

# Ενίσχυση ιδιωτικότητας μέσω μηχανισμών πληθοπορισμού

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FLAG**



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**Privacy Flag Project** Enabling Crowd-sourcing based privacy protection for smartphone applications, websites and Internet of Things deployments



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# The problem...

A large majority of Europeans engage with Online Social Networks (OSNs)

- 74% of users consider that they **do not have sufficient control**
- 70% **are concerned with the way** such data are handled by



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# End-users' perspective

I will NOT share this with an app:

86% credit card or bank info



64% medical records



56% home address



35+ are more concerned with sharing all pieces of personal info EXCEPT their location

49% children/s' name



35% physical location



24% birth date



Source: [http://insights.wired.com/profiles/blogs/mobile-privacy-lock-down?xg\\_source=activity#axzz3f5nXFUt9](http://insights.wired.com/profiles/blogs/mobile-privacy-lock-down?xg_source=activity#axzz3f5nXFUt9)



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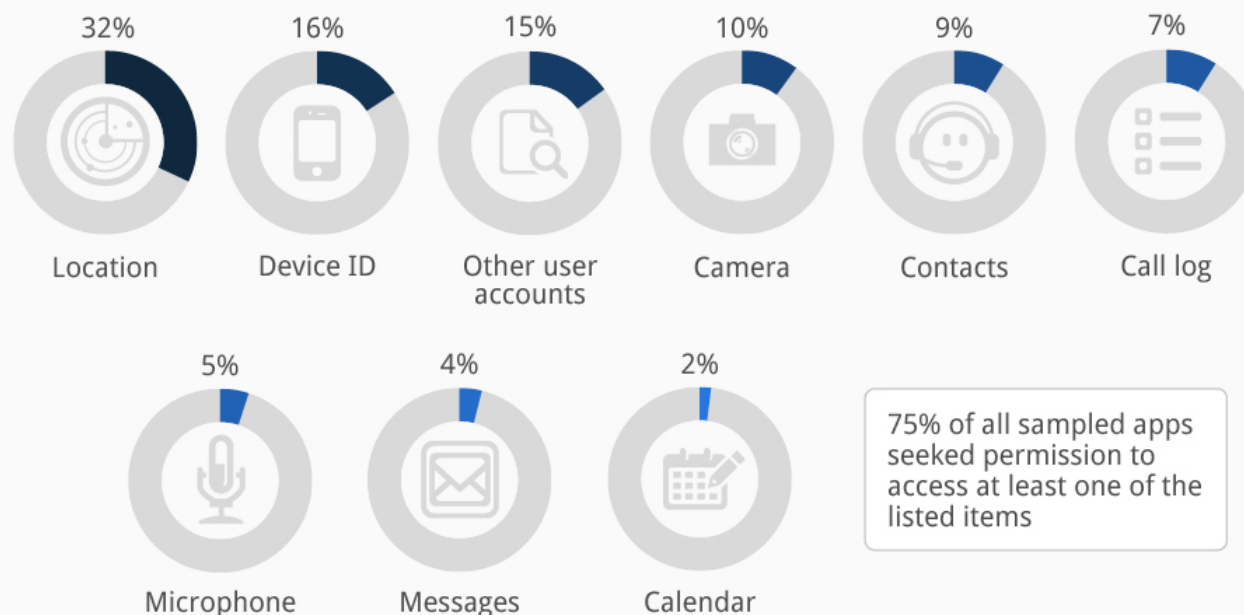


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# Apps' perspective

## 75% Of Mobile Apps Want Access To User Data

Percentage of apps seeking permission to access the following data



Based on an analysis of 1,211 Android and iOS apps in May 2014

Source: Global Privacy Enforcement Network

statista

Source: [http://insights.wired.com/profiles/blogs/mobile-privacy-lock-down?xg\\_source=activity#axzz3f5nXFUt9](http://insights.wired.com/profiles/blogs/mobile-privacy-lock-down?xg_source=activity#axzz3f5nXFUt9)



