Leaky Forms: A Study of Email and Password Exfiltration Before Form Submission

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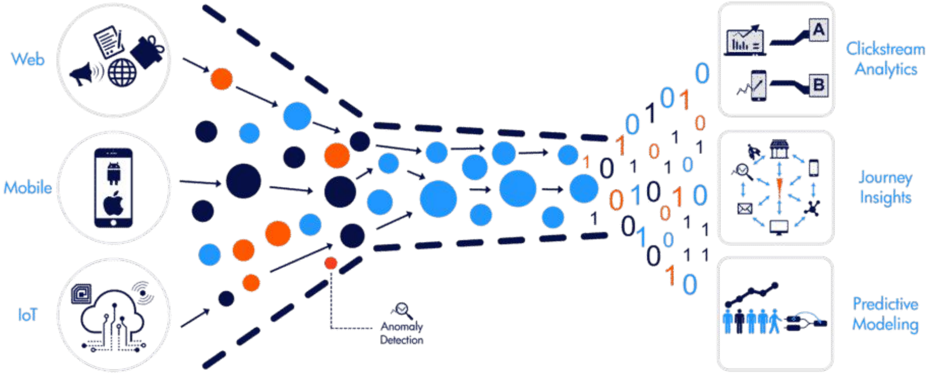
Background

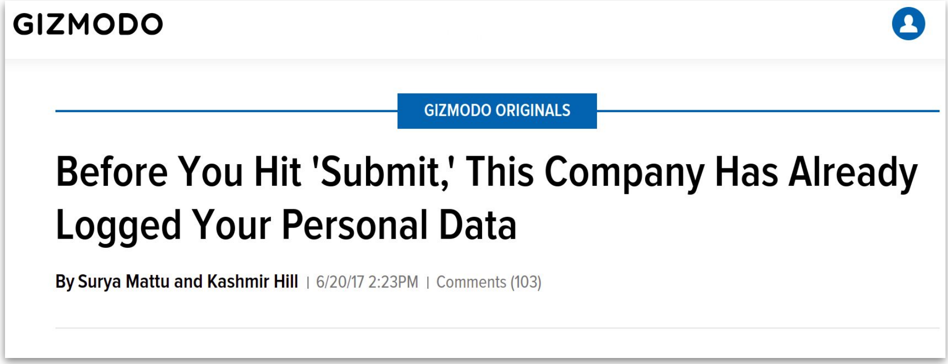
- Websites use advertising and marketing for monetization
  - built-in anti-tracking countermeasures
  - potential third-party cookie phase-out
- Tracking by email addresses
  - persistent, cross-site, cross-platform



https://medium.com/@ugurekmekci/real-time-user-activity-tracking-w-divolte-collector-and-kafka-d8c106313400

Motivation

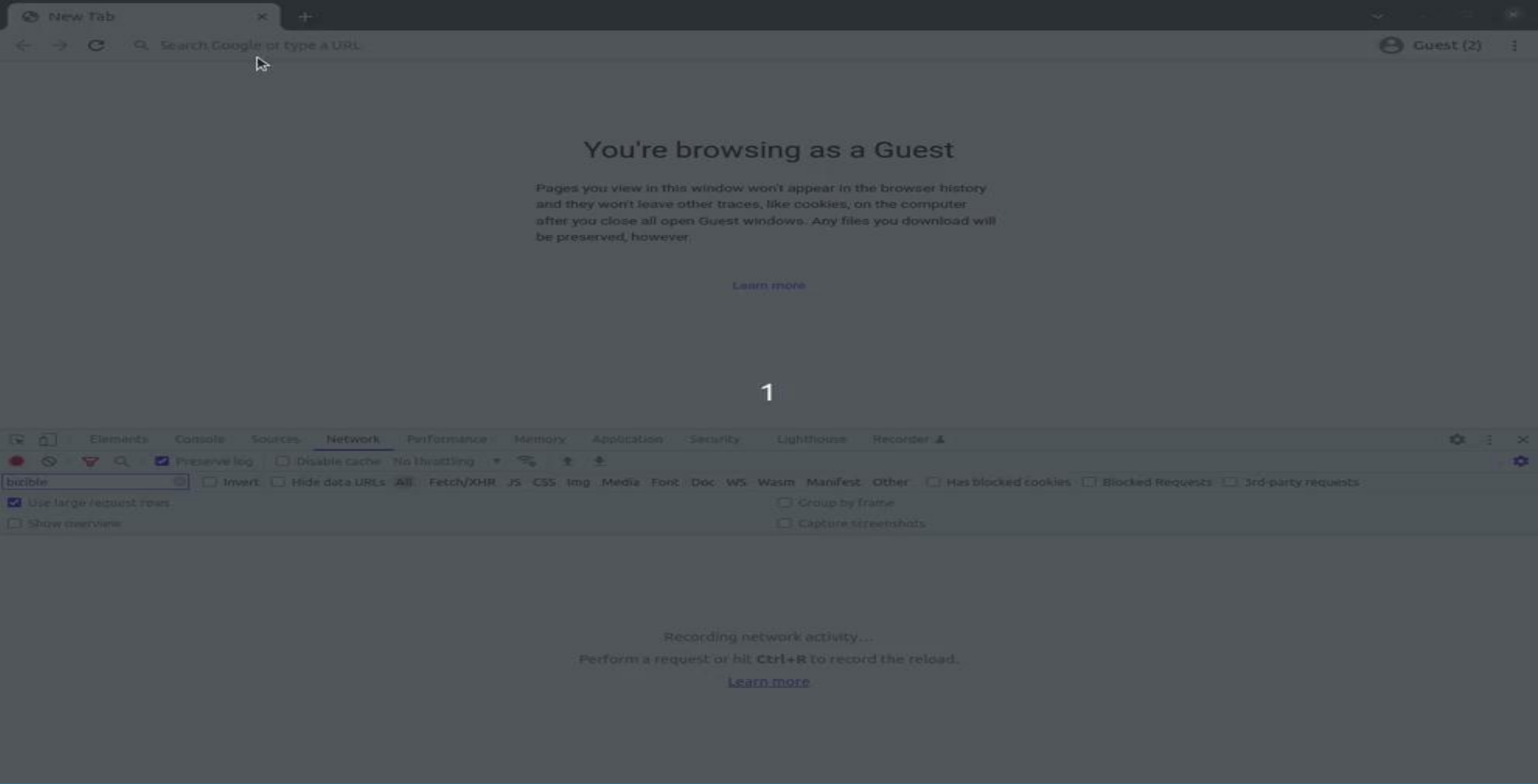
- PII collection before form submission on a mortgage calculator website (Gizmodo, 2017)
- A 2018 survey (n=502):
    - 81% abandoned forms at least once
    - 59% abandoned a form in the last month



GIZMODO ORIGINALS

Before You Hit 'Submit,' This Company Has Already Logged Your Personal Data

By Surya Mattu and Kashmir Hill | 6/20/17 2:23PM | Comments (103)



You're browsing as a Guest

Pages you view in this window won't appear in the browser history and they won't leave other traces, like cookies, on the computer after you close all open Guest windows. Any files you download will be preserved, however.

Learn more

☑ Preserve log □ Disable cache No throttling

bixible □ Invert □ Hide data URLs □ Has blocked cookies □ Blocked Requests □ 3rd-party requests

☑ Use large request rows □ Group by frame

□ Show overview □ Capture screenshots

Recording network activity…

Perform a request or hit Ctrl+R to record the reload.

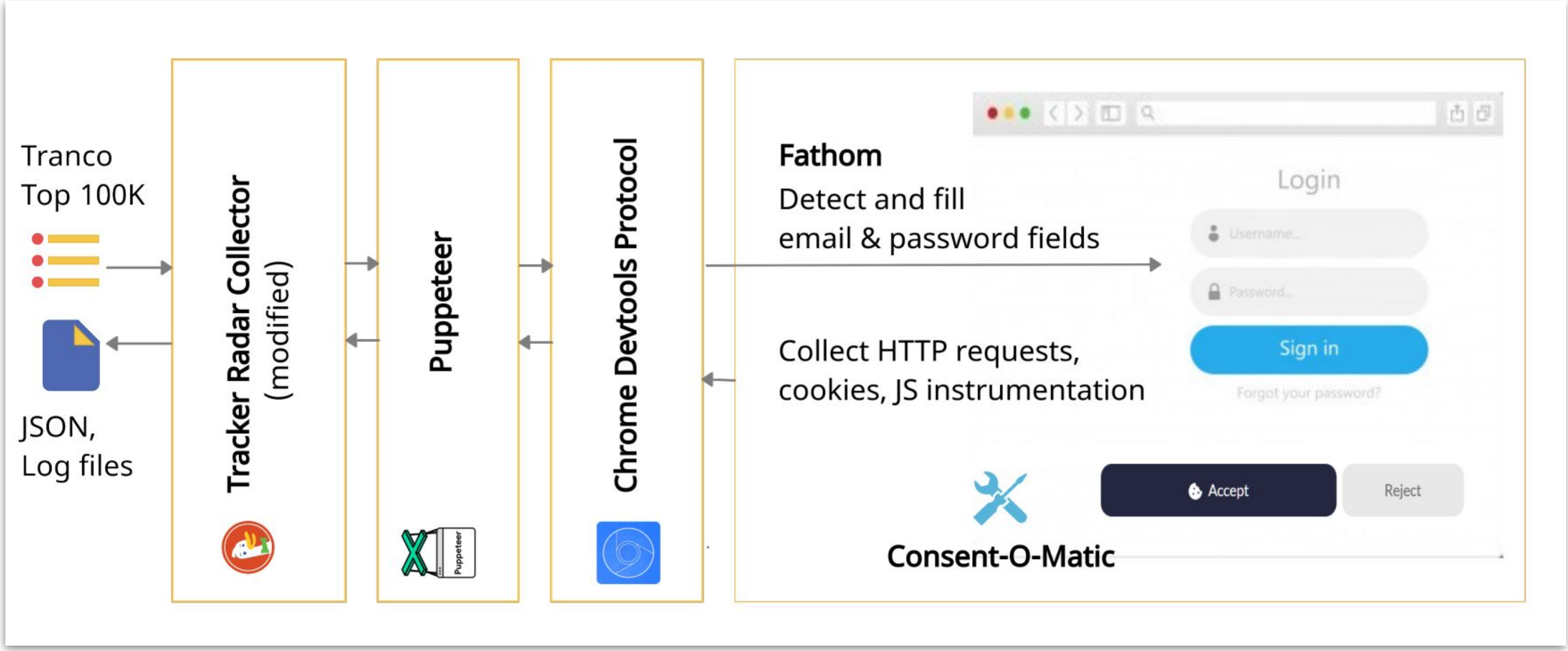
Learn more

Study Objectives

- Measure email and password collection prior to form submission
  - effect of location: EU vs. US
  - effect of consent
  - mobile vs. desktop

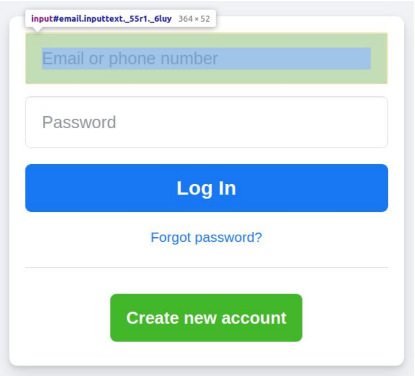
Method – Web Crawler

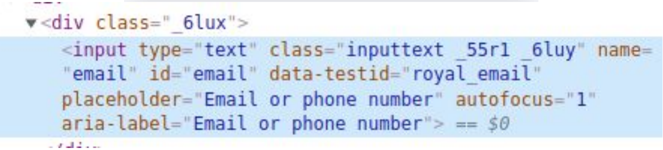
- Built on Tracker Radar Collector (developed by DuckDuckGo)



