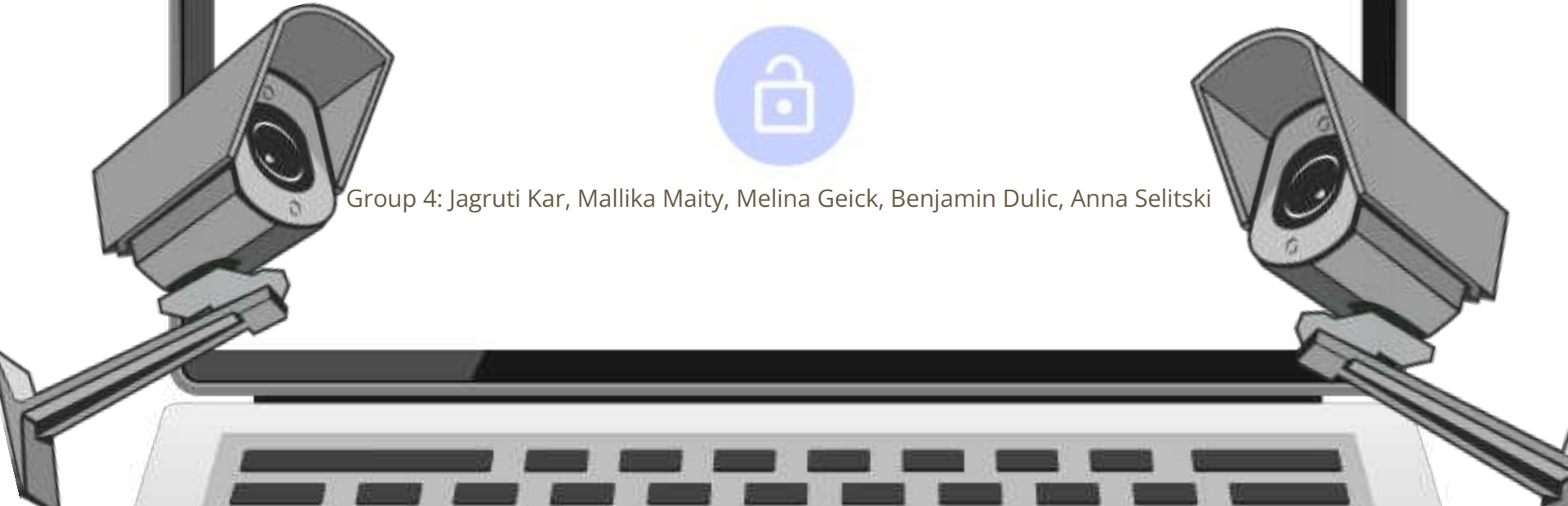


Surveillance and data protection on the Internet. Tools to support data protection-competent behaviour

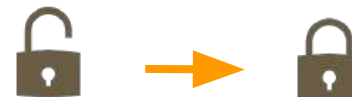


Group 4: Jagruti Kar, Mallika Maity, Melina Geick, Benjamin Dulic, Anna Selitski



Agenda

1. Data Protection and security on the internet
 - What is data protection? What is data security?
 - What does surveillance on the internet mean?
 - Why is data protection on the internet necessary?
 - What data is transferred/collected?
2. Laws on data transfer and security
 - GDPR and similar examples
3. Tools to support data protection-competent behaviour
 - Antivirus Program
 - Password Manager
 - Privacy Web Browser (Search Engine, Browser Extensions)
 - Secure Messaging Apps





Data protection and security on the Internet

Google



Data protection & Data security

Data protection is not about protecting any data - e.g., from unauthorized access or misuse
→ it's specifically about protecting a person's privacy and his or her personal data

Data protection

Protection of citizens against unauthorized collection, storage and sharing of data concerning them.



Data security

Security of data against illegal access by unauthorized persons.

Personal data →

“Any information relating to an identified or identifiable natural person (‘data subject’). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier” (GDPR, 2018)

→ physical, genetic, biometric, social, economic or similar data
E.g., name, occupation, hair colour or online ID such as an e-mail address, IP address or location coordinates



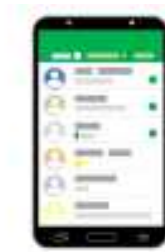
What does surveillance on the internet mean?

“Tracking” →

“the **collection of data** regarding a particular user's activity **across multiple distinct contexts** and the **retention, use, or sharing of data** derived from that activity **outside the context** in which it occurred” (W3C, 2019)



Web



Smartphone



Internet of Things Devices

Why data protection is necessary?

- Security measures should guard against unintentional data loss or destruction as well as intentional misuse.
- Data can be collected, compiled, analysed, and used to try and sell us stuff.
- Mobile phones and improved Internet connectivity have enabled online social, economic, and financial activities in developing countries which has increased internet crimes.
- Inadequate protection can harm the economy by reducing customer confidence and restricting enterprises.



What data is transferred/collected?