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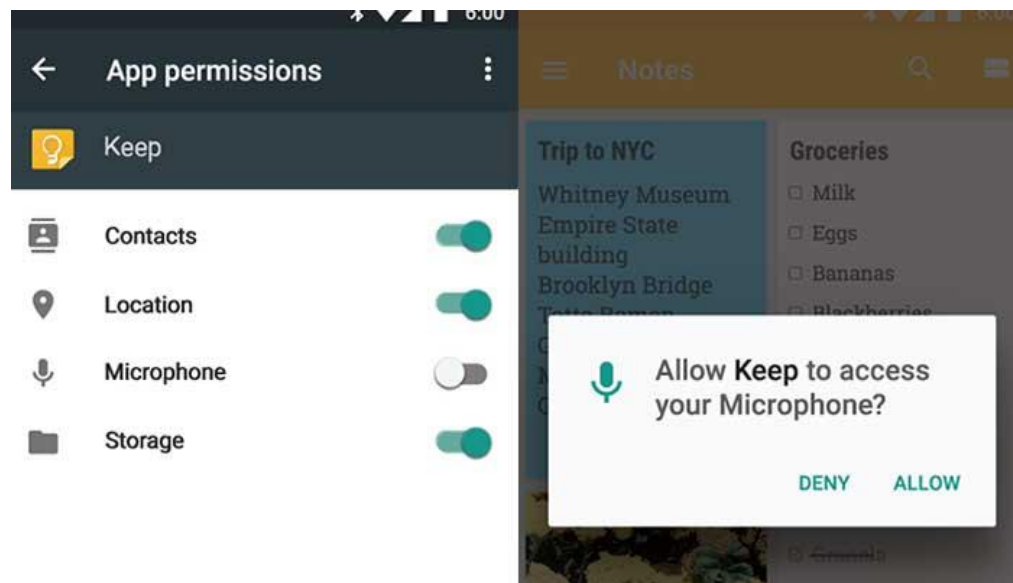
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# New permission settings

- ❖ From Android 6 and up
- ❖ Users are informed on installation to **allow/deny permissions** for specific information/services
- ❖ Problem 1: Why should an app use Microphone ?
- ❖ Problem 2: If denied the app won't install



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# Terms of agreement

- ❖ Used in all services
- ❖ Complex language (legal text)
- ❖ Usually long texts
- ❖ No one actually reads them

## Terms of Service

**BEFORE SUBMITTING ANY VIDEOS FOR THE FIRST TIME, YOU MUST READ AND AGREE TO THE TERMS OF THIS SUBMISSION AGREEMENT, WHICH APPLIES TO ALL VIDEOS UPLOADED FROM YOUR ACCOUNT AT ANY TIME.**

By submitting any videos to Facebook, you hereby agree to be bound by, and that all videos will fully comply with, the Facebook Code of Conduct and Terms of Use. Without limiting the foregoing, you understand that Facebook Video is intended to be used to post and share videos of a personal nature that is (i) of you or your friends, (ii) is taken by you or your friends, or (iii) is original art or animation created by you or your friends. Therefore, you agree not to upload any videos other than original works created by you or your friends.

You further agree not to upload any videos that infringe upon or violate the copyright, trademark, publicity, privacy or other rights of any third party and not to attempt to circumvent any content filtering techniques we may employ.

**FAILURE TO ADHERE TO THE CODE OF CONDUCT AND TERMS OF USE MAY RESULT, AMONG OTHER THINGS, IN TERMINATION OF YOUR ACCOUNT AND THE DELETION OF CONTENT THAT YOU HAVE POSTED ON FACEBOOK, WITH OR WITHOUT NOTICE, AS DETERMINED BY FACEBOOK IN ITS SOLE DISCRETION.**

**I AGREE** I have read and agree to all of the terms and conditions above and the Facebook Code of Conduct and Terms of Use.