Method – Email field detection

- **Fathom**: A supervised learning framework specialized to detect webpage parts [8]

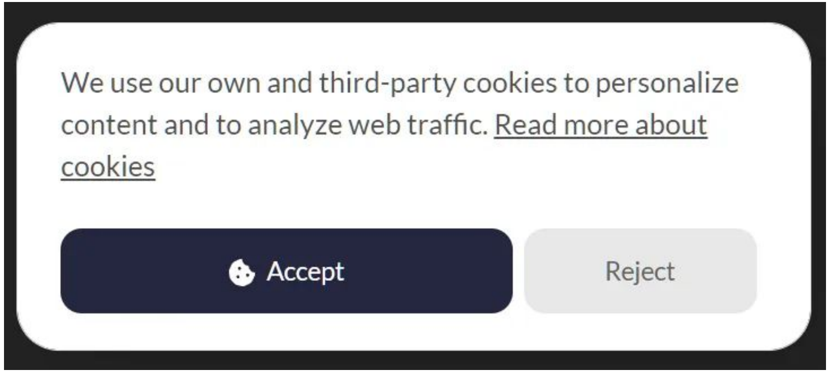




```
▼<div class="_6lux">
    <input type="text" class="inputtext _55r1 _6luy" name=
    "email" id="email" data-testid="royal_email"
    placeholder="Email or phone number" autofocus="1"
    aria-label="Email or phone number"> == $0
```

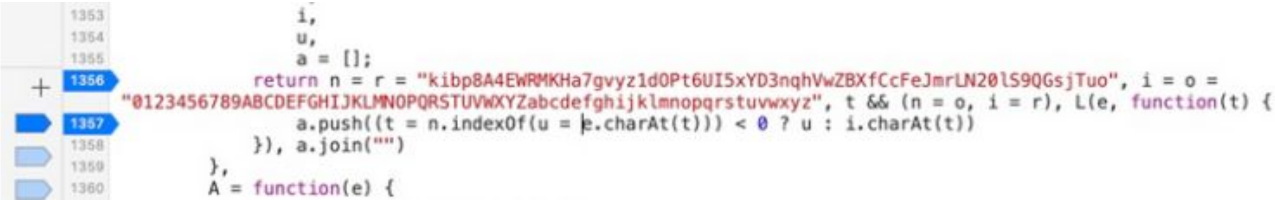
Method – CMP detection

- **Consent-O-Matic**: browser extension that can recognize and interact with Consent Management Provider (CMP) pop-ups [7]
- Consent modes:
  - No-action
  - Accept-all
  - Reject-all
- ≈7,700/100K


We use our own and third-party cookies to personalize content and to analyze web traffic. Read more about cookies

Method – Leak Detection

- Based on Englehardt et al.’s method [3]
  - search for different encodings and hashes of search terms
- Identified two new encodings and a hashing method
  - LZString, custom mapping, hashing with a fixed salt



```
                i,
                u,
                a = [];
            return n = r = "kibp8A4EWRMKHa7gvyz1dOPt6UI5xYD3nqhVwZBXfCcFeJmrLN20lS9QGsjTuo", i = o =
"0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz", t && (n = o, i = r), L(e, function(t) {
                a.push((t = n.indexOf(u = e.charAt(t))) < 0 ? u : i.charAt(t))
            }), a.join("")
        },
        A = function(e) {
```

Method – Tracker Labeling

- Only considered leaks to tracker domains
- Block-lists we used:
  - Disconnect
  - Whotracks.me
  - DuckDuckGo (tds.json)
  - uBlock Origin
  - + Manual labeling

Crawls (May, June 2021)

Crawl Option	EU				US			
	no-action	accept-all	reject-all	mobile	no-action	accept-all	reject-all	mobile
Crawled URLs	100K	7,720	7,720	100K	100K	7,720	7,720	100K
Visited websites	99,380	7,716	7,716	99,363	99,437	7,714	7,716	99,409
Crawled pages	625,143	44,752	40,385	597,791	690,394	51,735	49,260	668,848

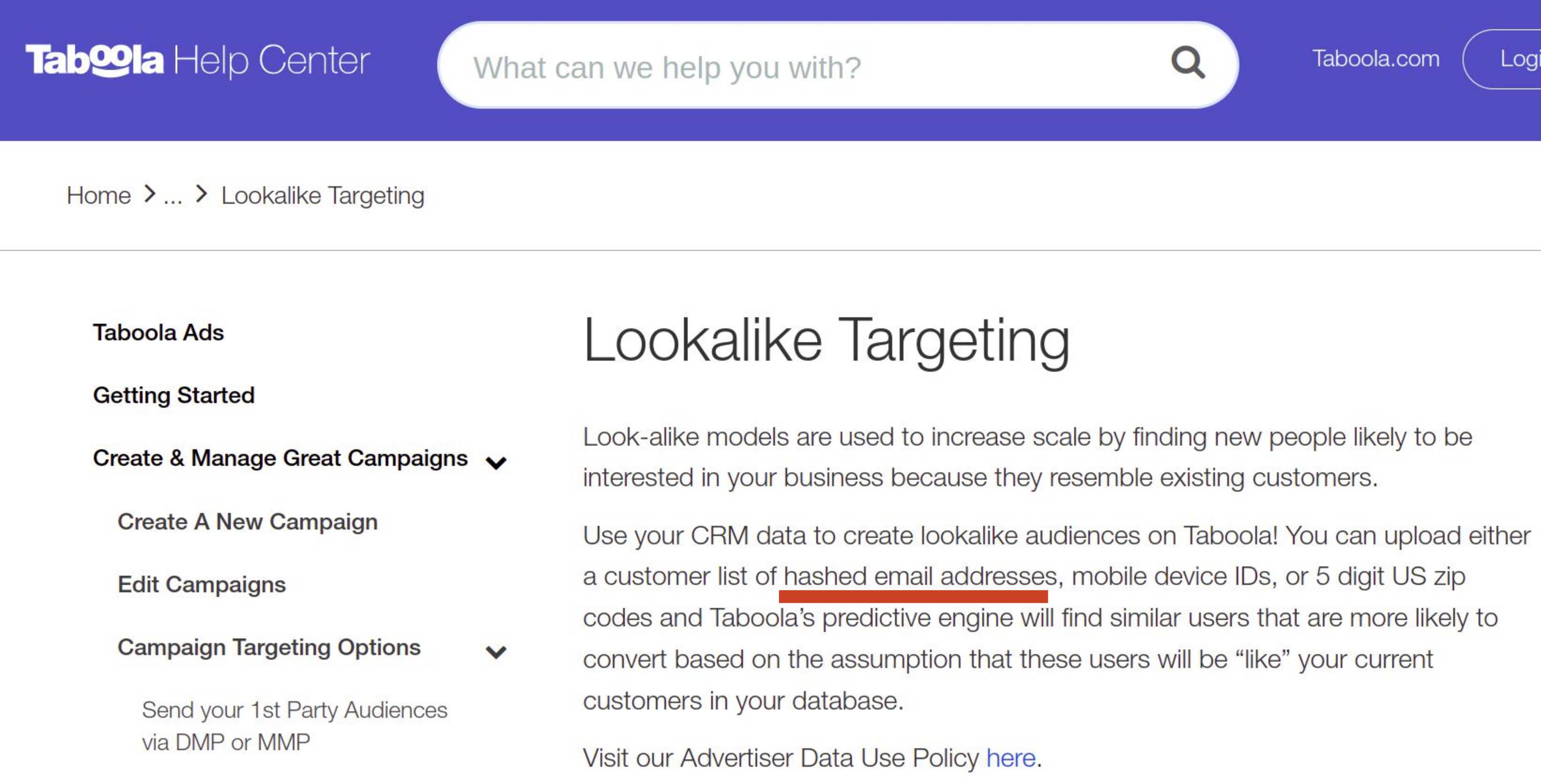
> 2.8 million pages

Results

	Email		Password	
	EU	US	EU	US
Websites where we filled	52,055	53,038	31,002	31,324
Leaks to 1st party	4,395	5,518	89	92
Leaks to 3rd party	2,633	3,790	87	87
Leaks to trackers	**1,844**	**2,950**	**48**	**49**

Prominent Tracker Domains

EU			US		
Name	**Domain**	**Num Sites**	**Name**	**Domain**	**Num Sites**
Taboola	taboola.com	327	LiveRamp	rlcdn.com	524
FullStory	fullstory.com	182	Taboola	taboola.com	383
Adobe	bizible.com	160	Adobe	bizible.com	191
Yandex	yandex.com	121	BounceX	bouncex.net	189
Awin	awin1.com	113	Awin	awin1.com	119
	zenaps.com	112		zenaps.com	118

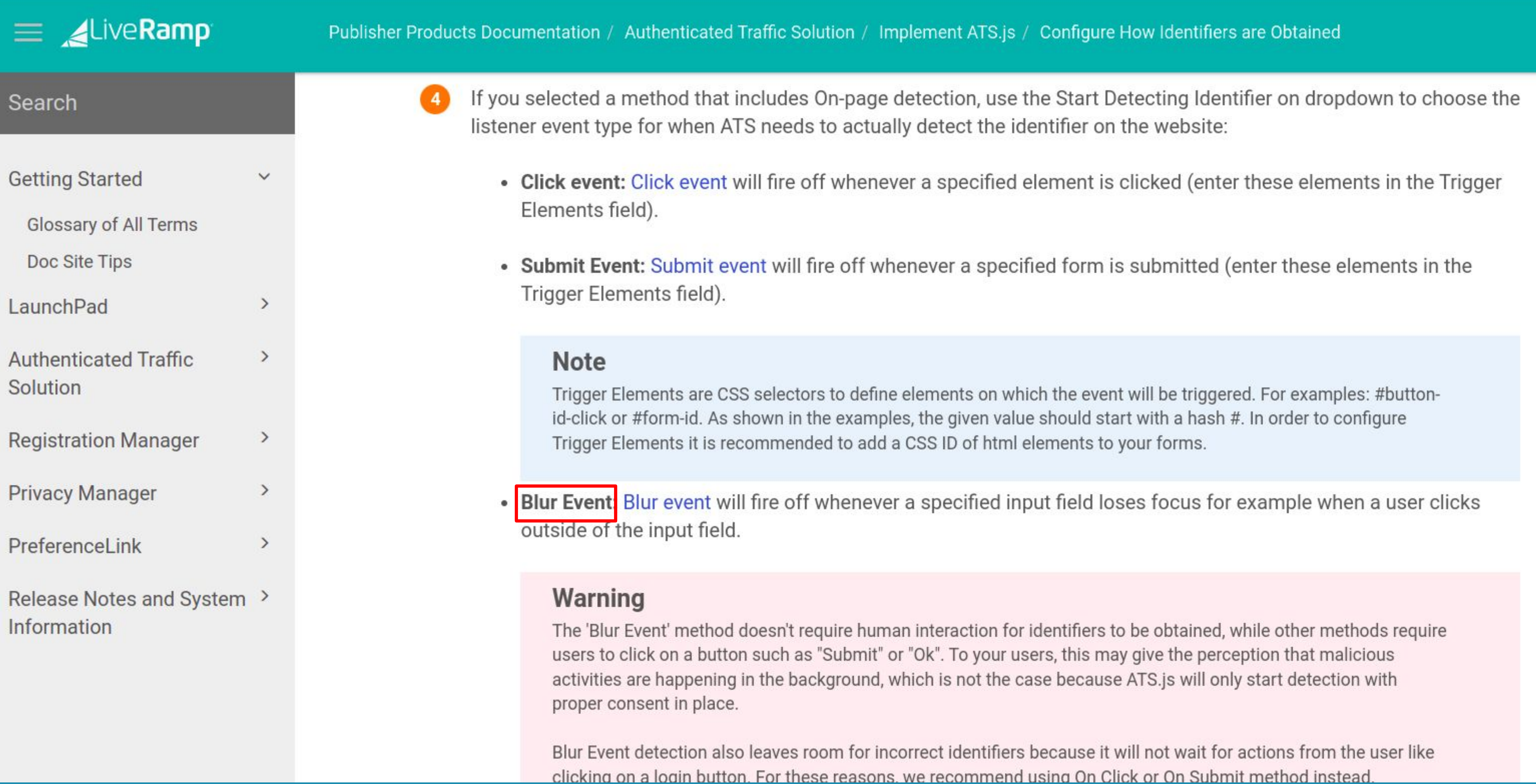

Taboola Help Center
What can we help you with?
Taboola.com
Logi
Home > ... > Lookalike Targeting
Taboola Ads
Getting Started
Create & Manage Great Campaigns
Create A New Campaign
Edit Campaigns
Campaign Targeting Options
Send your 1st Party Audiences via DMP or MMP

Lookalike Targeting

Look-alike models are used to increase scale by finding new people likely to be interested in your business because they resemble existing customers.

