MyTrackingChoices:

Reconciling Privacy and Economy
(part of the MyRealOnlineChoices.inrialpes.fr project)

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Joint work with
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• **Objective1: Understanding & Formalizing Privacy**
  - *Multidisciplinary approach*: technical, legal, economics, policy
  - *Experimental approach*:
    - monitor trackers, design or demonstrate practical privacy attacks
      *offensive privacy* as in offensive security?

• **Objective2: Building Privacy-Preserving Systems**
  - Privacy-by-Design
  - Privacy and Transparency Enhancing Technologies (TETs and PETs)
  - Data Anonymization
  - Privacy Impact Assessment
  - Surveillance (tracking, profiling....)

• Strong collaboration with the CNIL (bridge between lawyers and techies): mobilitics, data anonymization, PIA,....
Ad-supported economic model of the Web is under threat today!

AdBlock War
Why ad-supported economy in danger

intrusive and annoying ads
privacy-invasive ads
ads are a source of malware
ads slow down the page loading
network bandwidth consumption etc.

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users were provided with radical tools
— i.e., tools that block ALL ads

bascially, all the reasons why people started to block ads in the first place
Efforts for economic revival

1. Various self-regulatory initiatives
   - Acceptable Ads
   - L.E.A.N. program
   - YourOnlineChoices
   - YourAdChoices
   - DNT

2. Ad blocker tools for users
   - Users can white-list or black-list trackers (advertisers)
   - Users can white-list or black-list a domain
Self-regulatory initiatives do not work

Google, Microsoft, and Amazon are paying Adblock Plus huge fees to get their ads unblocked

Google And Facebook Ignore "Do Not Track" Requests, Claim They Confuse Consumers

Lack of technical enforcement is the root problem!
Current Blocking solutions are too coarse-grain!

- blocking based on trackers
- blocking on per domain basis

do not make sense from user + economical perspective
(users only care about their browsing profile)
Our Objective

• Can we propose a solution that respects users’ privacy preferences and still allows some kind of tracking?
What do people want [pets16]?

• People are not against targeted ads and even tracking
  – They even see some benefits
  – They are willing to even share more data:
    • If they can **control** the information that is being tracked.
    • If the shared information is not “sensitive”
• Whereas current tools focus on the properties of trackers, users are more concerned about the properties of the sites they visited, such as the topics of these pages!
• Users have different preferences
• Users are concerned about the lack of **transparency** and **control** over tracking!

[pet16] *Do Not* Track Me Sometimes: Users’ Contextual Preferences for Web Tracking
MyTrackingChoices

• let users decide where they’re ok or not to get tracked

<table>
<thead>
<tr>
<th>Profile</th>
<th>Allowed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>✗</td>
</tr>
<tr>
<td>Sports</td>
<td>✓</td>
</tr>
<tr>
<td>Health</td>
<td>✗</td>
</tr>
<tr>
<td>Economy</td>
<td>✓</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

users would be able to control the profile trackers have

*(Do not) Track Me Sometimes: Users’ Contextual Preferences for Web Tracking, PETS, 2016*
Fine-grained options (2)

• w.r.t. intrusiveness
  – maximum number of ads per page (on pages where users are ok to be tracked)
  – type, size, placement of ads
<table>
<thead>
<tr>
<th>Category</th>
<th>BlockTrackers</th>
</tr>
</thead>
<tbody>
<tr>
<td>adult</td>
<td>✓</td>
</tr>
<tr>
<td>agriculture</td>
<td></td>
</tr>
<tr>
<td>animals</td>
<td></td>
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<tr>
<td>architecture</td>
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<tr>
<td>arts &amp; entertainment</td>
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<td>automotive</td>
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<td>business</td>
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<td>careers</td>
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<td>economics</td>
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<td>education</td>
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<tr>
<td>family &amp; parenting</td>
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<td>fashion</td>
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<td>folklore</td>
<td></td>
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<tr>
<td>food &amp; drink</td>
<td></td>
</tr>
<tr>
<td>health &amp; fitness</td>
<td>✓</td>
</tr>
</tbody>
</table>
Nokia no longer the butt of tech jokes
Study says a major blood cancer is linked to diseases

By Adam Brimelow
Health correspondent, BBC News

© 8 June 2016 | Health
Categorization

• per web page basis (≠ per domain)

  Benefits

  website: ads would be blocked only on sensitive-category web pages (most revenue preserved)
  user: can technically control his profile yet continue receiving free content

• A page is categorized locally based on
  – domains/subdomains/hostname
  – unigrams and bigrams
Evaluation of data from MTC users
Dataset

• 96 users
  – who browsed 20 or more web pages and configured, at least, once their tracking options
  – found the extension on Chrome Web Store independently or through various publicity channels

• From January 11 to February 20, 2016
More users blocked sensitive categories

30% users blocked all categories!

Other economic models needed!
In total, only 33.19% of browsed web pages were blocked.
23.8% ads were blocked overall.

2015 loss (21.8 → 5.18 billion)
Conclusions

• Give users fine-grained control over their profile and privacy preferences

• Win-win situation for all stake-holders:
  – Users are more happy and will value more the ads
  – Retailers images/trust will improve since they won’t upset users
  – The quality (and therefore the price) of the targeted ads might increase... so ad network might actually benefit!

• This is another example of Privacy by Design...
TODOs

• provide users with fine-grained control w.r.t. intrusiveness
  – i.e. Add limitation on # of ads per page
Thanks for your attention!

Questions?

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Project web page: https://myrealonlinechoices.inrialpes.fr
Watch on YouTube: https://youtu.be/mzB1hXhqYBE