Agree

Do Not Agree



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# The Privacy Flag tools



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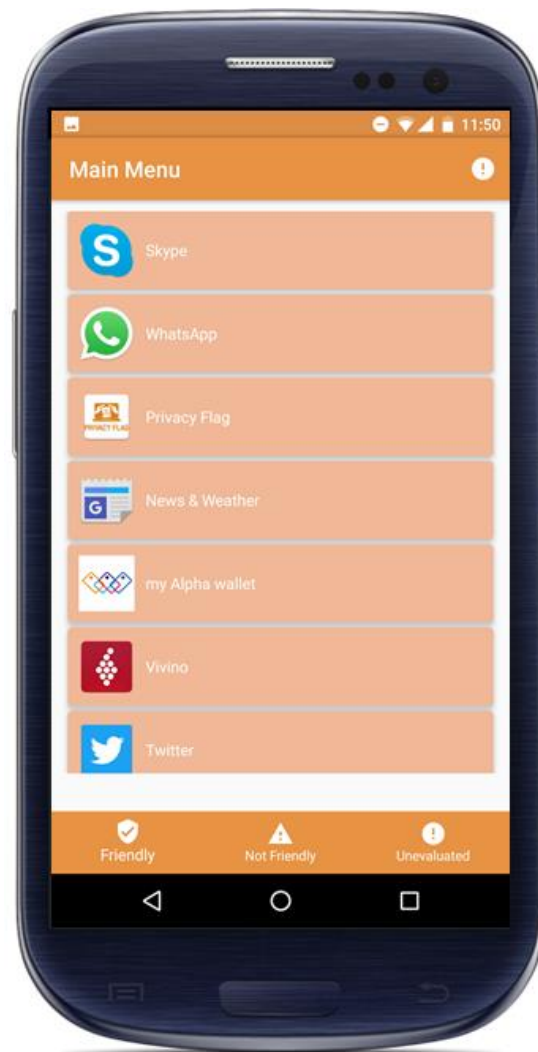
**Privacy Flag Project** Enabling Crowd-sourcing based privacy protection for smartphone applications, websites and Internet of Things deployments



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# PF smartphone app

- It allows users to get information on potential privacy risks from installed applications in their Android-powered mobile phones and tablets.
- It informs users whether installed software is considered privacy friendly or not friendly based on the analysis conducted by the Privacy Flag back-end system.



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# PF smartphone app

**Step 1:** Users open the app for the first time

User is asked to classify the 9 main Android permission categories, how threatening each one is

Before continuing please let us know, how privacy threatening do you think is permission access to your: (1 is max, 5 is less)

	1	2	3	4	5
Calendar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Camera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Location	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Microphone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sensors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SMS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SKIP DONE



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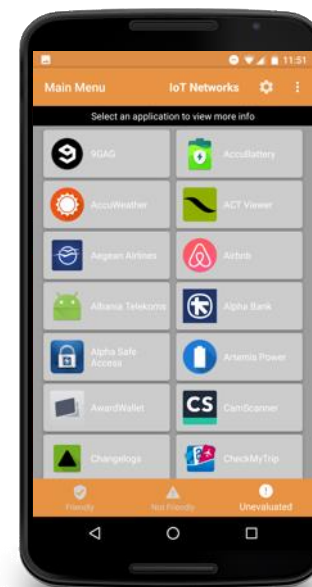
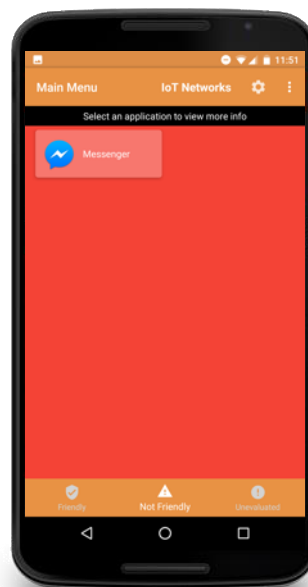
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# PF smartphone app

**Step 2:** shows a list of all installed applications based on the evaluation



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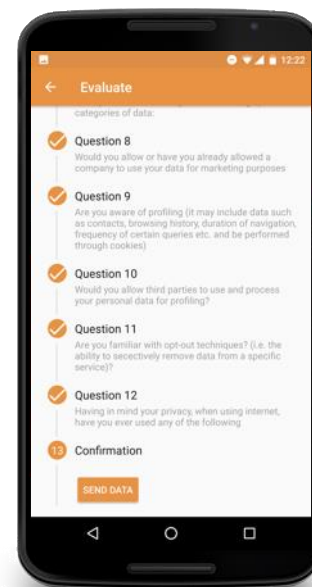
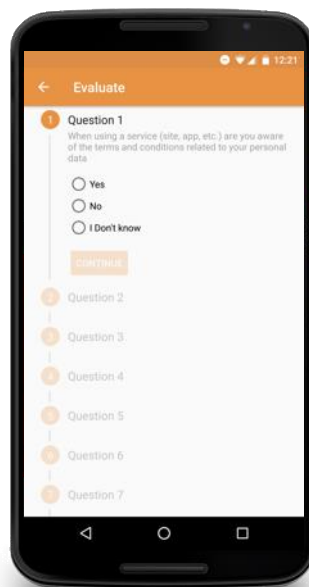
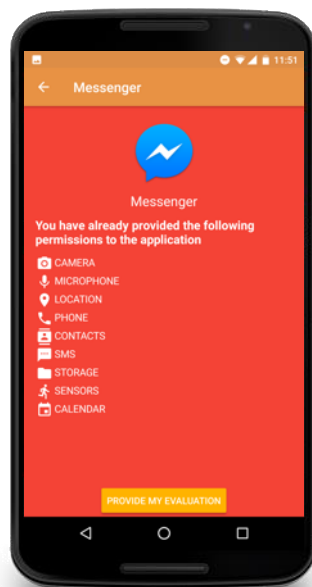
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# PF smartphone app