- Personal Information using cookies
 - Name
 - Gender
 - Phone number
 - Email
 - IP address
- Browser history
- Payment data
- Location using social media
 - Address
 - ZIP code
- Medical records by Insurance companies

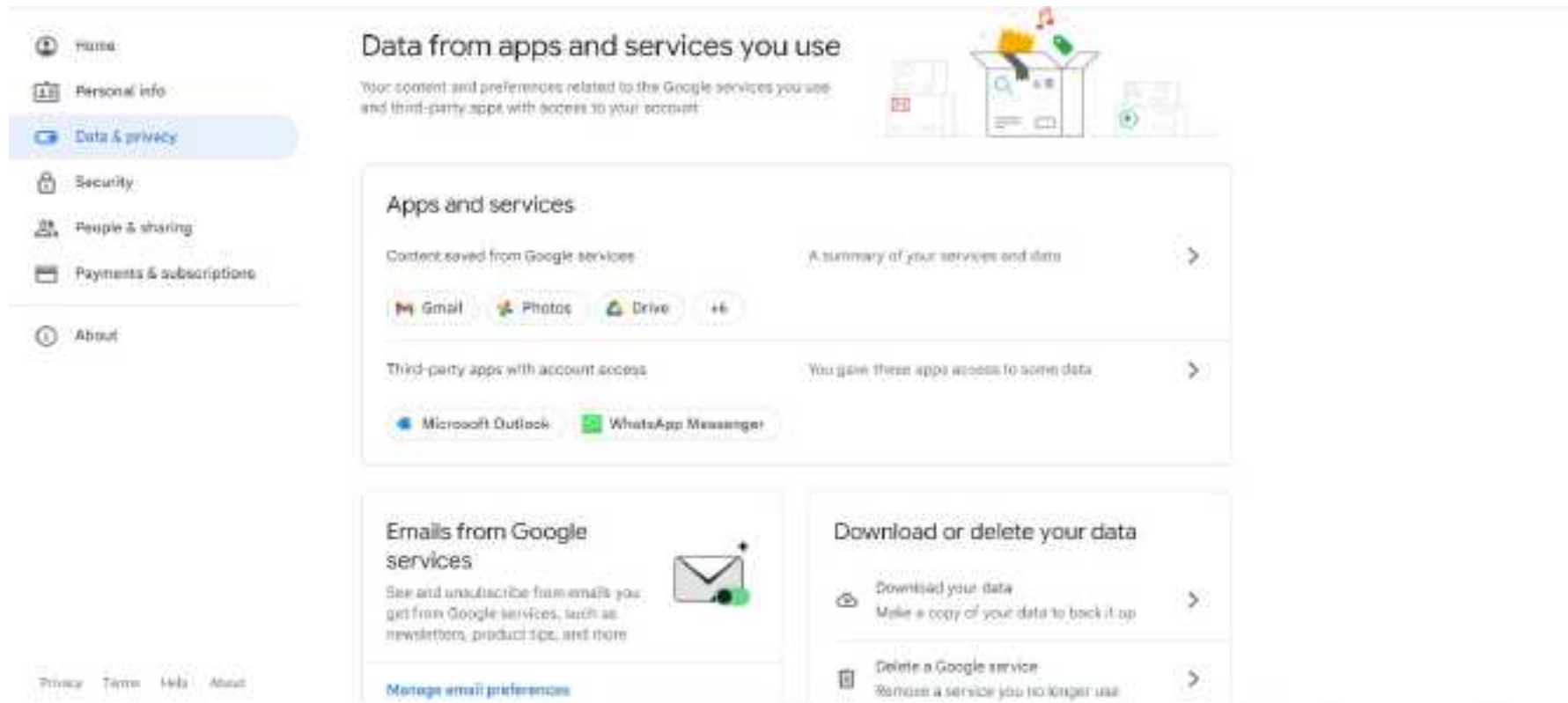
clario.
The companies that know most about you

#	Company	% of personal data collected	First Name	Age	Gender	Education	Sexual Orientation	Marital Status	Race	Religion	Live Location	Home Address	Employment Status	JOB Title	My Actual Membership	Mobile Number	Landline Number	Types of Myears/Types	Hobbies	Interests	Height	Weight	Married	Married Again	Current Employer	Past Employers	Bank Account Details	Salary	Social Profile (Present)	Social Profile (Hidden)	Social Profile (Private)	Credibility of Email	Aliases/Emails	Health/Utility Info		
1	Facebook	70.59%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
2	Instagram	58.82%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
3	Tinder	55.88%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
4	Grindr	52.04%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
5	Uber	52.04%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
6	Strava	41.18%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
7	Tesco	38.24%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
8	Spotify	35.29%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
9	MyFitnessPal	35.29%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
10	Jet2	35.29%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
11	Credit Karma	32.35%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
12	Lidl Plus	32.35%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
13	Netflix	26.47%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
14	Nike	26.47%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
15	Asos	26.47%	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

(Source: <https://www.pcmag.com/news/facebook-uber-and-dating-sites-top-list-of-companies-collecting-your-personal>)

(Jakobi et al. 2020, p.36 & p.37; Cherry, 2014, p.2 & p.5)

Third-Party access to our data



The screenshot shows the Google Account settings page for 'Data & privacy'. The left sidebar contains navigation options: Home, Personal info, Data & privacy (selected), Security, People & sharing, Payments & subscriptions, and About. The main content area is titled 'Data from apps and services you use' and includes an illustration of a box being opened. Below this, there are three main sections: 'Apps and services', 'Emails from Google services', and 'Download or delete your data'. The 'Apps and services' section is divided into 'Content saved from Google services' (listing Gmail, Photos, Drive, and a '+6' button) and 'Third-party apps with account access' (listing Microsoft Outlook and WhatsApp Messenger). The 'Emails from Google services' section includes an envelope icon and a 'Manage email preferences' link. The 'Download or delete your data' section includes options to 'Download your data' and 'Delete a Google service'.