Use your CRM data to create lookalike audiences on Taboola! You can upload either a customer list of hashed email addresses, mobile device IDs, or 5 digit US zip codes and Taboola's predictive engine will find similar users that are more likely to convert based on the assumption that these users will be "like" your current customers in your database.

Visit our Advertiser Data Use Policy here.


LiveRamp
Publisher Products Documentation / Authenticated Traffic Solution / Implement ATS.js / Configure How Identifiers are Obtained
Search
Getting Started
Glossary of All Terms
Doc Site Tips
LaunchPad
Authenticated Traffic Solution
Registration Manager
Privacy Manager
PreferenceLink
Release Notes and System Information

4. If you selected a method that includes On-page detection, use the Start Detecting Identifier on dropdown to choose the listener event type for when ATS needs to actually detect the identifier on the website:

- **Click event:** Click event will fire off whenever a specified element is clicked (enter these elements in the Trigger Elements field).
- **Submit Event:** Submit event will fire off whenever a specified form is submitted (enter these elements in the Trigger Elements field).

Note

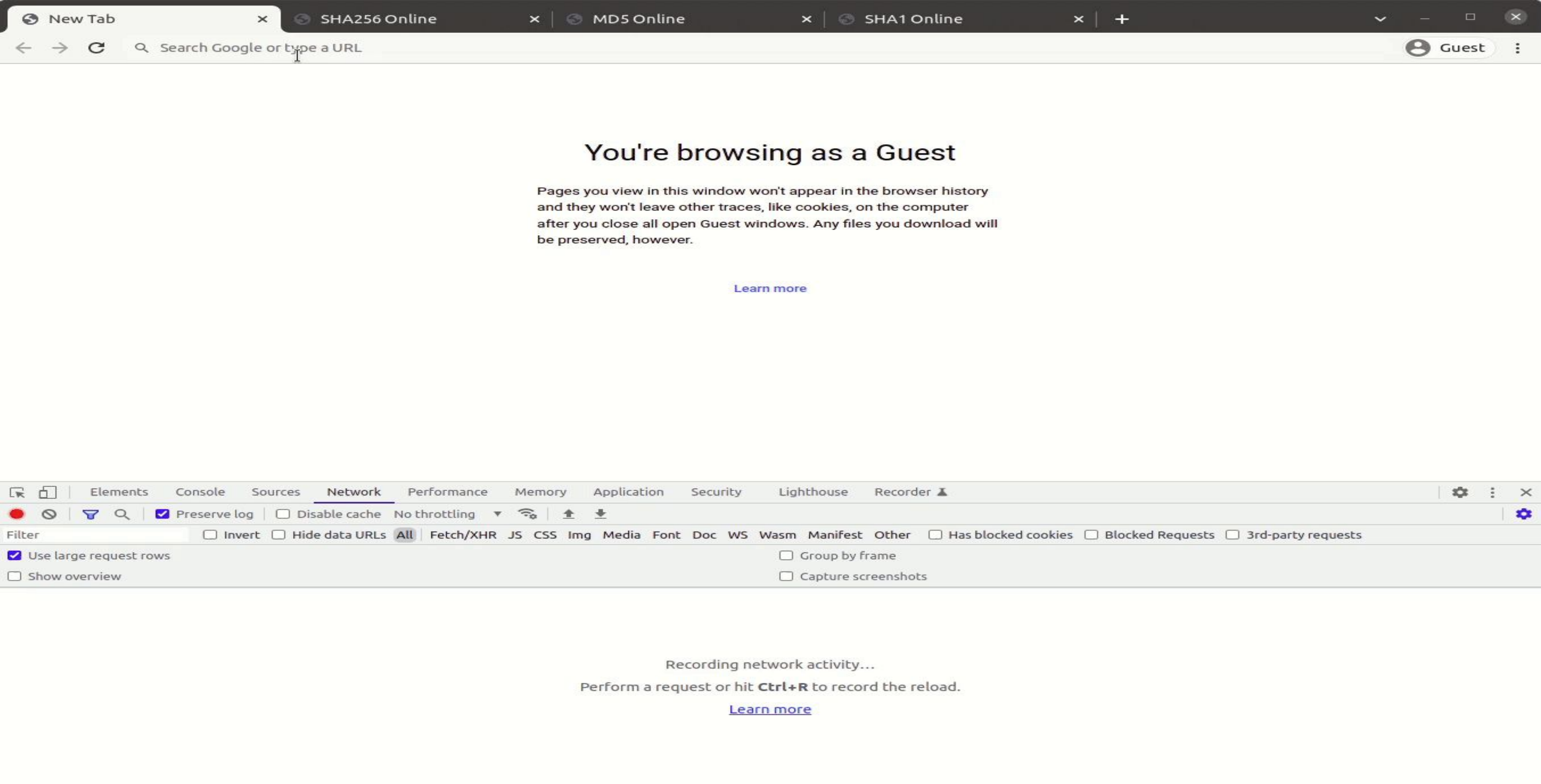
Trigger Elements are CSS selectors to define elements on which the event will be triggered. For examples: #button-id-click or #form-id. As shown in the examples, the given value should start with a hash #. In order to configure Trigger Elements it is recommended to add a CSS ID of html elements to your forms.

- **Blur Event:** Blur event will fire off whenever a specified input field loses focus for example when a user clicks outside of the input field.

Warning

The 'Blur Event' method doesn't require human interaction for identifiers to be obtained, while other methods require users to click on a button such as "Submit" or "Ok". To your users, this may give the perception that malicious activities are happening in the background, which is not the case because ATS.js will only start detection with proper consent in place.

Blur Event detection also leaves room for incorrect identifiers because it will not wait for actions from the user like clicking on a login button. For these reasons, we recommend using On Click or On Submit method instead.



You're browsing as a Guest

Pages you view in this window won't appear in the browser history and they won't leave other traces, like cookies, on the computer after you close all open Guest windows. Any files you download will be preserved, however.

Recording network activity…

Perform a request or hit **Ctrl+R** to record the reload.

Top ten websites

EU			US		
Rank	Website	3rd-party	Rank	Website	3rd-party
154	usatoday.com*	taboola.com	95	issue.com	taboola.com
242	trello.com*	bizible.com	128	businessinsider.com	taboola.com
243	independent.co.uk*	taboola.com	154	usatoday.com	taboola.com
300	shopify.com	bizible.com	191	time.com	bouncex.net
328	marriott.com	glassboxdigital.io	196	udemy.com udemy.com	awin1.com
567	newsweek.com*	rlcdn.com			zenaps.com
705	prezi.com	taboola.com	217	healthline.com	rlcdn.com
754	branch.io*	bizible.com	34	foxnews.com	rlcdn.com
1,153	prothomalo.com	facebook.com	242	trello.com*	bizible.com
1,311	codecademy.com	fullstory.com	278	theverge.com	rlcdn.com
1,543	azcentral.com*	taboola.com	288	webmd.com	rlcdn.com

*: Not reproducible anymore as of February 2022.

Website Categories

	EU/US	EU		US	
Categories	**Sites**	**Filled sites**	**Leaky sites**	**Filled sites**	**Leaky sites**
Fashion/Beauty	1,669	1,176	131 (11.1%)	1,179	224 (19.0%)
Online Shopping	5,395	3,658	345 (9. %)	3,744	567 (15.1%)
General News	7,390	3,579	235 (6.6%)	3,848	392 (10.2%)
Software/Hardware	4,933	2,834	138 (4.9%)	2,855	162 (5.7%)
Business	13,462	7,805	377 (4.8%)	7,924	484 (6.1%)
…..	…..	…..	…..	…..	…..
Gov’t/Military	3,754	939	3 (0.5%)	974	7 (0.7%)
Pornography	**1,388**	**528**	**0 (0.0%)**	**645**	**0 (0.0%)**

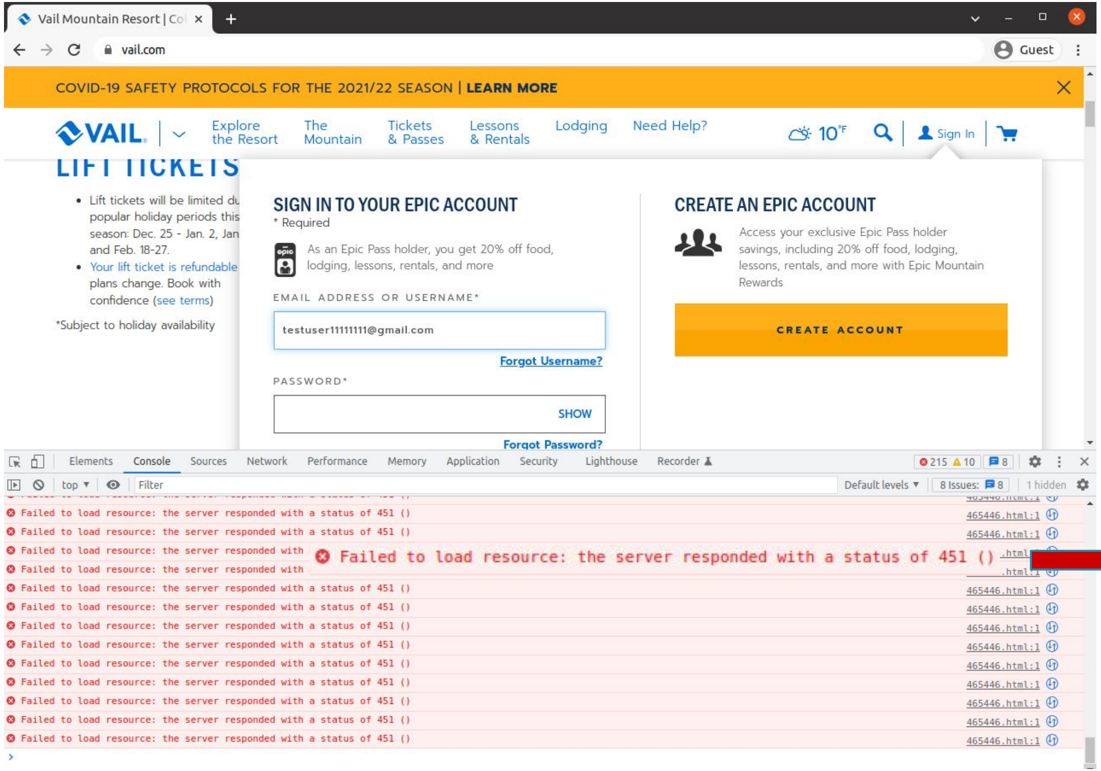
EU vs US

Num distinct websites	EU	US
Visited websites	99,380	99,437
Websites where we filled	52,055	53,038
Emails sent to 1st party	4,395	5,518
Emails sent to 3rd party	**2,633**	**3,790**
Emails sent to trackers	**1,844**	**2,950**

60% difference

addthis.com, yahoo.com, doubleclick.net and criteo.com → Only appear in the US crawl

Results - EU vs US



COVID-19 SAFETY PROTOCOLS FOR THE 2021/22 SEASON | **LEARN MORE**

LIFT TICKETS

- Lift tickets will be limited du popular holiday periods this season: Dec. 25 - Jan. 2, Jan and Feb. 18-27.
- Your lift ticket is refundable plans change. Book with confidence (see terms)

*Subject to holiday availability

SIGN IN TO YOUR EPIC ACCOUNT

* Required

As an Epic Pass holder, you get 20% off food, lodging, lessons, rentals, and more

EMAIL ADDRESS OR USERNAME*

testuser11111111@gmail.com

Forgot Username?