**Step 3:** users can view more information for each application and provide their own evaluation



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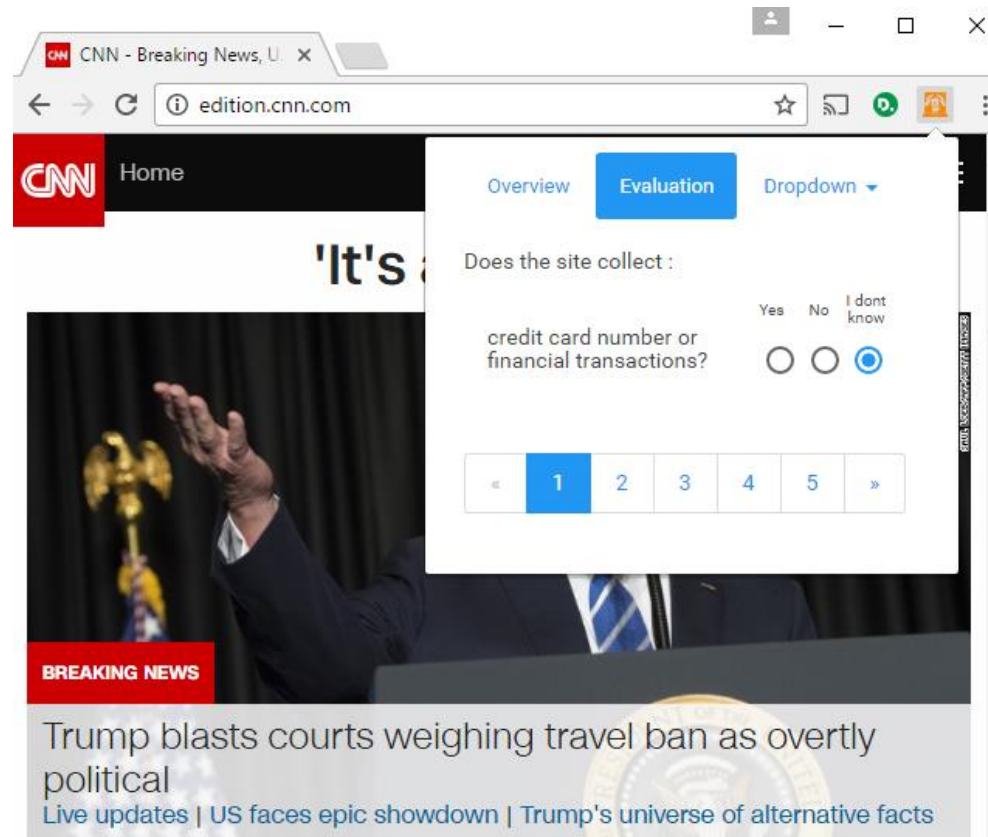




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# PF web browser add-on

- A tool that allows users to get information about potential privacy risks when browsing throughout the Internet.
- The add-on informs users whether a web site is considered safe or not based
  - input gathered by technical enables
  - crowdsourcing data from end users.



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# Implemented list of threats

The evaluation of the website is based on the top 20 threat matrix.