Data from apps and services you use

Your content and preferences related to the Google services you use and third-party apps with access to your account

Apps and services

Content saved from Google services: A summary of your services and data

Gmail Photos Drive +6

Third-party apps with account access: You gave these apps access to some data

Microsoft Outlook WhatsApp Messenger

Emails from Google services

See and unsubscribe from emails you get from Google services, such as newsletters, product tips, and more

Manage email preferences

Download or delete your data

Download your data: Make a copy of your data to back it up

Delete a Google service: Remove a service you no longer use

Privacy Terms Help About

Unnoticed Surveillance

Home

Personal info

Data & privacy

Security

People & sharing

Payments & subscriptions

About

Things you've done and places you've been

Your options for history, ads, and personalization. Rediscovers the things you've searched for, used, and watched, and see the places you've visited.



History settings

Choose whether to save the things you do and places you go to get more relevant results, personalized maps, recommendations, and more.

Web & App Activity	Paused	>
Location History	Paused	>
YouTube History	Paused	>

See and delete your history anytime.

My Activity

Maps Timeline

YouTube watch & search history

Personalized ads

You can choose whether the ads you see in Google services and partner sites are personalized.

Personal results in Search

You can decide whether Google Search shows you personal results based on info in your Google Account.

Privacy Terms Help About



Laws on data transfer and security



Are there laws on data transfer and security?

- The German region of Hesse passed the first law in 1970
- National laws emerged soon afterwards:
 - Sweden, Germany, France
- As of January 2018, over 100 countries had adopted data protection laws



Flags. (n.d.). Pixabay. Retrieved February 10, 2023, from <https://pixabay.com/photos/flags-europe-eu-flag-european-1615129/>



International privacy. (n.d.). Pixabay. Retrieved February 10, 2023, from <https://pixabay.com/photos/regulation-gdpr-data-protection-3246979/>

- Over time, regional legal frameworks were also adopted.
- In 1980, the Organisation for Economic Cooperation and Development (OECD) developed its guidelines, which included 'privacy principles'
 - This was modernised in 2018.

What is GDPR? Are there similar examples in the rest of the world?

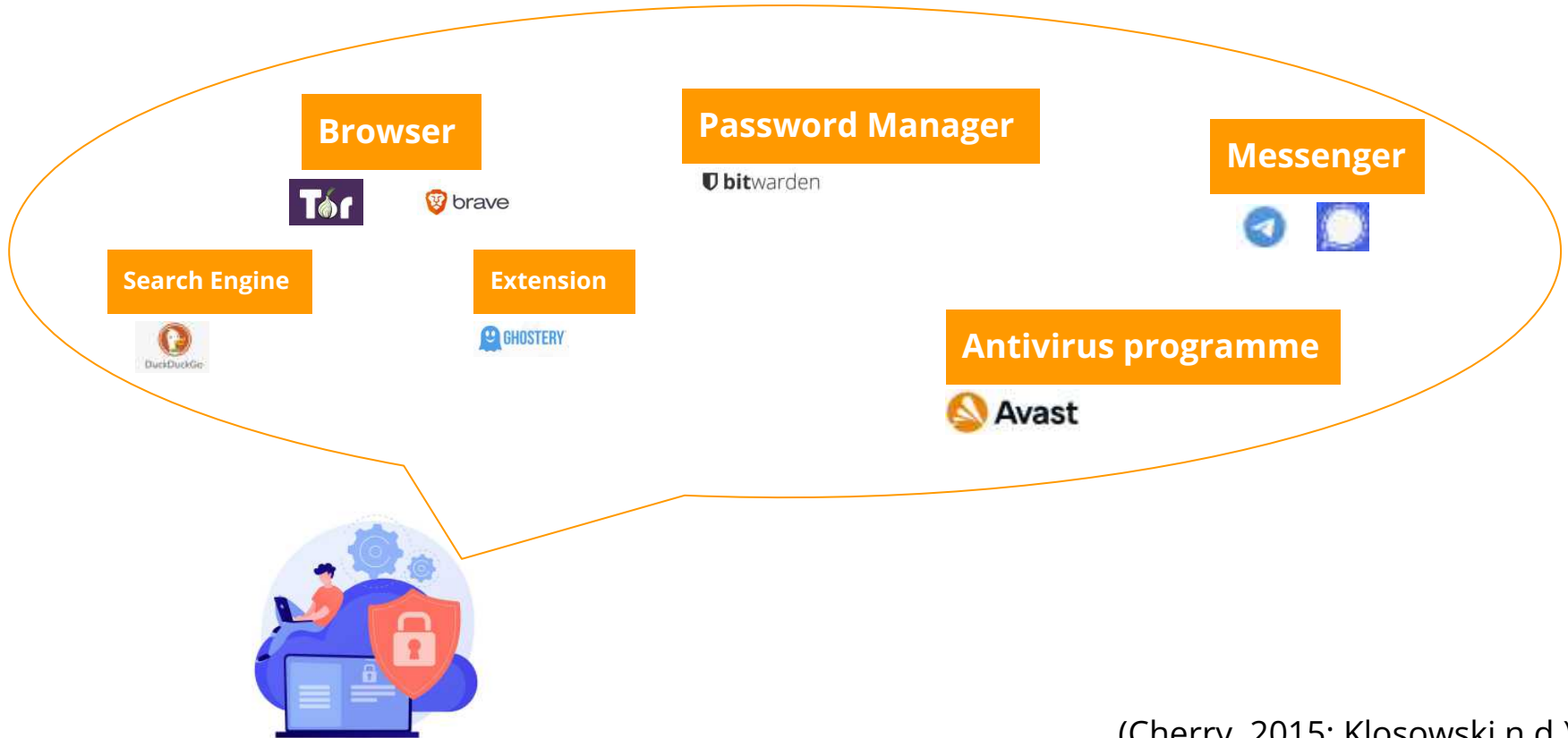
- The GDPR came into force in 2018, replacing the old Data Protection Act 1998. (Mehrnezhad, Maryam and Coopamootoo, Kovila and Toreini, Ehsan (2022). p.4.)
- General Data Protection Regulation (GDPR) – a mandatory regulation that ensures a harmonized approach across all EU member states. (Biersteker, N. (n.d.). p.47.)
- Other data protection regulations include:
 - California Consumer Privacy Act (CCPA)
 - Chinese Personal Information Security Specification (PISS)
 - Indian Personal Data Protection Bill (PDP Bill)
 - Russian Federal Law on Personal Data, and many more.