PASSWORD*

SHOW

Forgot Password?

CREATE AN EPIC ACCOUNT

Access your exclusive Epic Pass holder savings, including 20% off food, lodging, lessons, rentals, and more with Epic Mountain Rewards

CREATE ACCOUNT

```
Failed to load resource: the server responded with a status of 451 ()    465446.html:1
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Failed to load resource: the server responded with a status of 451 ()    465446.html:1
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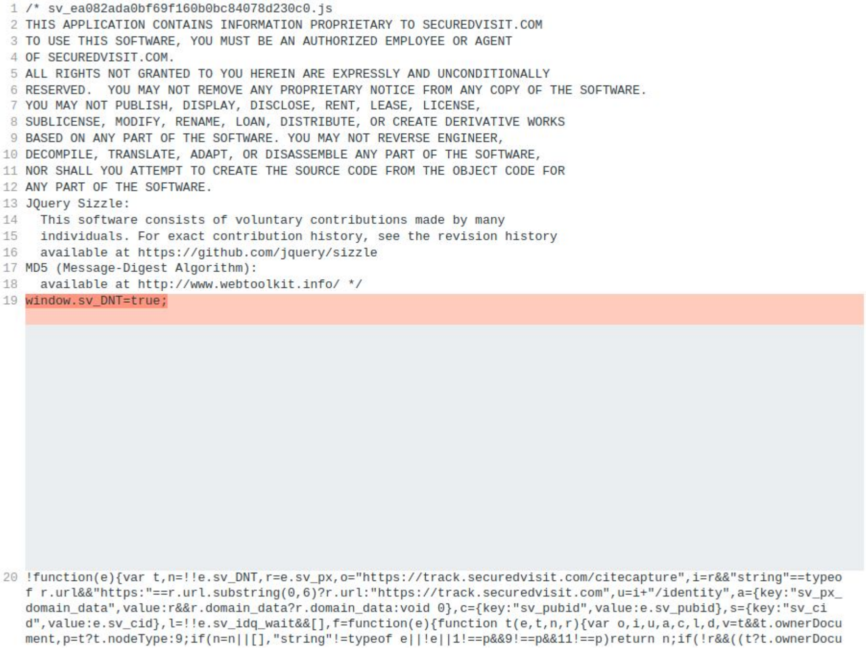
```
Failed to load resource: the server responded with a status of 451 ()
```

rlcdn.com sends HTTP 451 error: Unavailable For Legal Reasons

Results - EU vs US

Same script (from securedvisit.com) served with different content



```
/* sv_ea082ada0bf69f160b0bc84078d230c0.js
THIS APPLICATION CONTAINS INFORMATION PROPRIETARY TO SECUREDVISIT.COM
TO USE THIS SOFTWARE, YOU MUST BE AN AUTHORIZED EMPLOYEE OR AGENT
OF SECUREDVISIT.COM.
ALL RIGHTS NOT GRANTED TO YOU HEREIN ARE EXPRESSLY AND UNCONDITIONALLY
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YOU MAY NOT PUBLISH, DISPLAY, DISCLOSE, RENT, LEASE, LICENSE,
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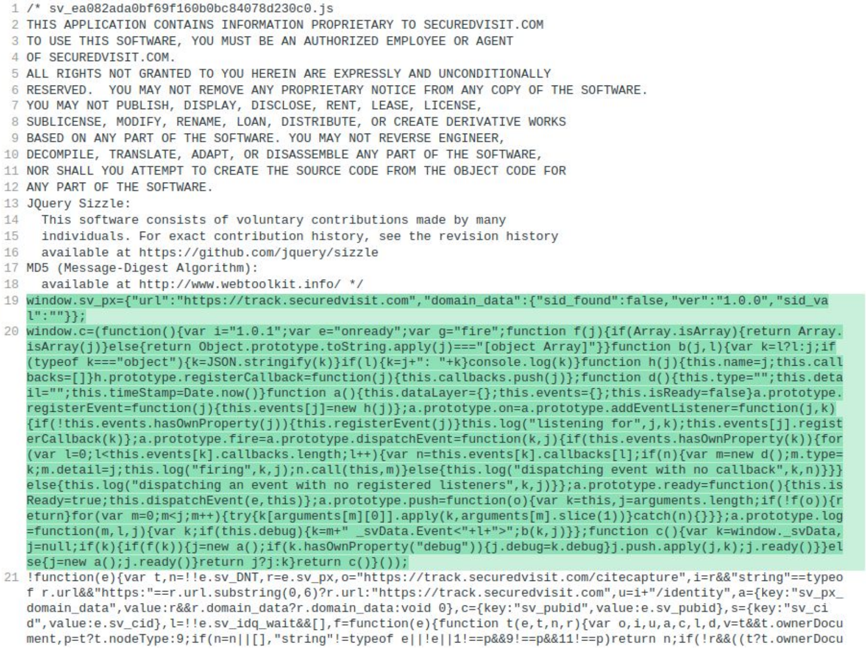
DECOMPILE, TRANSLATE, ADAPT, OR DISASSEMBLE ANY PART OF THE SOFTWARE,
NOR SHALL YOU ATTEMPT TO CREATE THE SOURCE CODE FROM THE OBJECT CODE FOR
ANY PART OF THE SOFTWARE.
JQuery Sizzle:
  This software consists of voluntary contributions made by many
  individuals. For exact contribution history, see the revision history
  available at https://github.com/jquery/sizzle
MD5 (Message-Digest Algorithm):
  available at http://www.webtoolkit.info/ */
window.sv_DNT=true;
!function(e){var t,n=!!e.sv_DNT,r=e.sv_px,o="https://track.securedvisit.com/citecapture",i=r&&"string"==typeo
f r.url&&"https:"==r.url.substring(0,6)?r.url:"https://track.securedvisit.com",u=i+"/identity",a={key:"sv_px_
domain_data",value:r&&r.domain_data?r.domain_data:void 0},c={key:"sv_pubid",value:e.sv_pubid},s={key:"sv_ci
d",value:e.sv_cid},l=!!e.sv_idq_wait&&[],f=function(e){function t(e,t,n,r){var o,i,u,a,c,l,d,v=t&&t.ownerDocu
ment,p=t?t.nodeType:9;if(n=n||[],"string"!=typeof e||!e||1!==p&&9!==p&&11!==p)return n;if(!r&&((t?t.ownerDocu
```

in the EU