- *Does the website provide data encryption (SSL/TLS)?*
- *What information does the website/server directly learn about a user (using forms)?*
- *Which communication parties is data transferred to?*
- *Does the website use HTML cookies?*
- *Does the website use third party cookies?*
- *Does the website use HTML5 Web SQL database?*



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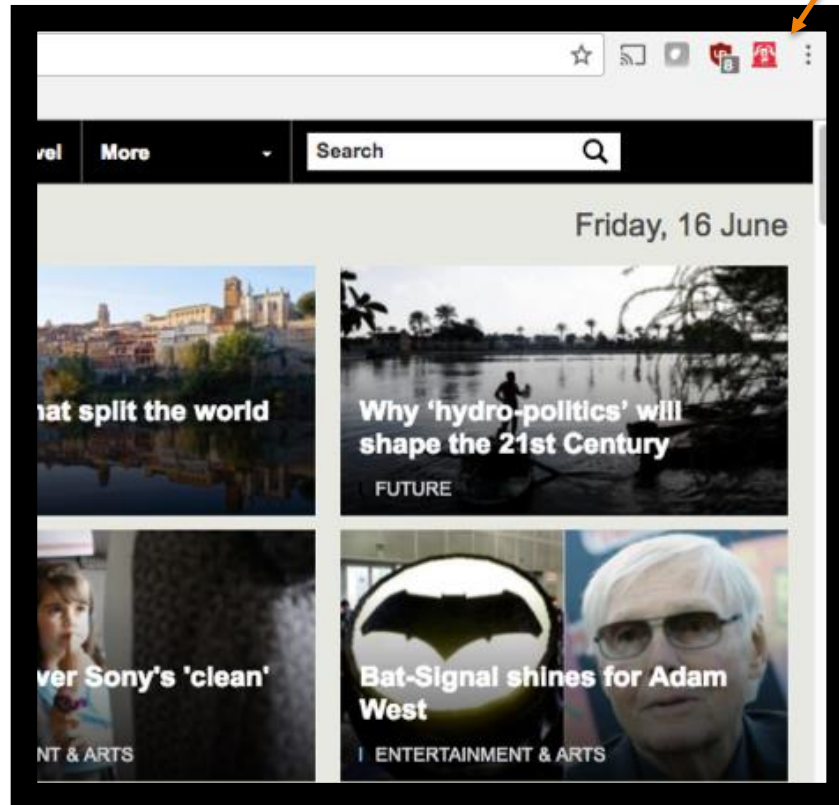


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# PF web browser add-on

**Step 1:** user browses through the internet

PF flag quickly shows the evaluation of the site



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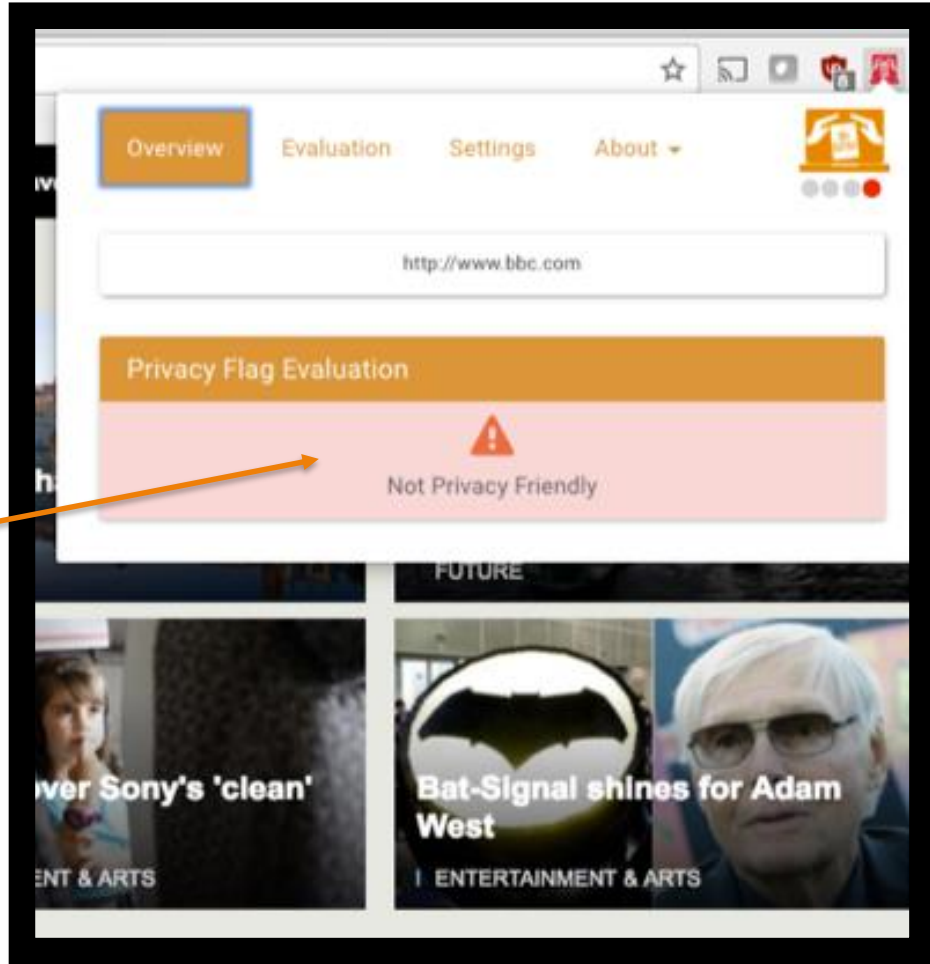