(Mehrnezhad, Maryam and Coopamootoo, Kovila and Toreini, Ehsan (2022). p.4.)



GDPR. (n.d.). Pixabay. Retrieved February 10, 2023, from <https://pixabay.com/photos/internet-technology-laptop-3254288/>

Tools to support data protection-competent behaviour



Protect your computer: Antivirus program

- Protect your computer from malware
 - Malware allows criminals to access or damage data on your computer without your knowledge (Bundesamt für Sicherheit in der Informationstechnik n. d.a)
 - Protection against: Spyware, Ransomware, Viruses, Worms, Trojans, Adware, Spam (Moßmann 2021)
 - Looks for known online threats & monitors the behaviour of all programs, reporting suspicious behaviour or malicious code
 - Program primarily compares the data on your computer with the “Fingerprints” of known malware
 - These "Fingerprints" must always be up to date (Bundesamt für Sicherheit in der Informationstechnik n. d.a). Therefore, you need to update the software regularly.

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- The program is available free of charge as a basic program
- Protection for Android, iOS, macOS, Windows
- PCMAG test winner for 2023
- Encrypted connection possible via VPN
- Wi-Fi Network security
- 6 layers of antivirus security: smart scan, cyber capture, behaviour shield, file shield, rescue disk, quarantine
- Safe browsing & emailing
- Data leak alerts

- Security is limited on smartphones (iOS, Android)
- Many useful functions require an upgrade. This means that many advanced functions are chargeable
- The user may receive a lot of false alarms

Link: <https://www.avast.com> (Rubenking 2023a; Rubenking 2023b)

Other antivirus programs



Link: <https://www.webroot.com/us/en>



Link: <https://www.bitdefender.com/>



Link: <https://www.avg.com/en-ww/store#pc>



Link: <https://www.avira.com/>

For a detailed comparison, you can read more here:
<https://bit.ly/3YtuNHy>

Choose and manage a secure password - Password Manager

- Long password (eight characters long)
 - Use all available characters: upper and lower case letters, numbers and special characters (Bundesamt für Sicherheit in der Informationstechnik n. d.b)
- Online data safes store, offline data safes store (Datenschutz.org 2022)
- Not advisable to store personal passwords in the password managers of browsers → third parties can quickly gain access to them (Datenschutz.org 2022)
- “Have I been pwned” → <https://haveibeenpwned.com/>



- Best for open-source password management
- Two-Factor Authentication
- Analyzes passwords and security
- “Inexpensive“ 10\$ per year
- Supports all popular platforms and browsers → offers Apps
- Family Organization → sharing Tool

- Full-scale secure sharing costs extra
- 1 GB encrypted storage by default → each additional gigabyte costs 4\$ per year
- Multi-factor authentication via hardware key for paying users only

Link: <https://bitwarden.com/> (Key 2023a; Key 2023b)

Other password managers



Link: <https://www.logmeonce.com/>



Link: <https://passhub.net/login.php?>



Link: <https://nordpass.com/>



Link: <https://us.norton.com/>



Link: <https://www.avira.com/en/password-manager>



Link: <https://www.enpass.io/>



Link: <https://keepass.info/>

For a detailed comparison, you can read more here:
<https://bit.ly/3lySuPZ>

Data Protection on the Internet

Privacy Web Browser



Browser Extension



Search Engine



Privacy Web Browser



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- Simple to use
- Anonymizes traffic on the web
- Uses onion routing protocol → „The Onion Router“
- Traffic is relayed and encrypted in a circuit across three Tor relays around the world → no website knows where you are connecting from
- Nearly impossible for your activity to be tracked
- Allows you to browse also through dark web (only safe with VPN)
- Search Engine DuckDuckGo
- Onion Browser for iOS
- Deletes browser history after session
- Security settings: block elements that could be used to attack the computer

- Browser experience is different
- Tor provides a slower experience
- Some websites may not work or load (depending on security level)
- Can't guard against every threat → You need a VPN
- The fact that nothing is tracked does make it easier for those with bad intentions in dark web
- Can draw unwanted attention

Tor Browser will close all windows and tabs to reset the identity of the user

DuckDuckGo is an internet search engine that prioritizes the privacy of searchers and avoids the filter bubble of personalized search results. DuckDuckGo does not display search results from content farms. With DuckDuckGo these settings: private search, tracker blocking and site encryption are activated. (DuckDuckGo n.d.)

Explore. Privately.

You're ready for the world's most private browsing experience.

Search with DuckDuckGo

Do you use a VPN?

We'd like to learn more about how and why our users use VPNs. Complete this short ten-minute survey to tell us about your experience:

[Launch the Survey](#)

Tor is free to use because of donations from people like you. [Donate Now](#) =>

Questions? [Check our Tor Browser Manual](#) =>

Get the latest news from Tor straight to your inbox. [Sign up for Tor News](#). =>

This Tor Project is a US 501(c)(3) non-profit organization advancing human rights and freedoms by creating and deploying free and open source anonymity and privacy technologies, supporting their unrestricted availability and use, and fostering their scientific and popular understanding. [Get Involved](#) =>

Downloading Tor Browser update

- New Window 30N
- New Identity 0:30
- New Tor Circuit for this Site 0:30

Zoom: - 100% +

Edit ✕

- Library >
- Logins and Passwords 0:24
- Add-ons 0:24
- Preferences 38
- Customize...

