The Browser Privacy Arms Race

Which Browsers Actually Protect Your Privacy?

Andrés Arrieta - Dir of Consumer Privacy Engineering
Who are we?

Non-profit that fights for your civil liberties in the digital world.

- Certbot, HTTPS Everywhere, Panopticlick, Privacy Badger...
- AI, Coders Rights, Freedom of Speech, Privacy...

We fight for the users
Why does it matter?

Browsers are most users’ window to the Internet, and most users do not change the defaults.

The out of the box window to the Internet defines the defaults for the rights most users enjoy.

The Internet should be opt-in and empower users where the default is respecting our rights.
Who cares about more relevant ads anyway?

So what if they gather some information?
What can third-parties learn from your browser or other sources?

- Age
- Gender
- Race
- Address physical and email
- Location
- Browser
- Device
- Time spent
- What you clicked
- What you hovered
- What you buy online and offline
- Health data
They can learn directly or infer a lot of things from your browsing habits!

- Politics
- Health condition
- Religious beliefs
- Sexual orientation
- Hobbies and interests
- **Personality**
- Where you are going
- Who you know and who you’ve met
What can they do with it?

- Marketing for more “relevant” ads (That you probably learned to ignore)
- Decide what you see from your friends
- Decide what news and which outlets you see
- Decide what you should interact with (what has more engagement)
Trigger psychological buttons

- Anger
- Happiness
- Depression
- Fear
What are the browsers doing?
Apple - Safari/Webkit

- + ITP
  - Battles with Criteo
- + Large anonymity sets
- - No extensions
Brave

- + HTTPS Everywhere built-in
- + Anti-fingerprinting built-in
- + Easylist blocking
- + Chromium extensions
Mozilla - Firefox

- + Disconnect tracker blocking
- + Widgets/Containers
- + Install 3rd party extensions
Tor

- + HTTPS Everywhere
- + Large anonymity pool
- + Anti Fingerprinting
Chrome

- + Removing fingerprinting vectors
- - No tracker-blocking
- - Killing meaningful privacy extensions
- - Proposals to make it easier to track and standardize it
Edge-i-um?

- + Past versions of IE supported DNT
- + Tracking Protections
- ? Current Edge-i-um supports extensions BUT
How do their efforts stack up?

Actions and plans

These are not grades!

✔ Doesn’t mean they’re all good and done
How do they stack up?

- **Firefox** - Blocks known 3rd parties
- **Chrome** - Reduce UA
- **Safari** - Canvas Fingerprinting
- **Tor** - Effort to make all =
- **Brave** - No access to commonly used
- **Edge** - Same as Chromium
How do they stack up?

- Low hanging fruit
- Try to make as large as possible the anonymity pool
How do they stack up?  

- Large Anonymity Pool

- Firefox

- Chrome

- Safari - Controls the hardware

- Tor

- Brave

- Edge
How do they stack up?  

- How far can you remove features
- Consider hardware when comparing

Large Anonymity Pool
How do they stack up?

- **Firefox** - eSNI, DoH
- **Chrome** - DoH, eSNI?
- **Safari**
- **Tor** - Tor! And Firefox.
- **Brave** - DoH, eSNI?
- **Edge** - DoH
How do they stack up? eSNI/DoH/DoT/Tunneling

- Third-parties on sites are not the only threat vector for privacy
- Allow users to choose
How do they stack up?

<table>
<thead>
<tr>
<th>Browser</th>
<th>Tracker Blocking</th>
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<tbody>
<tr>
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<td>List, 3rd Party Cookies</td>
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<td>Chrome</td>
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<td>Safari</td>
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<td>Tor</td>
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<td>Brave</td>
<td>List, 3rd Party cookies</td>
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<tr>
<td>Edge</td>
<td>List based</td>
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</tbody>
</table>
How do they stack up? Tracker Blocking

- List vs Heuristics vs Behaviour
- Balance of protection vs breaking
- Transparency
- Control
- Choice
How do they stack up?

- **Firefox**
- **Chrome** - Manifest V3
- **Safari** - Walled garden
- **Tor**
- **Brave**
- **Edge** - Follow Google or do better?
How do they stack up?

- You serve the users, protect the users
- You can’t account for all threats, allow others to help
- Blunt solutions that do not provide real solutions aren’t solutions
<table>
<thead>
<tr>
<th>Browser</th>
<th>Fingerprint</th>
<th>Privacy</th>
<th>downloads</th>
<th>的真实性</th>
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How do they stack up?

- Privacy is hard but there are easy lifts
- If privacy is too hard for you, maybe don’t get involved with making a browser?
- Ads != (always) tracking
- Money doesn’t make it ok to violate our rights
Some Challenges

- **Anonymity Pool**: Some have the advantage of controlling the hardware

- **Providing Privacy while having a good browsing experience**
  - More trackers blocked = faster and less noisy browsing
  - Too aggressive can brake functionality
  - User choice can help in many of these cases

- **Privacy vs Security**
  - They are different things but for some users they are the same
  - Investing in security doesn't equate to investing in privacy
  - Users shouldn’t be forced to choose
What should you do?

- The Internet needs to be an **opt-in world**, not opt-out (**Users’ choice**)
- The **default** has to be **security AND privacy**

Demand better, you shouldn’t have to “choose” between privacy and security.

YOUR VOICE HAS MORE POWER THAN YOU THINK!
Thank you!

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