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# PF web browser add-on

**Step 2:** user opens the add-on to view more info



Current Evaluation



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# PF web browser add-on

**Step 3:** user provides his own evaluation

Overview Evaluation Settings About

Is the following data collected? (with or without your consent)

	Yes	No	IDK
Personal data, for example user name, address, email	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Credit card number of financial transactions	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Data from your contacts, calendar, or social network accounts	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

1 2

Overview Evaluation Settings About

Is there clear and understandable information on

	Yes	No	IDK
who is collecting the data	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
what is their contact details	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
the purpose for which the data are collected	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

SUBMIT

1 2

User submits his evaluation



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# IoT Tool

- The increasing availability and diversity of IoT enables everyone and everything to be connected to the Internet (e.g., sensors for energy saving, security, home automation, transportation, wellness, etc).
- The Privacy Flag IoT evaluation tool allows users and those affected to assess IoT deployments in terms of privacy based on the UPRAAM methodology.
- Evaluation of IoT deployments is done by using only the crowd sourced UPRAAM evaluation with no automated tests.
- Privacy Flag IoT tool is available via Privacy Flag app.



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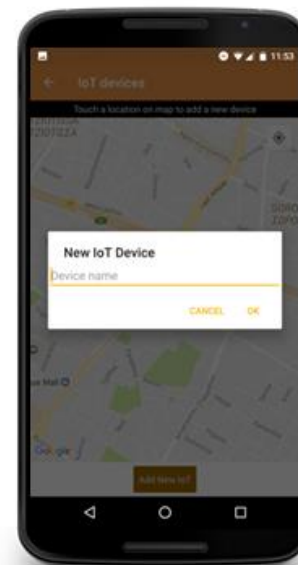
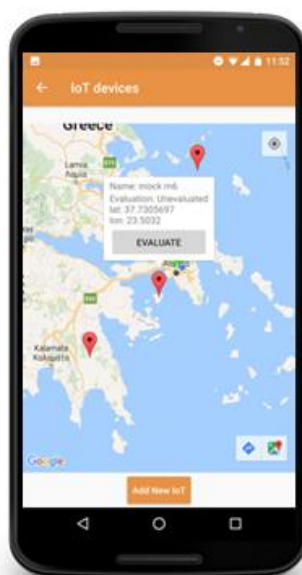
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# IoT Tool



Become aware of IoT devices around you empowered by the crowd knowledge

See if they privacy friendly and give your evaluation

Add devices that you are curious about their privacy status



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# IoT Tool (cont.)


1. Open the IoT option via the PF mobile app
2. Add an IoT device on the map
3. Evaluate this device



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Browser Add-on

The Privacy Flag web browser add-on is a tool that allows users to obtain information about potential risks of a website being considered safe -or not- based on an analysis conducted by the Privacy Flag backend system. The analysis is performed from end-users using the UPRAAM methodology. The Privacy Flag web browser add-on is one of the tools available to end-users on the Internet. The add-on informs users whether a web site is safe or not based on technical enablers and exploits the power of crowdsourcing data from end-users and the Privacy Flag project.