- Open File... 30
- Save Page As... 35
- Print... 3P
- Find in This Page... 3F
- More >
- Web Developer >
- Help >

General

Home

Search

Privacy & Security

Tor

Extensions & Themes

Tor Browser Support

Security

Security Level

Disable certain web features that can be used to attack your security and anonymity. [Learn more](#)

Standard 

All Tor Browser and website features are enabled.

Safer 

Disables website features that are often dangerous, causing some sites to lose functionality.

JavaScript is disabled on non-HTTPS sites.

Some fonts and math symbols are disabled.

Audio and video (HTML5 media), and WebGL are click-to-play

Safest 

Only allows website features required for static sites and basic services. These changes affect images, media, and scripts.

JavaScript is disabled by default on all sites.

Some fonts, icons, math symbols, and images are disabled.

Audio and video (HTML5 media), and WebGL are click-to-play

Deceptive Content and Dangerous Software Protection

Block dangerous and deceptive content [Learn more](#)

Block dangerous downloads

Warn you about unwanted and uncommon software

Privacy Web Browser



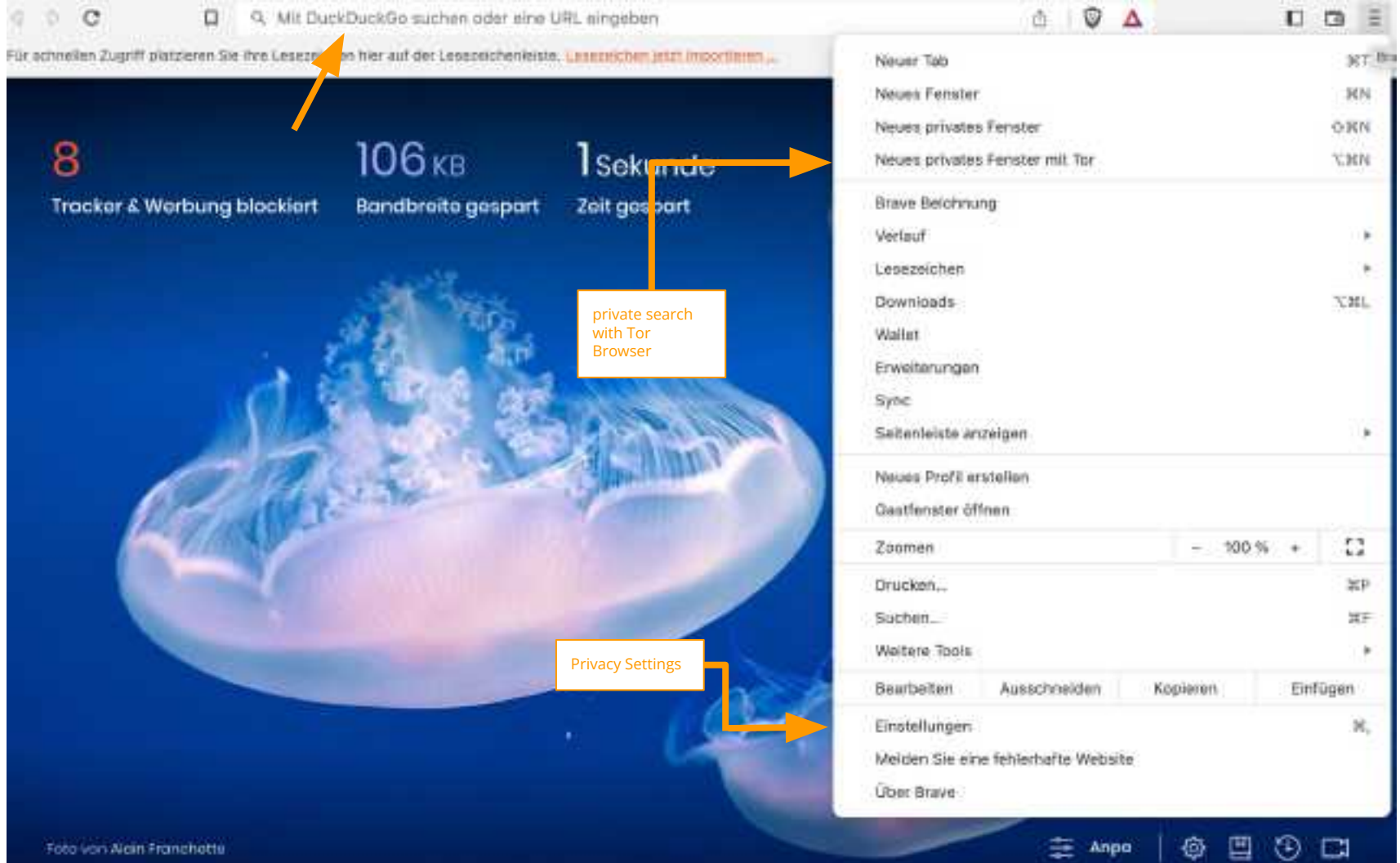
+

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- Easy to use: based on Google Chrome
- Fast
- Many options and individual settings → no installation of adblock extensions necessary
- Tracker Blocker
- Ad Blocker
- Cookie Blocker
- Search Engine DuckDuckGo
- App
- Connection to the Tor Browser possible
- Display of blocked trackers

- Doesn't always work well with every site
- In the settings, the user loses the overview because so many options are offered without an explanation.