```
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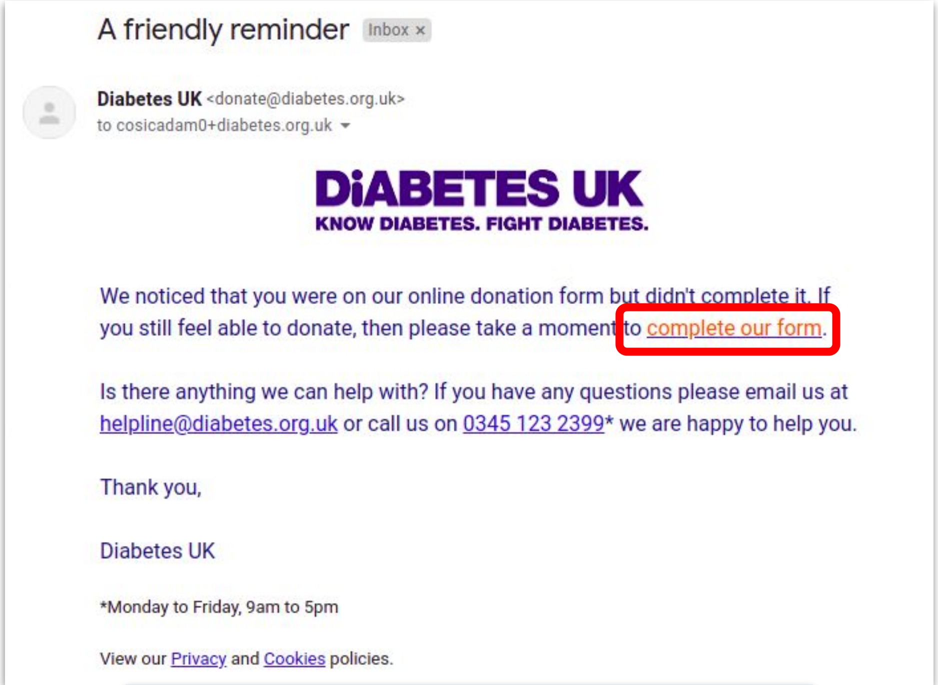
DECOMPILE, TRANSLATE, ADAPT, OR DISASSEMBLE ANY PART OF THE SOFTWARE,
NOR SHALL YOU ATTEMPT TO CREATE THE SOURCE CODE FROM THE OBJECT CODE FOR
ANY PART OF THE SOFTWARE.
JQuery Sizzle:
  This software consists of voluntary contributions made by many
  individuals. For exact contribution history, see the revision history
  available at https://github.com/jquery/sizzle
MD5 (Message-Digest Algorithm):
  available at http://www.webtoolkit.info/ */
window.sv_px={"url":"https://track.securedvisit.com","domain_data":{"sid_found":false,"ver":"1.0.0","sid_va
l":""}};
window.c=(function(){var i="1.0.1";var e="onready";var g="fire";function f(j){if(Array.isArray){return Array.
isArray(j)}else{return Object.prototype.toString.apply(j)==="[object Array]"}}function b(j,l){var k=l?l:j;if
(typeof k==="object"){k=JSON.stringify(k)}if(l){k=j+": "+k}console.log(k)}function h(j){this.name=j;this.call
backs=[]}h.prototype.registerCallback=function(j){this.callbacks.push(j)};function d(){this.type="";this.deta
il="";this.timeStamp=Date.now()}function a(){this.dataLayer={};this.events={};this.isReady=false}a.prototype.
registerEvent=function(j){this.events[j]=new h(j)};a.prototype.on=a.prototype.addEventListener=function(j,k)
{if(!this.events.hasOwnProperty(j)){this.registerEvent(j)}this.log("listening for",j,k);this.events[j].regist
erCallback(k)};a.prototype.fire=a.prototype.dispatchEvent=function(k,j){if(this.events.hasOwnProperty(k)){for
(var l=0;l<this.events[k].callbacks.length;l++){var n=this.events[k].callbacks[l];if(n){var m=new d();m.type=
k;m.detail=j;this.log("firing",k,j);n.call(this,m)}else{this.log("dispatching event with no callback",k,n)}}}
else{this.log("dispatching an event with no registered listeners",k,j)}};a.prototype.ready=function(){this.is
Ready=true;this.dispatchEvent(e,this)};a.prototype.push=function(o){var k=this,j=arguments.length;if(!f(o)){r
eturn}for(var m=0;m<j;m++){try{k[arguments[m][0]].apply(k,arguments[m].slice(1))}catch(n){}}};a.prototype.log
=function(m,l,j){var k;if(this.debug){k=m+" _svData.Event<"+l+">";b(k,j)}};function c(){var k=window._svData,
j=null;if(k){if(f(k)){j=new a();if(k.hasOwnProperty("debug")){j.debug=k.debug}j.push.apply(j,k);j.ready()}}el
se{j=new a();j.ready()}return j?j:k}return c()}());
!function(e){var t,n=!!e.sv_DNT,r=e.sv_px,o="https://track.securedvisit.com/citecapture",i=r&&"string"==typeo
f r.url&&"https:"==r.url.substring(0,6)?r.url:"https://track.securedvisit.com",u=i+"/identity",a={key:"sv_px_
domain_data",value:r&&r.domain_data?r.domain_data:void 0},c={key:"sv_pubid",value:e.sv_pubid},s={key:"sv_ci
d",value:e.sv_cid},l=!!e.sv_idq_wait&&[],f=function(e){function t(e,t,n,r){var o,i,u,a,c,l,d,v=t&&t.ownerDocu
ment,p=t?t.nodeType:9;if(n=n||[],"string"!=typeof e||!e||1!==p&&9!==p&&11!==p)return n;if(!r&&((t?t.ownerDocu
```

in the US

Received Emails

- 290 emails from 88 distinct sites
  - Offer a discount, or
  - Invite us back to their site



A friendly reminder

Diabetes UK <donate@diabetes.org.uk>
to cosicadam0+diabetes.org.uk

DiABETES UK
KNOW DIABETES. FIGHT DIABETES.