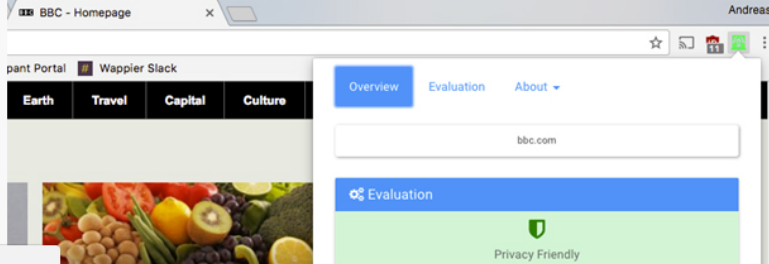
Here is information about how to install the add-on:

1. **Download** and unzip the add-on file.
2. In Chrome, open the extension menu.
3. From the menu select the developer mode (top right button).
4. Select Load unpacked extensions.
5. From the menu select Windows or Mac folder from the previous unzipped folder depending of your system.

After you have installed the addon, please test how it works and provide feedback by answering the following questionnaire: <https://www.surveymonkey.com/r/VJGMFSR>

If you have heard about this tool at an event and would like to provide us with feedback, please answer the following questionnaire: <https://www.surveymonkey.com/r/VITR3BM>

- PF Mobile Application
- PF Browser Add-on
- PF Observatory
- Privacy Pact
- Privacy Certification
- Privacy Portal
- Privacy Guide







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# PF Observatory

- ✓ Provides a holistic overview of the privacy and security situation on the Internet.
- ✓ Visualizes empirical data in a clearly and understandable way, in numerical and graphical formats, showing the adoption of best practices and standards on the WWW, as well as identifying issues with obsolete, insecure, but still widely deployed, technologies.
- ✓ Is of use to stakeholders, legislators, web developers, security researchers, scientists and enterprises, but primarily to European Citizens concerned about their digital data privacy.



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# PF Observatory

The PrivacyFlag Observatory is organized in three distinct categories, Confidentiality, Security and Privacy of Data. All of them are related to the Privacy of your Data in direct or indirect way. Find why:

Confidentiality

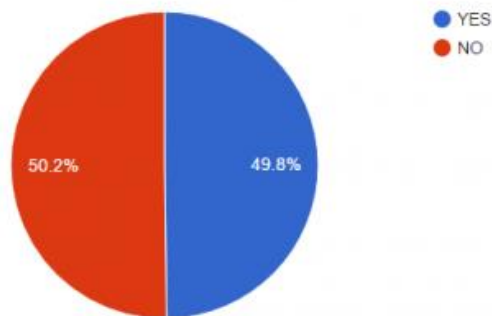
Security

Privacy

## Confidentiality

Data encryption is the basic mechanism to protect the confidentiality of your information to remain private. It is absolutely necessary to encrypt sensitive data as passwords, credit card number etc but it is even better to encrypt everything. Modern web sites provide various encryption mechanisms. In PrivacyFlag we check whether a web site respects users privacy by encrypting his/her data. Furthermore, PrivacyFlag also analyzes the robustness and strength of the implemented encryption algorithms. Bear in mind that obsolete, weak or poorly implemented encryption algorithms offer little or no protection at all against skilled adversaries.

Percentage of websites that provide data encryption (SSL/TLS).



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# The Approach on Focus Groups

## Focus Groups per tool

### ❖ Two categories

- Everyday users, which have little knowledge or are not concerned about how privacy and security technologies work (e.g. school teachers, students etc.)
- Expert users, which have some knowledge or are about how privacy and security technologies work (e.g. cyber security experts, academia personnel on cyber security etc.)

### ❖ Approximately 5 members per group

 Every group was shown a presentation about the tools and Privacy Flag followed by a live demo

 For the feedback a questionnaire was used, targeting a specific tool



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# The feedback from users

-  Positive on both tools
-  Major interest on the Android App from the every day users
-  The more experienced or expert users showed more interest on the Privacy Flag Observatory
-  Most changes regarded visual aspects (color, order etc.)
-  Both expert and non-expert groups were intrigued by these tools and wanted to learn more about them and their use



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# Conclusions

-  In nowadays users are getting more concerned about their online privacy
-  There is still a gap between the concern and the knowledge of what affects their privacy and data security
-  Users are interested in tools that help them to figure out issues on the protection and security of their data
-  Most of the time, users are not concerned about privacy
-  Increased level of awareness results to increased concern on privacy and security aspects.



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National and Kapodistrian  
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**HWCommunications**  
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