Link: <https://brave.com/> (Leith, 2021, p. 41623; Brave n.d.; Muchmore 2023)



private search
with Tor
Browser

Privacy Settings

Einstellungen

- Start
- Darstellung
- Neuer-Tab-Seite
- Schutz**
- Brave Belohnung
- Social-Media-Sperrung
- Datenschutz und Sicherheit
- Sync
- Suchmaschine
- Erweiterungen
- Wallet
- IPFS
- Autofill

Schutz

Werbung und Tracker blockieren.

Dies sind die Standardeinstellungen für den Schutz. Sie gelten für alle Websites, sofern Sie nicht im Schutz-Menü auf einer bestimmten Website Änderungen vornehmen. Wenn Sie die folgenden Einstellungen ändern, hat dies keine Auswirkung auf die Einstellungen die Sie auf bestimmten Websites bereits gemacht haben.

Hierdurch werden die meisten Anzeigen auf Websites blockiert, aber nicht private Brave-Anzeigen – diese werden kontrolliert in den Einstellungen der **Brave-Belohnungen**.

Zahl der blockierten Elemente auf dem Schutz-Ikon anzeigen

AMP-Seiten automatisch umleiten
URLs von Verlagsseiten gegenüber AMP und ähnlichen Versionen bevorzugen. **Weitere Informationen**

Verhindern, dass Websites aufgrund meiner Spracheinstellungen Fingerabdrücke von mir erstellen
Durch Aktivieren dieser Einstellung wird verringert, wie viel Websites über Ihre Spracheinstellungen erfahren können.

Tracker & Anzeigenblockierung **Aggressiv**

JavaScript blockieren

Fingerprinting blockieren **Streng, könnte Websites ko...**

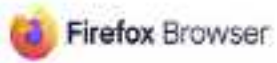
Other privacy web browsers



Link: <https://www.avast.com/secure-browser>



Link: <https://axia.global/axplorer>



Link: <https://www.mozilla.org/en-US/firefox/new/>



Microsoft Edge

Link:

<https://www.microsoft.com/en-us/edge?exp=e511&form=MA13FI>



Opera

Link: <https://www.opera.com/>



VIVALDI

Link: <https://vivaldi.com/>

You can read a detailed comparison in Muchmore's article:

<https://bit.ly/3YIPw9V>

Browser extensions

- Plug-in → allows to add certain functions and features to your internet browser
- For example, if you're a fan of Chrome, you can add several browser extensions that will help protect your privacy

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- Detailed view of trackers
 - Analysis
- Blocks trackers and ads
- Private search
- Free components
- is available for Chrome, Firefox, Opera, and Microsoft Edge free of charge and also with additional security levels for a fee.

- Tracker analysis overview is not useful to consumers
- Some websites recognize this type of tool and as a result, deny the user access or use of certain services.

Link: <https://www.ghostery.com/> (Rubenking 2023c)

Other browser extensions



Link: <https://ironvest.com/>



Link: <https://privacybee.com/#site-content>

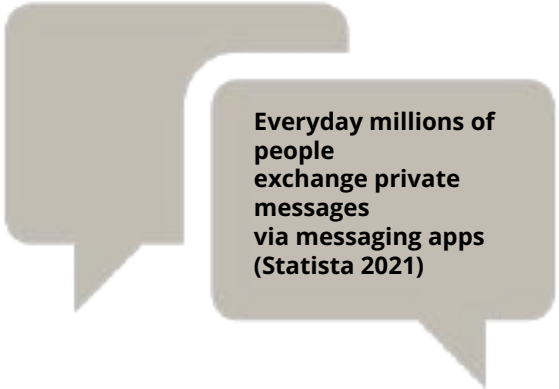


Link: <https://support.avast.com/en-us/article/install-antitrack-browser-extension/#mac>



Link: <https://simplelogin.io/>

For a detailed comparison, you can read more here: <https://bit.ly/3XoDfGH>



Everyday millions of people exchange private messages via messaging apps (Statista 2021)



**Private messenger
for the
smartphone**



Secure Messaging Apps

- End-to-End Encryption → private chat messages are encrypted (Bogos et al. 2023, p. 3)
- Collecting Metadata
 - Messaging app alternatives (Bogos et al. 2023, p. 3)
 - Signal scored best in the security test (Bogos et al. 2023, p. 14; Eddy 2023)



<ul style="list-style-type: none">• Open-source, nonprofit owned• Multiplatform support<ul style="list-style-type: none">○ iOS, Android, Notebooks• End-to-end encryption• No ads, trackers• The app allows to set a password with which you can lock the app.	<ul style="list-style-type: none">• Your metadata will still be saved• Only the most necessary data, such as your telephone number and profile information, is documented
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Link: <https://signal.org/en/> (Signal 2023; Bogos et al. 2023, p.3; Eddy 2023)