We noticed that you were on our online donation form but didn't complete it. If you still feel able to donate, then please take a moment to complete our form.

Is there anything we can help with? If you have any questions please email us at helpline@diabetes.org.uk or call us on 0345 123 2399* we are happy to help you.

Thank you,

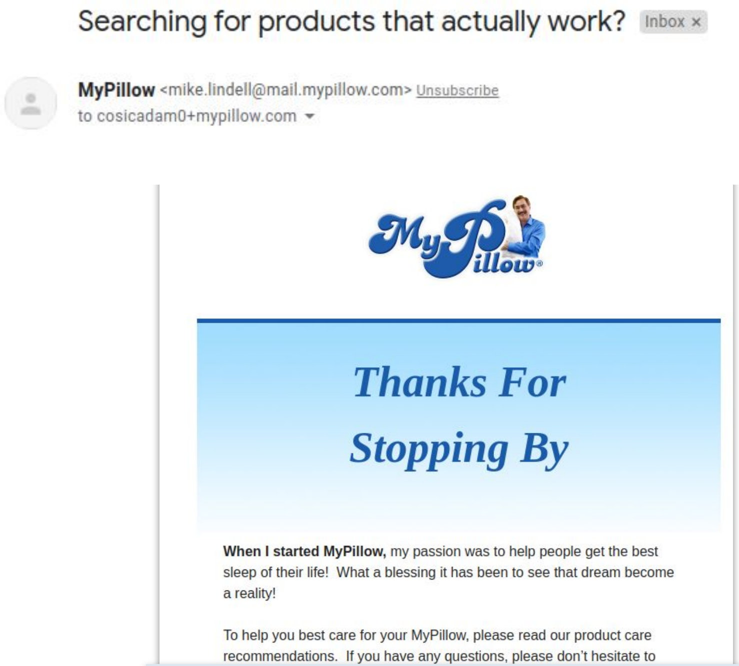
Diabetes UK

*Monday to Friday, 9am to 5pm

View our Privacy and Cookies policies.

Email from: diabetes.org.uk
Tracker domain: freshaddress.biz

Received Emails



Searching for products that actually work? Inbox ×

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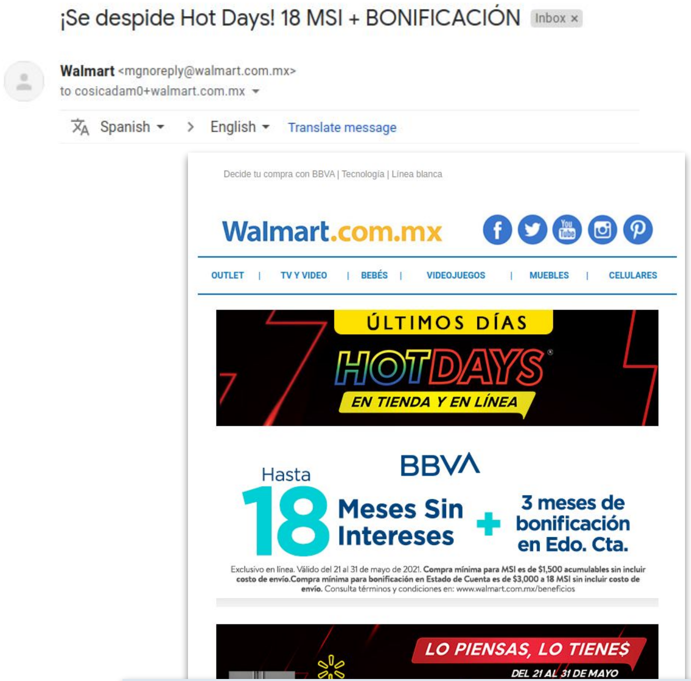
to cosicadam0+mypillow.com

Thanks For Stopping By

When I started MyPillow, my passion was to help people get the best sleep of their life! What a blessing it has been to see that dream become a reality!

To help you best care for your MyPillow, please read our product care recommendations. If you have any questions, please don't hesitate to

Email from: mypillow.com
Tracker domain: listrakbi.com



¡Se despide Hot Days! 18 MSI + BONIFICACIÓN Inbox ×

Walmart <mgnoreply@walmart.com.mx>
to cosicadam0+walmart.com.mx

Spanish > English Translate message

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HOTDAYS
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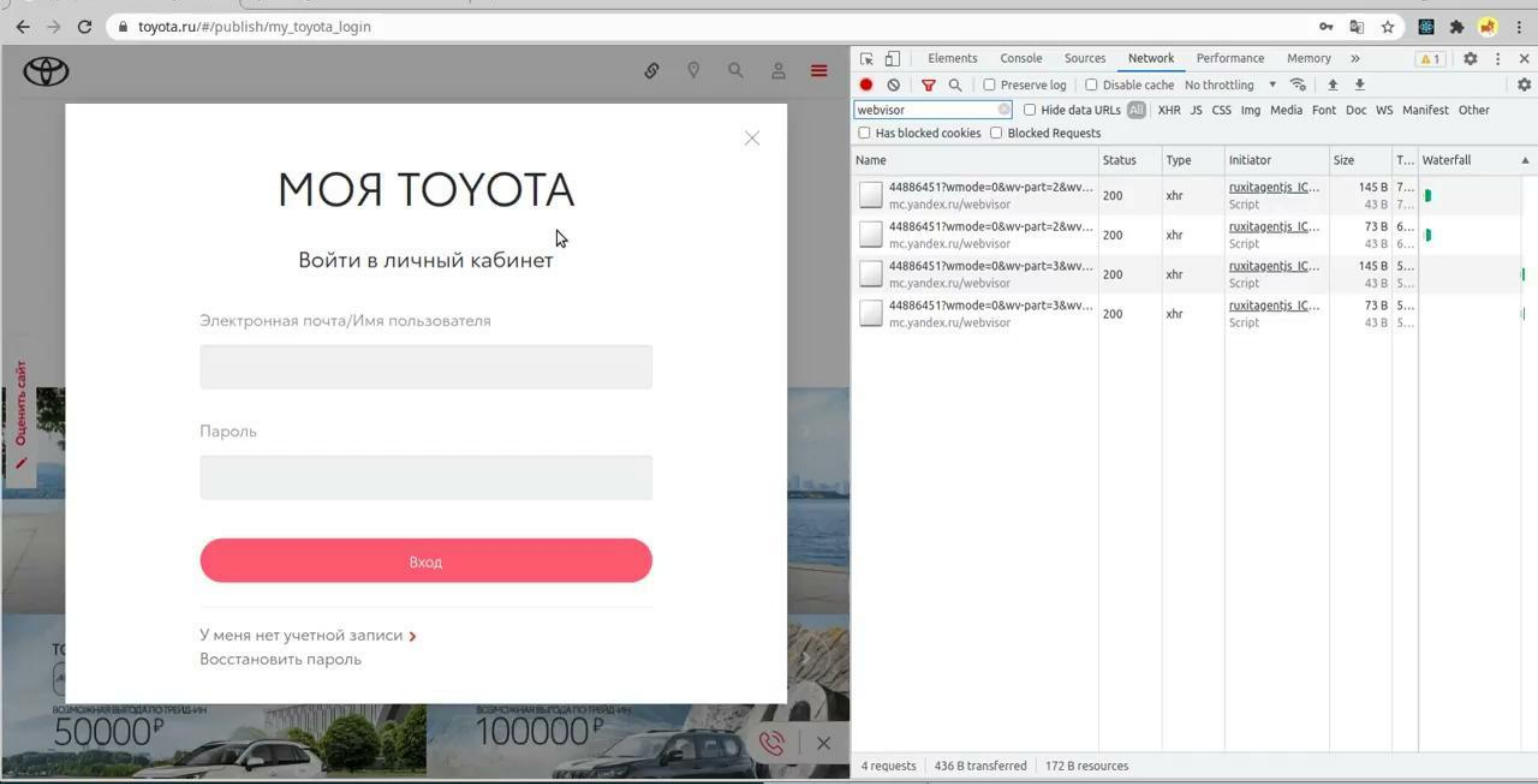
LO PIENSAS, LO TIENE$
DEL 21 AL 31 DE MAYO

Exclusivo en línea. Válido del 21 al 31 de mayo de 2021. **Compra mínima para MSI es de $1,500 acumulables sin incluir costo de envío.Compra mínima para bonificación en Estado de Cuenta es de $3,000 a 18 MSI sin incluir costo de envío.** Consulta términos y condiciones en: www.walmart.com.mx/beneficios

Email from: walmart.com.mx
Tracker domain: veinteractive.com

Password Leaks

- Incidental collection on 52 sites by
  - Yandex Metrica: due to React framework (50 websites)
  - Mixpanel: due to outdated SDK usage (1 website)
  - LogRocket: No response (1 website)
- Fixed thanks to our disclosures



toyota.ru/#/publish/my_toyota_login

МОЯ TOYOTA

Войти в личный кабинет

Электронная почта/Имя пользователя

Пароль

Вход

У меня нет учетной записи ›

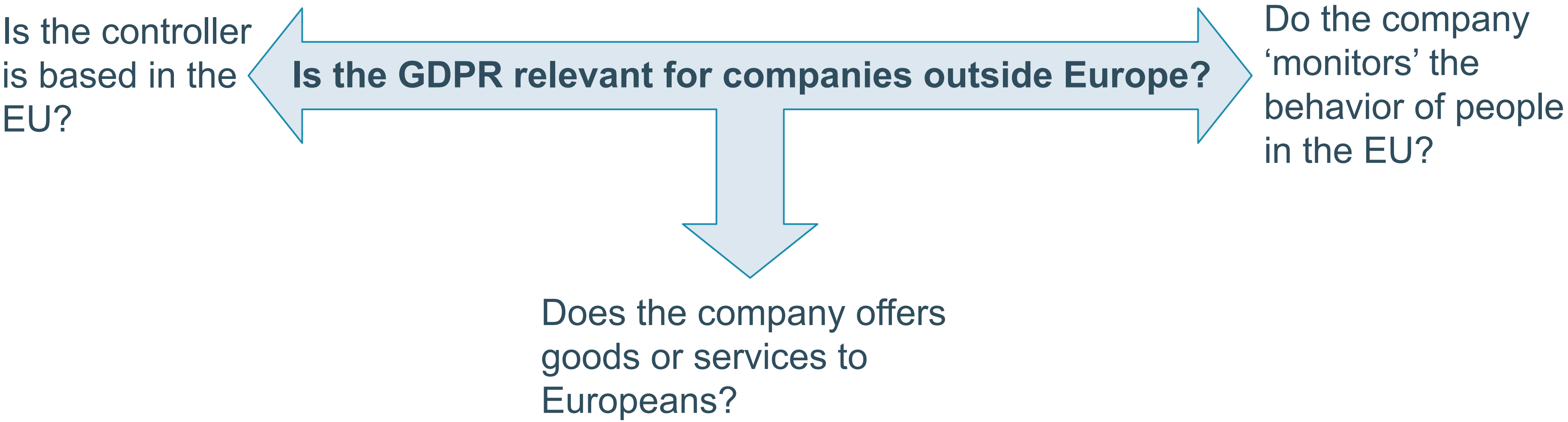
Восстановить пароль

webvisor

Name	Status	Type	Initiator	Size	T...
44886451?wmode=0&wv-part=2&wv... mc.yandex.ru/webvisor	200	xhr	ruxitagentjs_IC... Script	145 B 43 B	7... 7...
44886451?wmode=0&wv-part=2&wv... mc.yandex.ru/webvisor	200	xhr	ruxitagentjs_IC... Script	73 B 43 B	6... 6...
44886451?wmode=0&wv-part=3&wv... mc.yandex.ru/webvisor	200	xhr	ruxitagentjs_IC... Script	145 B 43 B	5... 5...
44886451?wmode=0&wv-part=3&wv... mc.yandex.ru/webvisor	200	xhr	ruxitagentjs_IC... Script	73 B 43 B	5... 5...

4 requests | 436 B transferred | 172 B resources

Does Email Exfiltration Comply With the GDPR?



Is the GDPR relevant for companies outside Europe?

Is the controller is based in the EU?

Does the company offers goods or services to Europeans?

Do the company ‘monitors’ the behavior of people in the EU?

Does Email Exfiltration Comply With the GDPR?

1. **Transparency principle**

   Personal data must be processed 'fairly and in a transparent manner'

2. **Purpose limitation principle**

