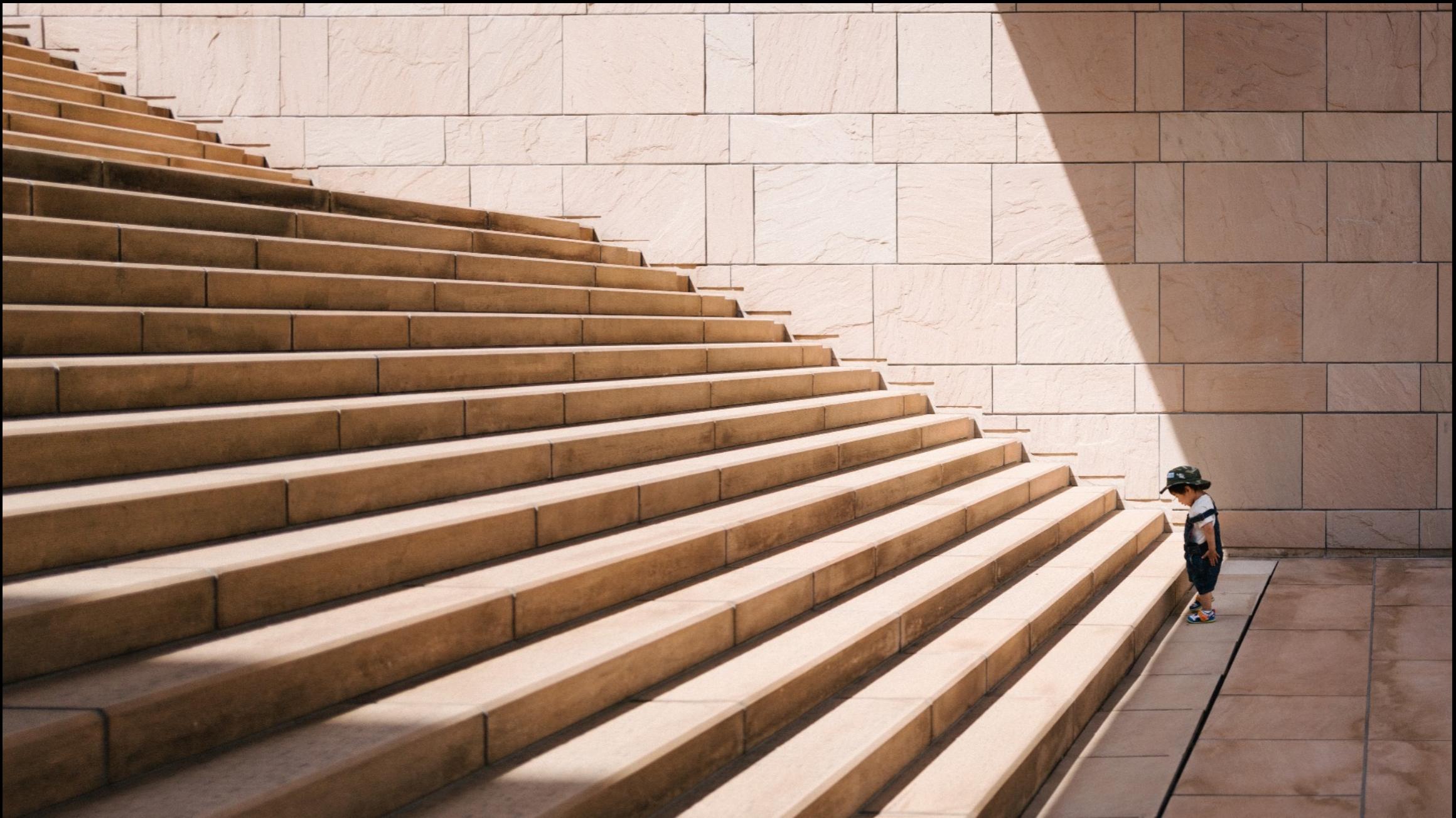
[f](#) [Twitter](#) [SHARE](#)



25 

[https://www.theverge.com/2019/9/18/20871173/  
facebook-portal-camera-price-release-date-availability](https://www.theverge.com/2019/9/18/20871173/facebook-portal-camera-price-release-date-availability)

# Take a first step



“

Chi va piano, va sano e va lontano.

– Italian proverb

# More hugs, less likes



# Thank you

@rosacastilloPhD

arosacastillo@protonmail.com

@atineoSE

me@adriantineo.com



# Image credits

- Cover photo: Photo by [Bit Cloud](#) on [Unsplash](#)
- Guy Fawkes “we want you”: <https://www.materaincognita.com.br/quem-sao-os-anonymous-no-brasil-e-a-mascara-de-guy-fawkes/>
- Mailbox photo: Photo by [Davide Baraldi](#) on [Unsplash](#)
- Beware of phishing image: <https://engsharaf.wordpress.com/resources/phishing/712-2/>
- Security cameras image: [Matthew Henry](#) on [Unsplash](#)
- Two-way mirror image: <https://www.twowaymirrors.com/acrylic/>
- Credit card image: Photo by [Web Hosting](#) on [Unsplash](#)
- Google photo: Photo by [Paweł Czerwiński](#) on [Unsplash](#)
- Take a step photo: Photo by [Jukan Tateisi](#) on [Unsplash](#)
- Kids hugging photo: Photo by [Aman Shrivastava](#) on [Unsplash](#)
- Woman in mountain photo: Photo by [Sage Friedman](#) on [Unsplash](#)