Other secure messaging apps



Link: <https://telegram.org/>



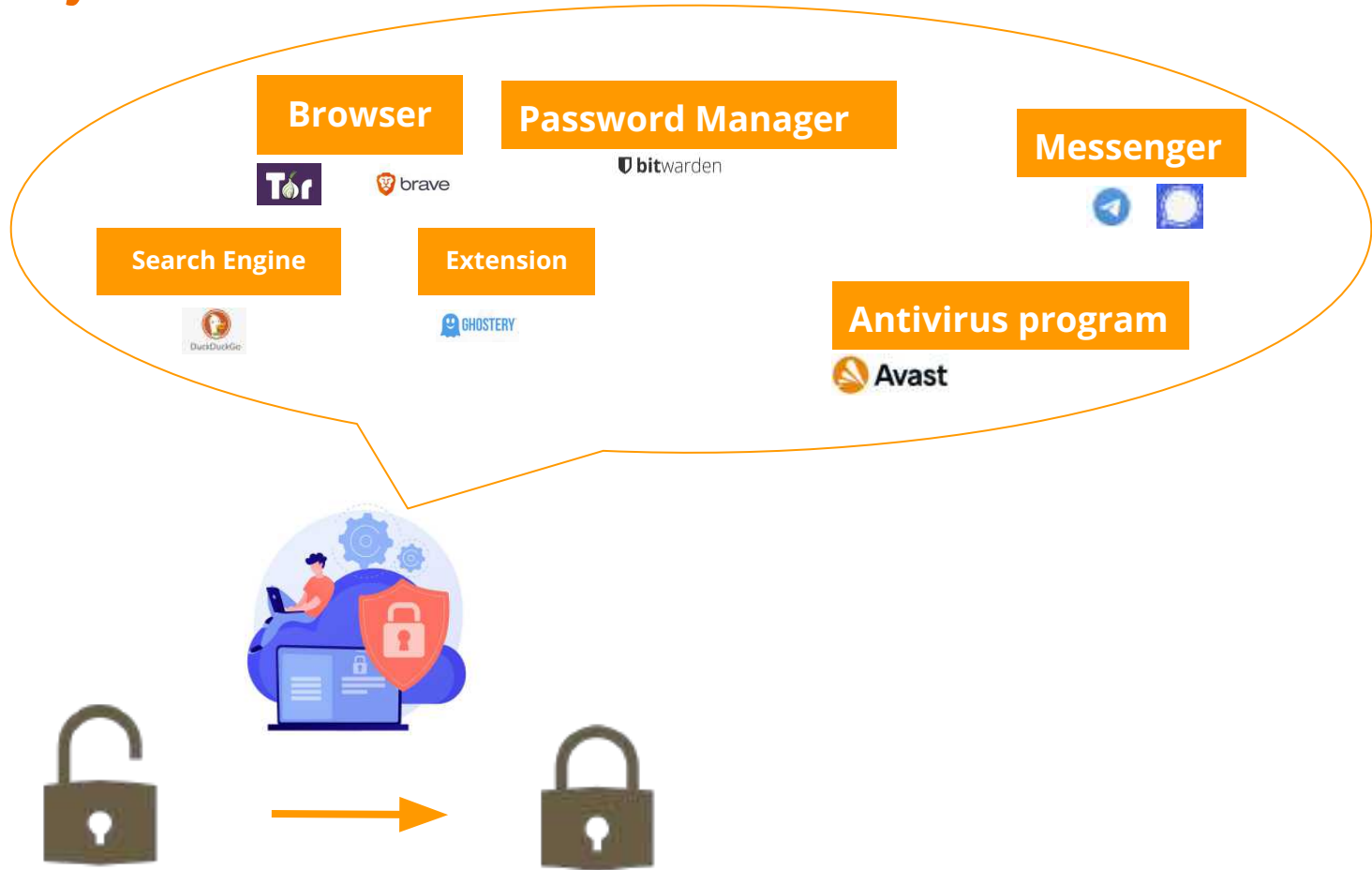
Link: <https://wire.com/en/>



Link: <https://wickr.com/downloads/>

For a detailed comparison, you can read more here: <https://bit.ly/3K1Plks> and here <https://nordvpn.com/blog/most-secure-messaging-app/>

Summary



References

Brave Browser (n.d.) Retrieved February 12, 2023, from <https://brave.com/learn/>

Biersteker, N. (n.d.). Data protection regulations and international data flows: Implications for trade and development. UNCTAD. Retrieved January 31, 2023, from https://unctad.org/system/files/official-document/dtlstict2016d1_en.pdf
https://unctad.org/system/files/official-document/dtlstict2016d1_en.pdf

Binns, Reuben (2022): Tracking on the Web, Mobile and the Internet-of-Things. Online at <https://doi.org/10.48550/arXiv.2201.10831>

Bogos, C.-E., Mocanu, R., & Simion, E. (2023). A security analysis comparison between Signal, WhatsApp and Telegram. <https://eprint.iacr.org/2023/071>

Bundesamt für Sicherheit in der Informationstechnik (n.d.a.). Virenschutz und falsche Antivirensoftware. Online at https://www.bsi.bund.de/DE/Themen/Verbraucherinnen-und-Verbraucher/Informationen-und-Empfehlungen/Cyber-Sicherheitsempfehlungen/Virenschutz-Firewall/Virenschutzprogramme/virenschutzprogramme_node.html [Retrieved February 7, 2023]

Bundesamt für Sicherheit in der Informationstechnik (n.d.b.). Sichere Passwörter erstellen. Online at https://www.bsi.bund.de/DE/Themen/Verbraucherinnen-und-Verbraucher/Informationen-und-Empfehlungen/Cyber-Sicherheitsempfehlungen/Accountschutz/Sichere-Passwoerter-erstellen/sichere-passwoerter-erstellen_node.html [Retrieved February 7, 2023]

Cherry, Danny (2014): The Basics of Digital Privacy. Simple tools to protect your Personal Information and your Identity online. Elsevier. DOI: <https://doi.org/10.1016/C2013-0-13408-3>

Datenschutz.org (2022). Passwörter über ein Programm erstellen, speichern & verwalten: Ist die Unterstützung durch Passwort-Software sicher? Online at <https://www.datenschutz.org/passwoerter-programm/> [Retrieved 12.02.2023]

Digitale Gesellschaft e.V. (2018): Your data your rights. Online at <https://yourdata-yourrights.eu/>

References

DuckDuckGo (n.d.). DuckDuckGo. Retrieved February 12, 2023, from <https://duckduckgo.com/>

Duden online (n.d.): "Datenschutz". Retrieved February 7, 2023 from <https://www.duden.de/node/30540/revision/30569>; "Datensicherheit". Retrieved February 7 from <https://www.duden.de/node/30547/revision/1218669>

Eddy, Max (2023): The best secure messaging apps for 2023. In: PCMAG. Retrieved February 12, 2023, from https://www.pcmag.com/picks/best-secure-messaging-apps?test_uuid=05n7gTzbSo0Sh5pVEDljnCi&test_variant=b

General Data Protection Regulation (GDPR) (2018): Art. 4: Definitions. Online at <https://gdpr.eu/article-4-definitions/>

Jakobi, Timo; Stevens, Gunnar; Seufert, Anna-Magdalena; Becker, Max; Max von Gravenstein (2020): Web Tracking Under the New Data Protection Law: Design Potentials at the Intersection of Jurisprudence and HCI. De Guyter Oldenbourg. DOI: <https://doi.org/10.1515/icom-2020-0004>

Key, Kim (2023a): The best password managers for 2023. In: PCMAG. Online at https://www.pcmag.com/picks/the-best-password-managers?test_uuid=02cRJYkCqD0UO6tw1ne6Y2l&test_variant=a [Retrieved February 8, 2023]

Key, Kim (2023b): The best free password managers for 2023. In: PCMAG. Retrieved February 12, 2023, from https://www.pcmag.com/picks/the-best-free-password-managers?test_uuid=05n7gTzbSo0Sh5pVEDljnCi&test_variant=b

Klosowski, Thorin (n. d.): How to Protect Your Digital Privacy. In: New York Times. Online at <https://www.nytimes.com/guides/privacy-project/how-to-protect-your-digital-privacy> [Accessed 06.02.2022]

References

Leith, D. J. (2021). Web browser privacy: What do browsers say when they phone home? In: IEEE Access, 9, 41615–41627. <https://doi.org/10.1109/ACCESS.2021.3065243>

Mehrnezhad, Maryam and Coopamootoo, Kovila and Toreini, Ehsan (2022): How Can and Would People Protect From Online Tracking? In: Proceedings on Privacy Enhancing Technologies, 1 .pp. 105-125. DOI: <https://doi.org/10.2478/popets-2022-0006>

Moßmann, Richard (2021). What is Malware? In: Chip. Online at https://praxistipps.chip.de/was-ist-malware_28542 [Retrieved 12.02.2023].

Muchmore, Michael (2023): Stop trackers dead: The best private browsers for 2023. In: PCMAG. Retrieved February 12, 2023, from https://www.pcmag.com/picks/stop-trackers-dead-the-best-private-browsers?test_uuid=05n7gTzbSo0Sh5pVEDljnCi&test_variant=b

Onugha, Michael. (2020). INTERNET PRIVACY IN 2020. 10.13140/RG.2.2.34846.97609.

Privacy International (2018): Data Protection Guide. [https://www.privacyinternational.org/sites/default/files/2018-09/Data%20Protection%20COM PLETE.pdf](https://www.privacyinternational.org/sites/default/files/2018-09/Data%20Protection%20COM%20PLETE.pdf)

Picture on slide 8: <https://www.pcmag.com/news/facebook-uber-and-dating-sites-top-list-of-companies-collecting-your-personal>

Rubenking, Neil J. (2023a): The best antivirus software for 2023. In: PCMAG. Retrieved February 7, 2023, from https://www.pcmag.com/picks/the-best-antivirus-protection?test_uuid=05n7gTzbSo0Sh5pVEDljnCi&test_variant=b

Rubenking, Neil J. (2023b): The best free antivirus software for 2023. In: PCMAG. Retrieved February 12, 2023, from https://www.pcmag.com/picks/the-best-free-antivirus-protection?test_uuid=05n7gTzbSo0Sh5pVEDljnCi&test_variant=b

References

Rubenking, Neil J. (2023c): 14 essential apps for ironclad online privacy. In: PCMAG. Retrieved February 12, 2023, from https://www.pcmag.com/picks/essential-apps-for-protecting-your-privacy-online?test_uuid=05n7gTzbSo0Sh5pVEDljnCi&test_variant=b

Sajan, Priya P; Balan, C.; Priya, M. J. Devi; Sreedeeep (2021): Tor Browser Forensics. In: Turkish Journal of Computer and Mathematics Education. 12(11), 5599–5608. Published 10 May 2021 Available from <https://turcomat.org/index.php/turkbilmat/article/view/6810/5613> [Accessed 05.02.2022]

Signal (2023). Signal Terms & Privacy Policy. Online at <https://signal.org/legal/> [Retrieved 06.02.2023]

Statista (2021). Instant Messaging: Statistiken und Umfragen zu WhatsApp, Telegram & Co. Online at <https://de.statista.com/themen/1973/instant-messenger/> [Retrieved 12.02.2023]

Telegram (n.d.). Telegram privacy policy. Online at <https://telegram.org/privacy?setln=fa> [Retrieved February 7, 2023]

Tor Browser (n.d.). Retrieved February 12, 2023, from <https://www.torproject.org>

W3C (2019): Tracking Compliance and Scope. Retrieved February 12, 2023 at <https://www.w3.org/TR/tracking-compliance/>

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