   Controllers can only collect personal data if they specify a clear purpose in advance

3. **The requirement for a legal basis such as consent**

   The controller always needs a 'legal basis' to process personal data

Outreach Efforts

First parties: 30/58 replied →

- Were not aware & removed
  - fivethirtyeight.com (via Walt Disney's DPO)
  - trello.com (Atlassian)
- Marriott: Glassbox is used for **customer care, technical support, and fraud prevention**

Third parties: 15/28 replied →

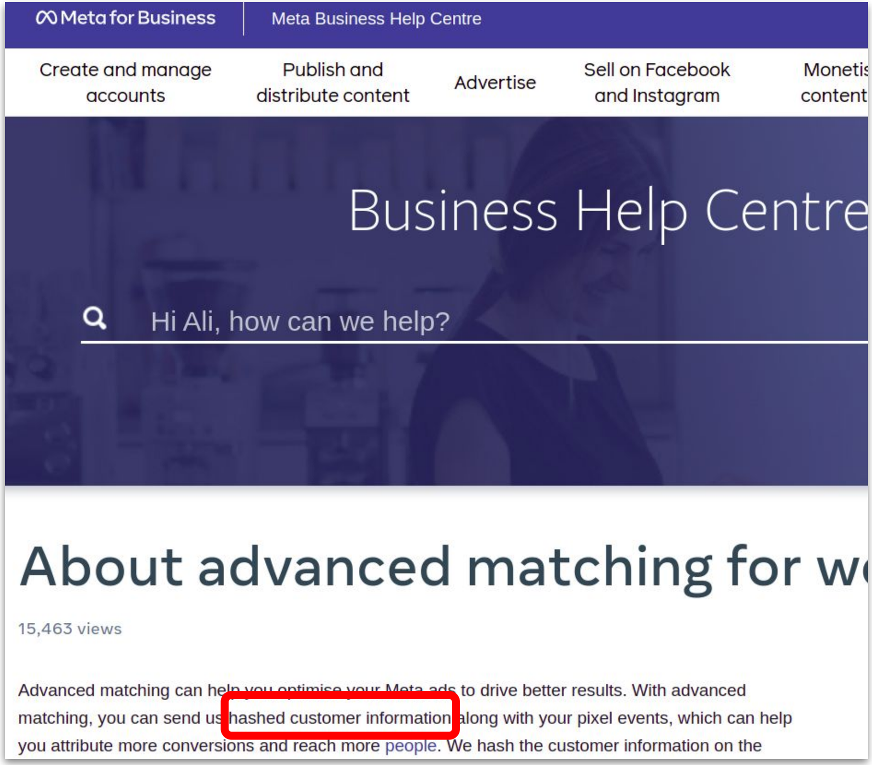
- Adobe and Yandex: Referred to corresponding first parties
- Taboola: ad & content personalization

0/33 first parties replied (Websites in the US crawl) →

- No response from these 33 websites.

Leaks to Facebook & TikTok

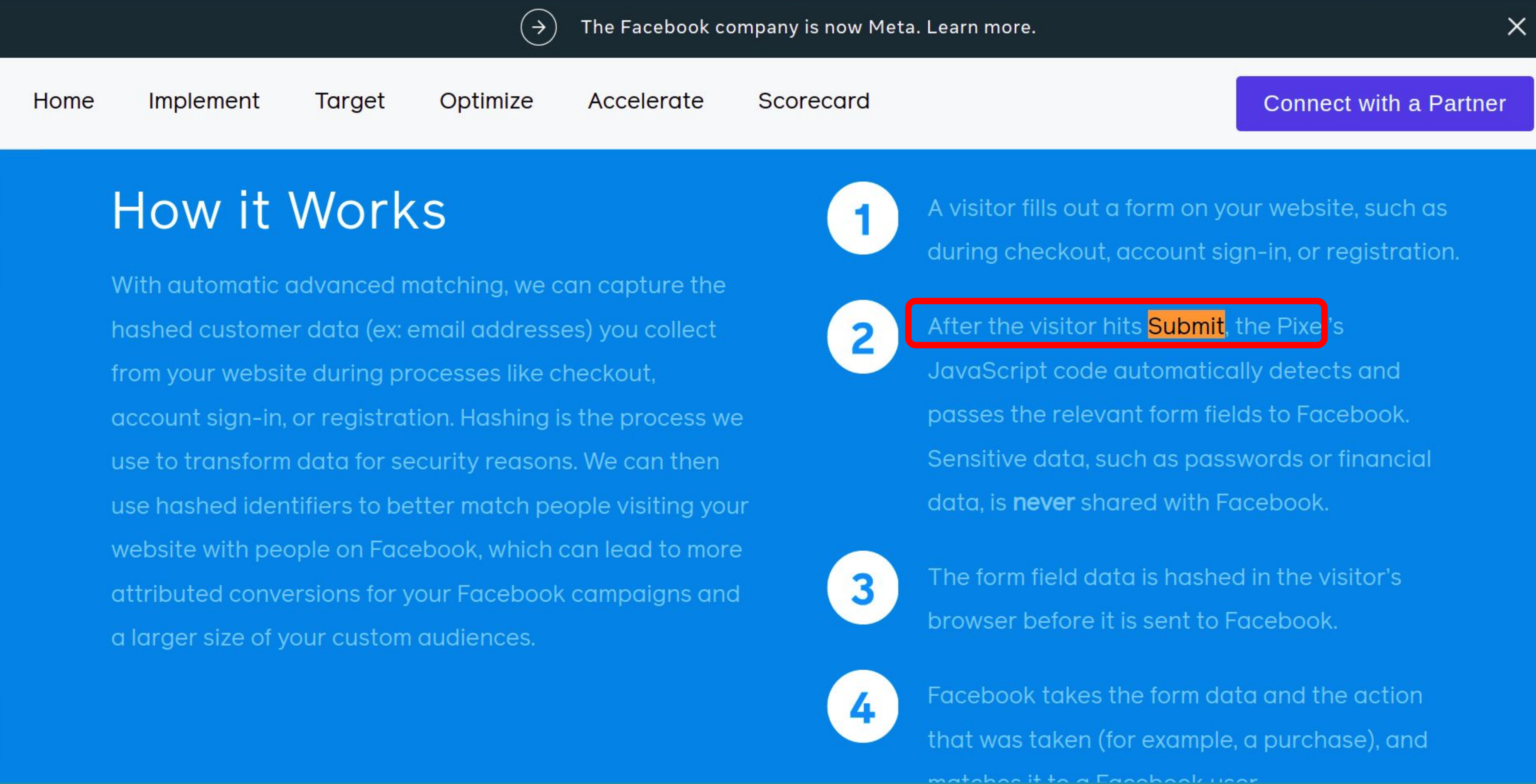
- Closer look to Facebook
- Due to Automatic Advanced Matching feature of Facebook/Tiktok Pixel (scrapes personal information from forms)


Meta for Business
Meta Business Help Centre
Create and manage accounts
Publish and distribute content
Advertise
Sell on Facebook and Instagram
Monetis content
Business Help Centre
Hi Ali, how can we help?

About advanced matching for we

15,463 views

Advanced matching can help you optimise your Meta ads to drive better results. With advanced matching, you can send us hashed customer information along with your pixel events, which can help you attribute more conversions and reach more people. We hash the customer information on the



How it Works

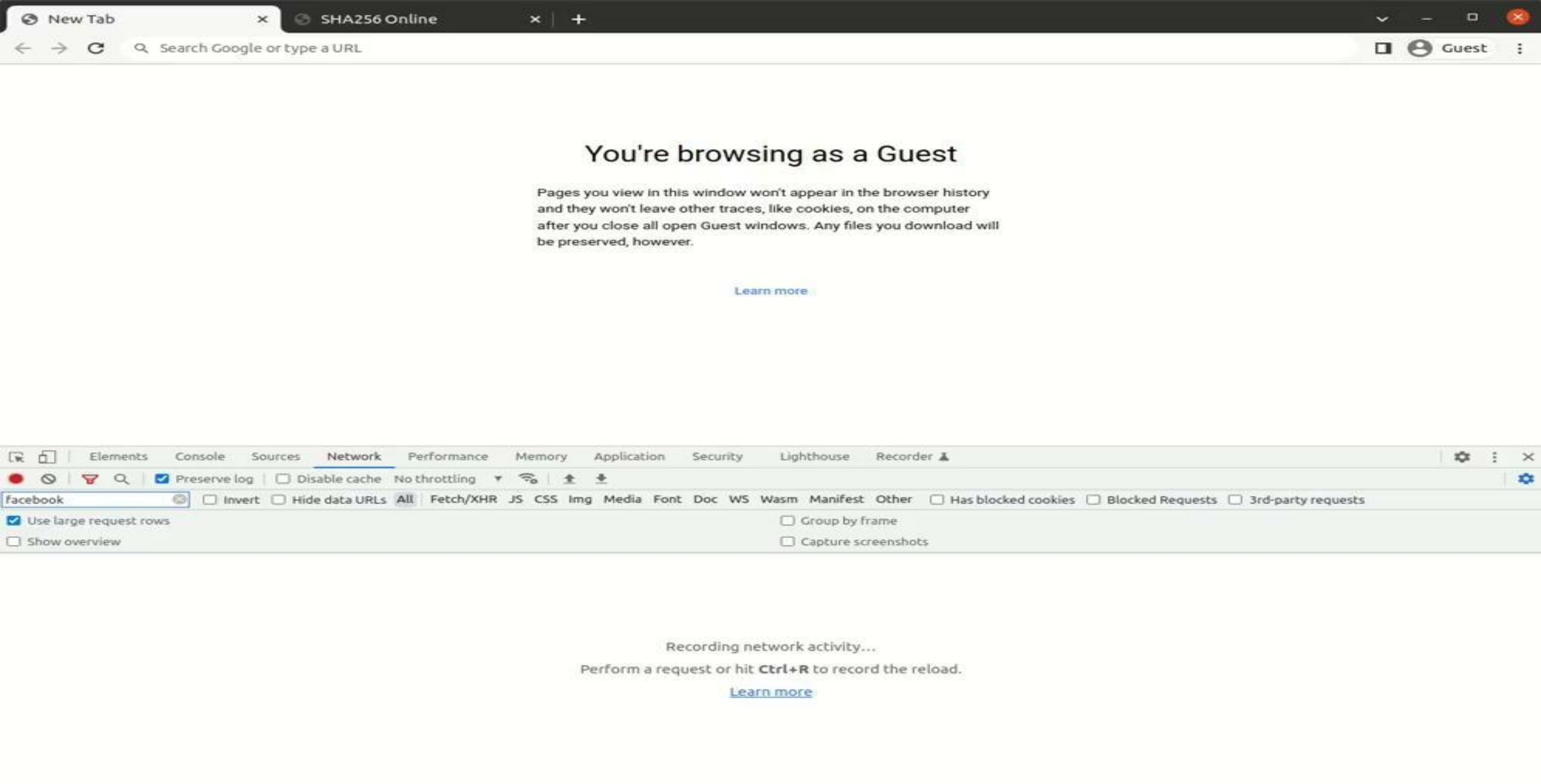
With automatic advanced matching, we can capture the hashed customer data (ex: email addresses) you collect from your website during processes like checkout, account sign-in, or registration. Hashing is the process we use to transform data for security reasons. We can then use hashed identifiers to better match people visiting your website with people on Facebook, which can lead to more attributed conversions for your Facebook campaigns and a larger size of your custom audiences.

1 A visitor fills out a form on your website, such as during checkout, account sign-in, or registration.

2 After the visitor hits Submit, the Pixel's JavaScript code automatically detects and passes the relevant form fields to Facebook. Sensitive data, such as passwords or financial data, is **never** shared with Facebook.

3 The form field data is hashed in the visitor's browser before it is sent to Facebook.

4 Facebook takes the form data and the action that was taken (for example, a purchase), and matches it to a Facebook user.



You're browsing as a Guest

Pages you view in this window won't appear in the browser history and they won't leave other traces, like cookies, on the computer after you close all open Guest windows. Any files you download will be preserved, however.

☑ Preserve log □ Disable cache

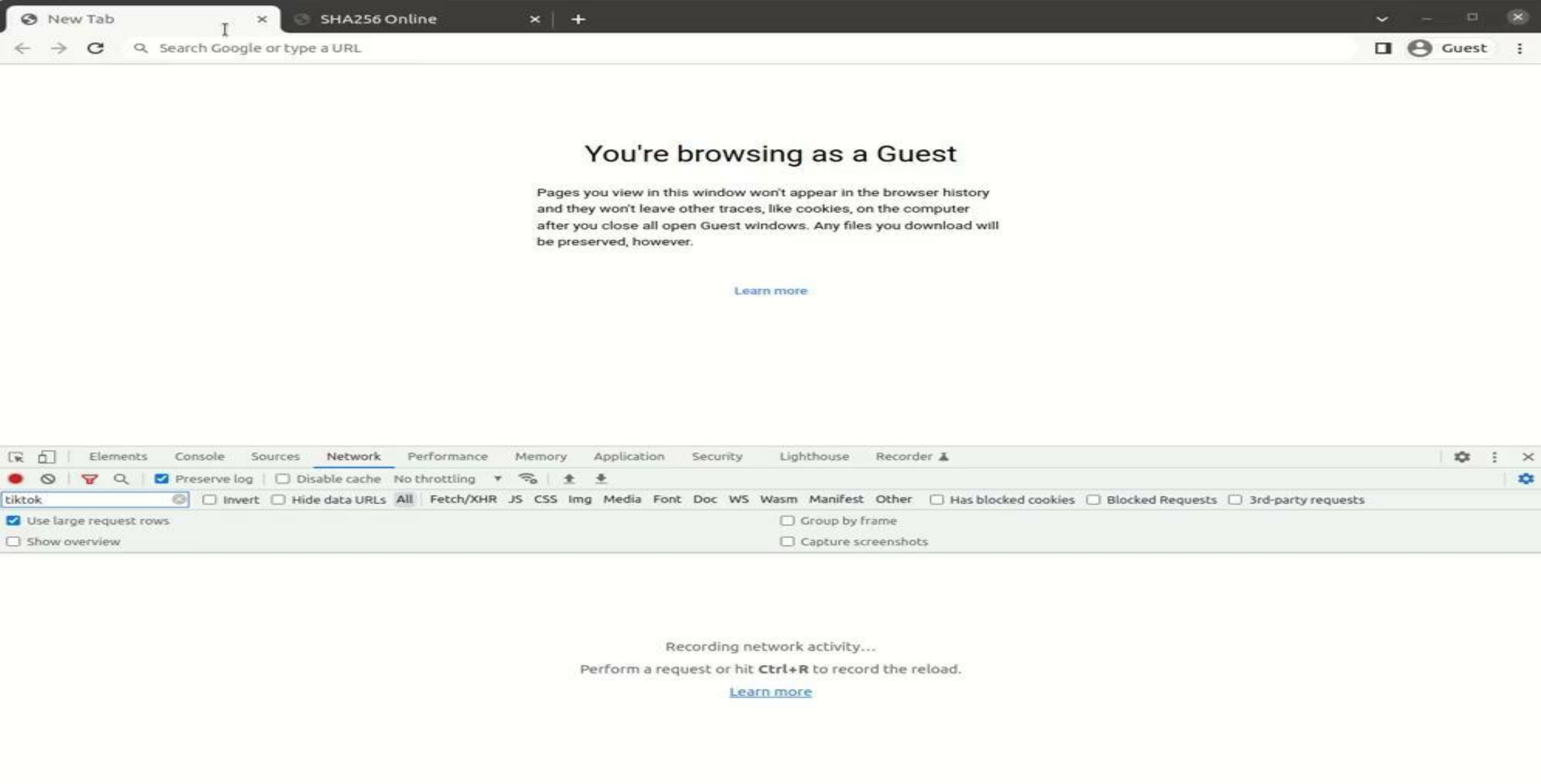
facebook □ Invert □ Hide data URLs □ Has blocked cookies □ Blocked Requests □ 3rd-party requests

☑ Use large request rows □ Group by frame

□ Show overview □ Capture screenshots

Recording network activity…

Perform a request or hit **Ctrl+R** to record the reload.



You're browsing as a Guest

Pages you view in this window won't appear in the browser history and they won't leave other traces, like cookies, on the computer after you close all open Guest windows. Any files you download will be preserved, however.

Filter: tiktok

☑ Preserve log ☐ Disable cache

☐ Invert ☐ Hide data URLs ☐ Has blocked cookies ☐ Blocked Requests ☐ 3rd-party requests

☑ Use large request rows ☐ Group by frame

☐ Show overview ☐ Capture screenshots

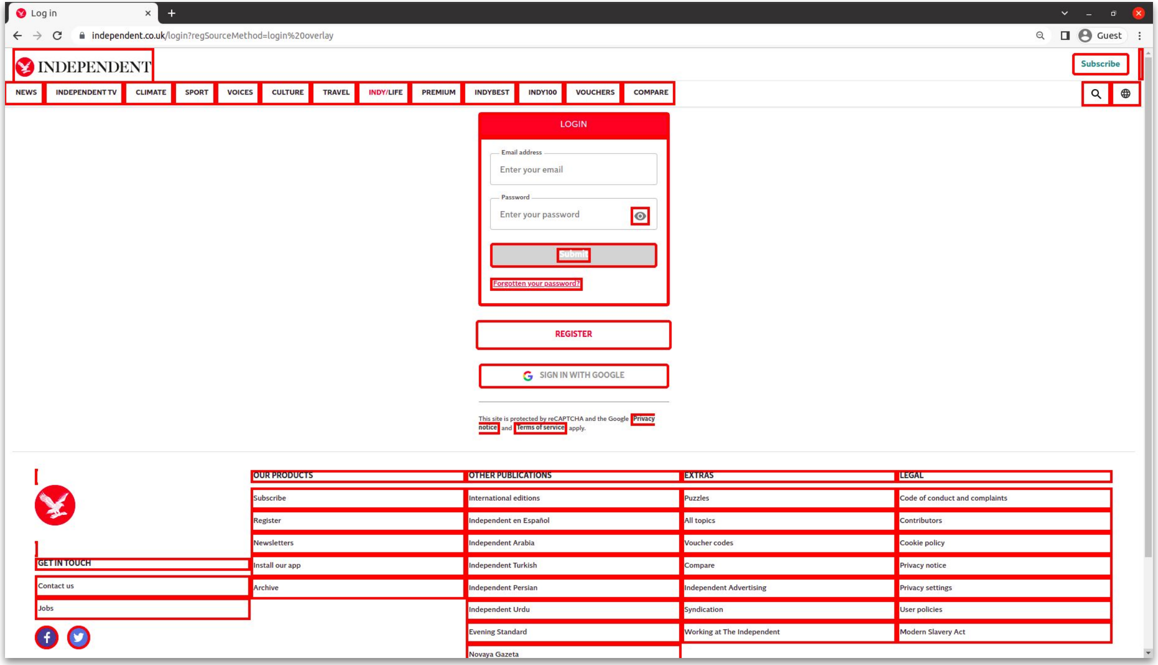
Recording network activity…

Perform a request or hit **Ctrl+R** to record the reload.

Leaks to Facebook & TikTok

- Triggered when the user clicks any **link** or **button** on the page

	EU	US
Facebook	7,379	8,438
TikTok	147	154



Log in

independent.co.uk/login?regSourceMethod=login%20overlay

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Email address: Enter your email

Password: Enter your password

Submit

Forgotten your password?

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SIGN IN WITH GOOGLE

This site is protected by reCAPTCHA and the Google Privacy notice and Terms of service apply.

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Independent Advertising

Syndication

Working at The Independent

LEGAL

Code of conduct and complaints

Contributors

Cookie policy

Privacy notice

Privacy settings

User policies

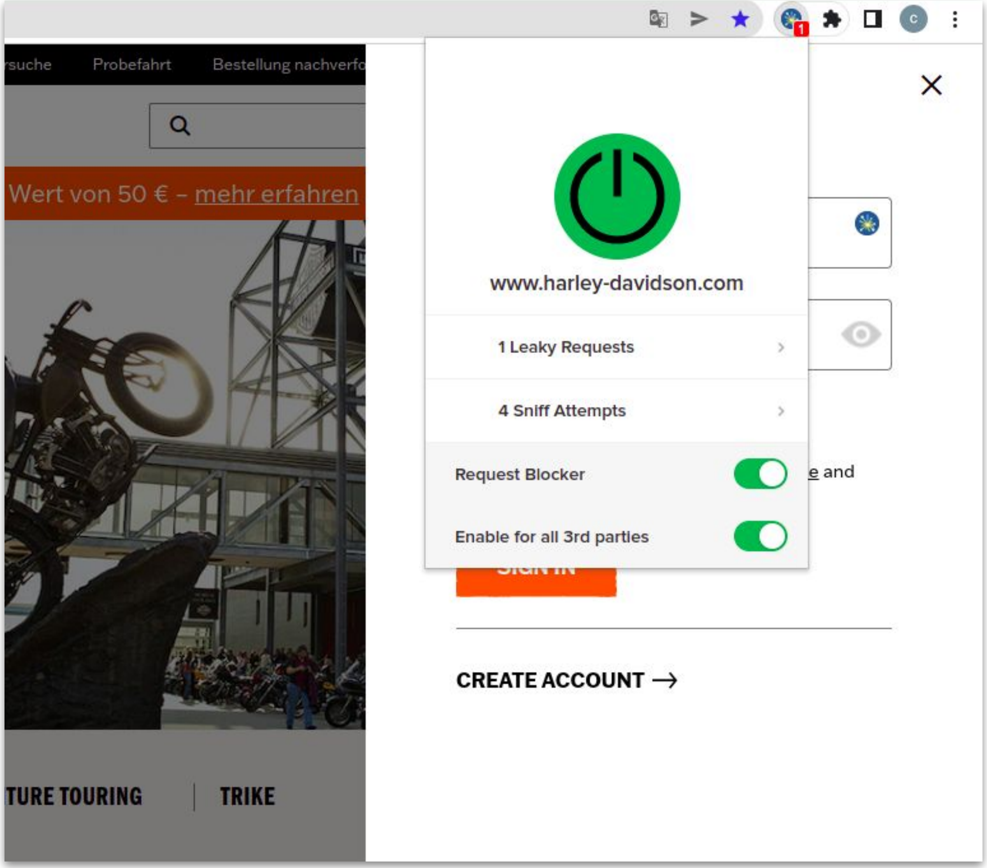
Modern Slavery Act

Countermeasures

- Adblockers that block requests to tracker domains
- Private email relay services that hide users’ emails
    - Apple, Mozilla, DuckDuckGo
    - e.g. testuser@duck.com-> testuser@gmail.com
- NO tool for detection and prevention of sniff & exfiltration on online forms

LEAKINSPECTOR

- Proof-of-concept browser add-on
- (https://github.com/leaky-forms/leak-inspector)
- Detects sniff attempts
- Blocks leaky requests



www.harley-davidson.com

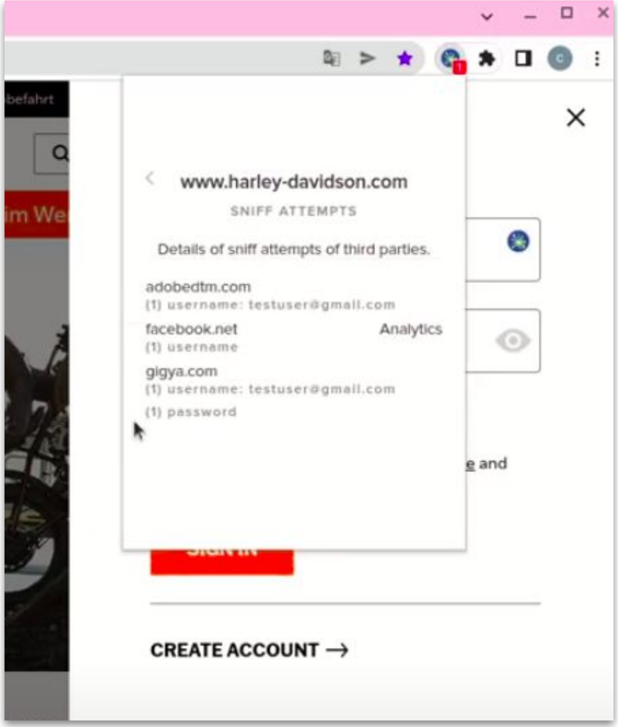
1 Leaky Requests

4 Sniff Attempts

Request Blocker

Enable for all 3rd parties

LeakInspector



www.harley-davidson.com

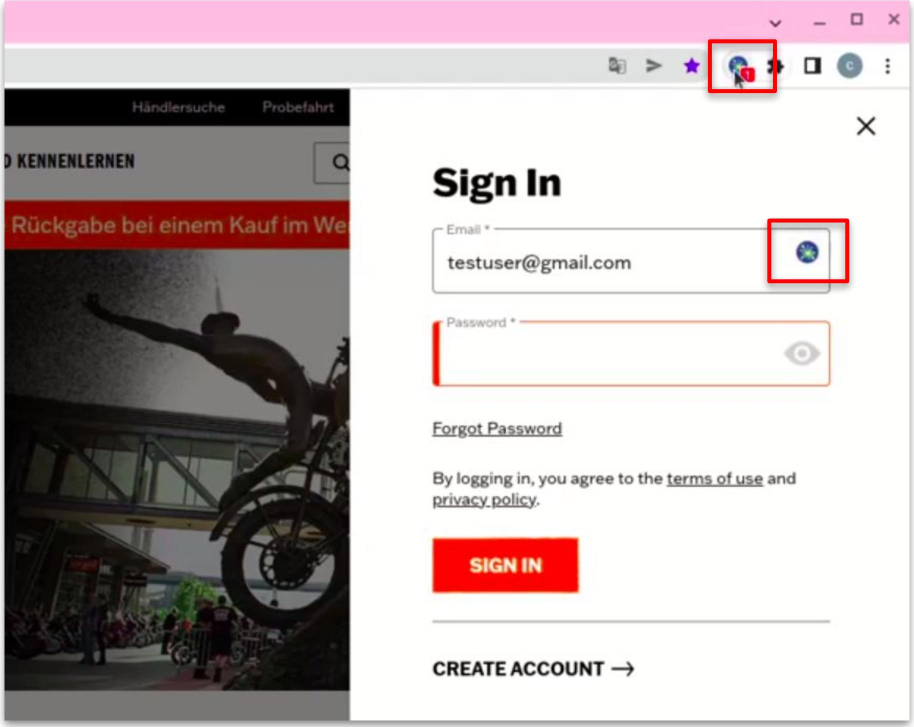
SNIFF ATTEMPTS

Details of sniff attempts of third parties.

adobedtm.com
(1) username: testuser@gmail.com

facebook.net Analytics
(1) username

gigya.com
(1) username: testuser@gmail.com
(1) password



Sign In

Email *
testuser@gmail.com

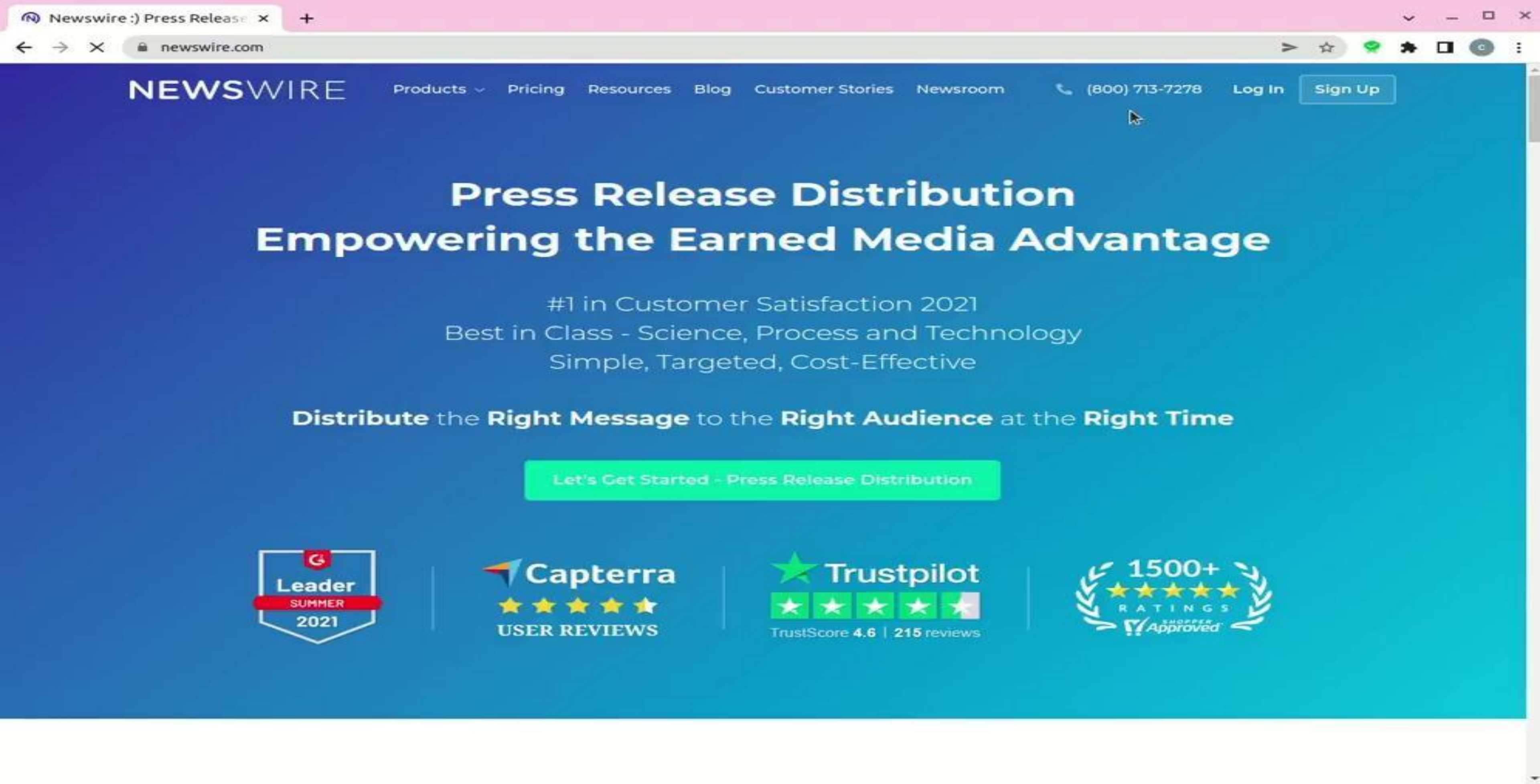
Password *

Forgot Password

By logging in, you agree to the terms of use and privacy policy.

SIGN IN

CREATE ACCOUNT →



Press Release Distribution
Empowering the Earned Media Advantage

#1 in Customer Satisfaction 2021
Best in Class - Science, Process and Technology
Simple, Targeted, Cost-Effective

Distribute the **Right Message** to the **Right Audience** at the **Right Time**

Let's Get Started - Press Release Distribution
G2 Leader SUMMER 2021
Capterra USER REVIEWS
Trustpilot
TrustScore 4.6 | 215 reviews
1500+ RATINGS Shopper Approved

Summary

- Email leaks on 1,844 (EU), 2,950 (US) websites
- Password leaks on 52 websites due to session replay scripts
- Uncovered 41 unlisted tracking domains
- Developed a transparency browser add-on that detects and blocks personal data exfiltration from online forms

Any Questions?

- Project's Website

- Source Codes: