GDPR Banner Saliency

Measuring the saliency of GDPR privacy policy banners across EU websites

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What is GDPR?

And why do we care about it?

GDPR

- The **General Data Protection Regulation (GDPR)** is a set of laws in the European Union that govern how companies should process and handle personal user data.
- Put into effect on May 25, 2018.
- "With the GDPR, Europe is signaling its firm stance on data privacy and security at a time when **more people are entrusting their personal data with cloud services and breaches are a daily occurrence**."

Cookies, the GDPR, and the ePrivacy Directive, 2019

Why is this important?

Privacy as a right:

European Convention on Human Rights of 1950 states:

"Everyone has the right to respect for his private and family life, his home and his correspondence."

It's expensive to not comply:

"...the fines for violating the GDPR are very high. There are two tiers of penalties, which max out at €20 million or 4% of global revenue (whichever is higher), plus data subjects have the right to seek compensation for damages."

Cookies, the GDPR, and the ePrivacy Directive, 2019

The European convention on human rights. (1952)

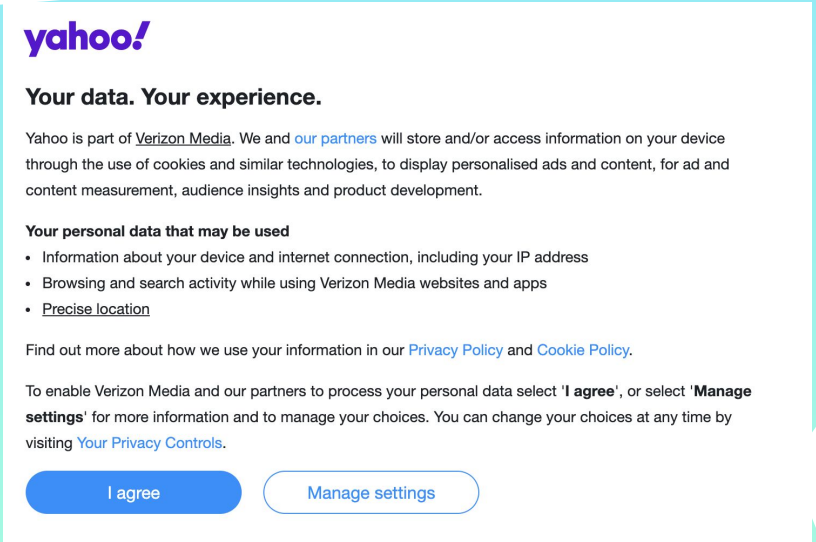
C is for Cookies... and Consent.

- Cookies are small text files used by websites to track and store information about individual users. These can be potentially harmful if exploited, particularly without the user's consent.
- GDPR lays out a series of laws around how websites should inform visitors about how these cookies will be used and stored.

Cookies, the GDPR, and the ePrivacy Directive, 2019

How it's implemented

A key feature of managing GDPR compliance is capturing user consent through "Cookie Banners" such as this one:



The Problem

How can a user consent if they don't see the cookie banner?

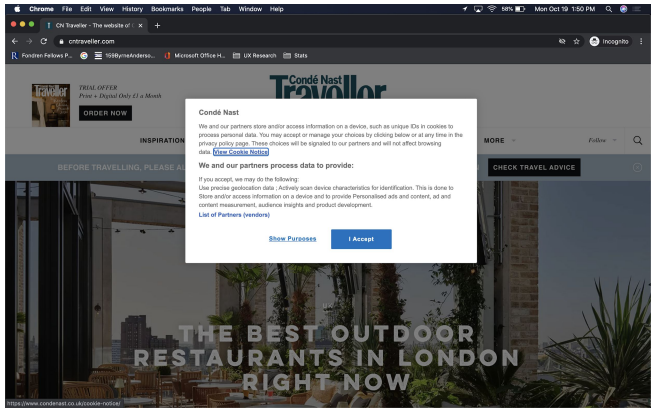
- If the cookie banner isn't salient enough, users may not have the opportunity to actively give their consent.
- This can become an expensive problem for the company.
- And a moral dilemma for all parties.

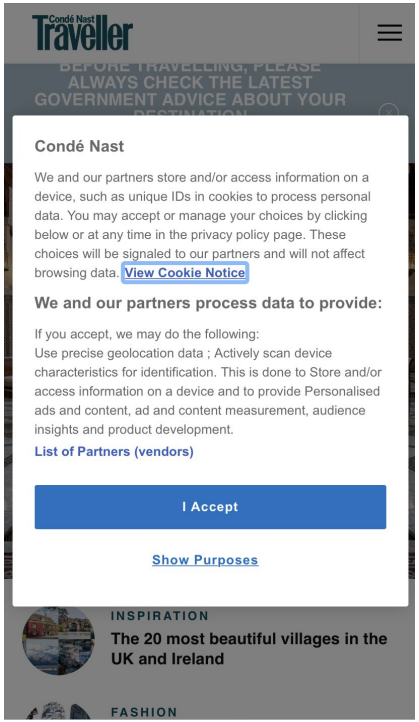
Method

Data

Data used was 10 webpages

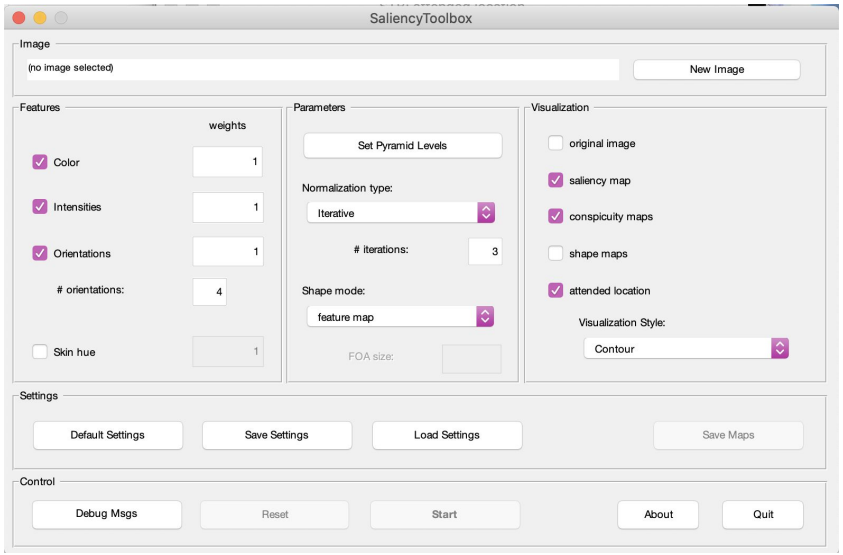
- Each Web page had to two images: Mobile and Desktop
- Websites were European based and part of the EU
- Websites were in English
- Websites were selected to represent different categories





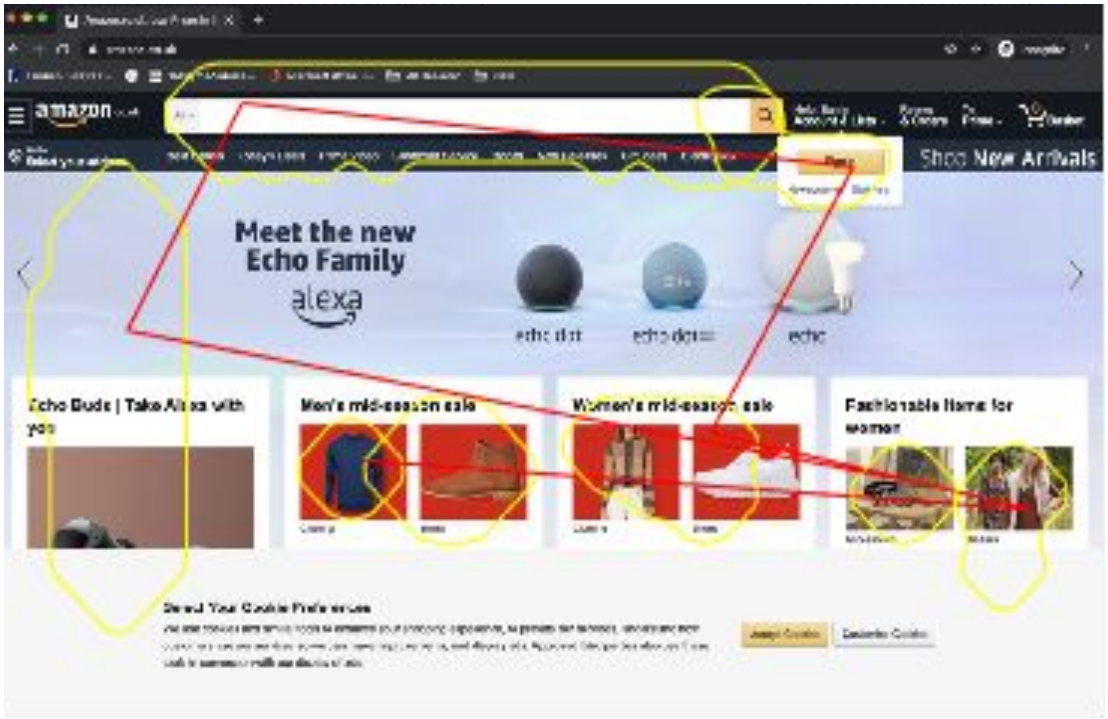
Saliency Toolbox 2.3

- Analyze the image and provides the most salient part
  - Provides time estimate of most salient part (in milliseconds)
  - Provides saliency map of the image
- Also provides the second, third and so on, most salient part of the image.
  - This is provided like a road map overlayed on the image.



Walter & Koch, 2006

Saliency Toolbox 2.3



Procedure

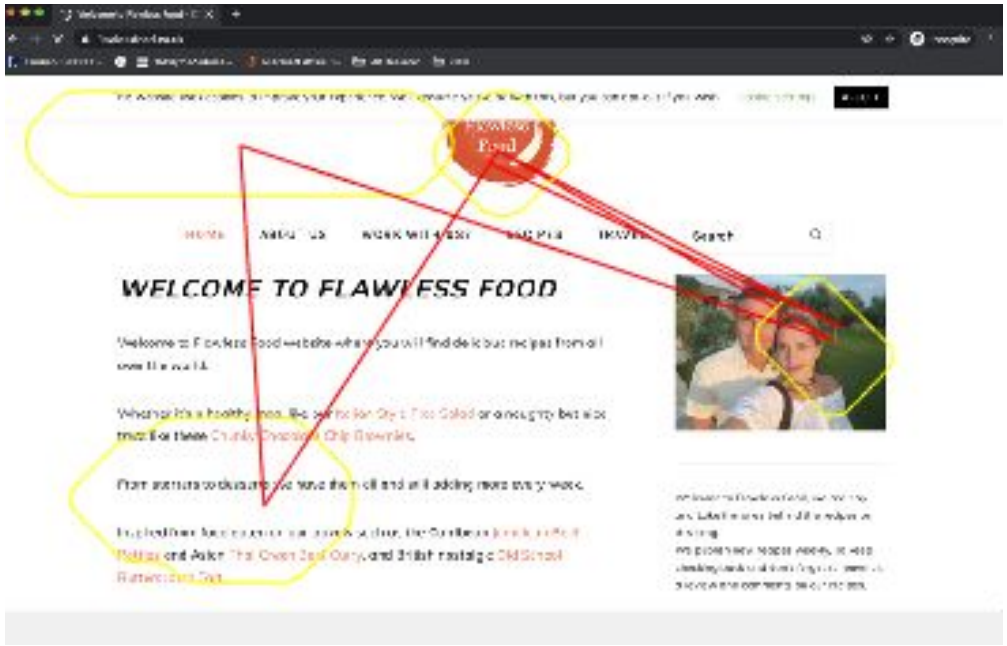
- 2 screenshots were obtained for each website
  - Mobile - iPhone X
  - Desktop - MacOS Catalina
- Each image was run through the Saliency Toolbox 2.3
  - Most salient part image overlay, saliency map and time were obtained

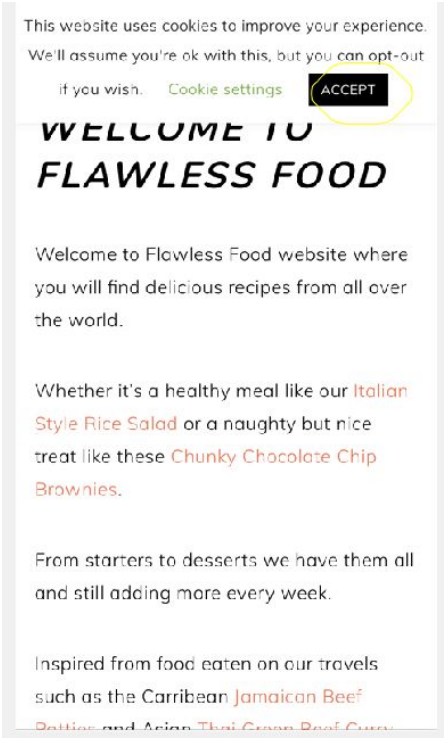
Assumptions

- If users see the Cookies Banner, they will accept or deny
- Image saliency alone is what determines the likelihood of interacting with the Cookies Banner
- Cookies Banner saliency is determined if the salient area includes part of the banner as long as the area contains text and/or a button

Results

- A highly salient “Accept Cookies” banner in the mobile version of a website does not always translate to a highly salient statement in the desktop version





Saliency Classification

Rank	Category Definition
1st (best)	The websites that measured the “Accept Cookies” bar as the most salient on the first try
2nd	The websites that measured the “Accept Cookies” bar as the most salient on the second try
3rd (worst)	The websites that measured the “Accept Cookies” bar as the most salient on the third+ try

Saliency Classification

Mobile Sites		
1 (Best)	2 (Acceptable)	3 (Worst)
Best Companies (97ms)	Hubspot (174ms)	Amazon (486ms)
Flawless Food (98ms)	Yahoo (177ms)	Chanel (509ms)
Conde Nast (100ms)		Emirates (4914ms)
Trinity College (102ms)		Savills (5000+ ms)

Desktop Sites		
1 (Best)	2 (Acceptable)	3 (Worst)
Conde Nast (99ms)	Chanel (168ms)	Best Companies (490ms)
Yahoo (102ms)	Savills (172ms)	Emirates (620ms)
Trinity College (106ms)	Hubspot (174ms)	Amazon (811ms)
		Flawless Food (4863 ms)

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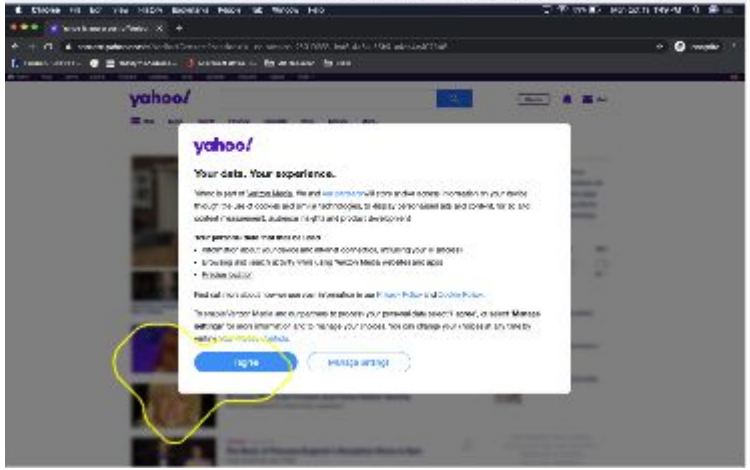
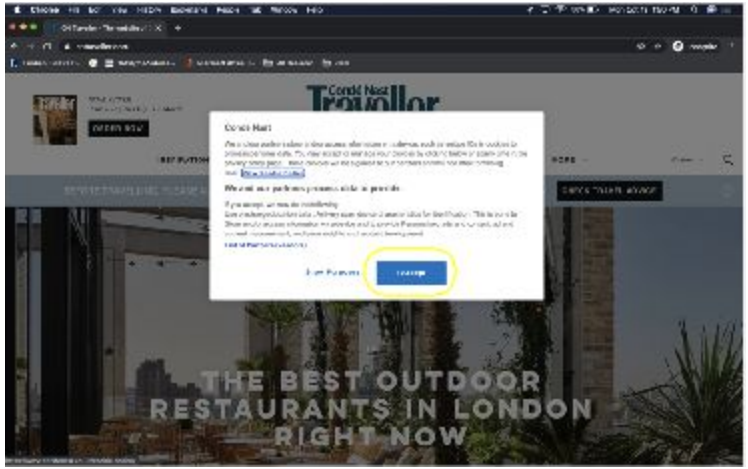
Between Subjects ANOVA

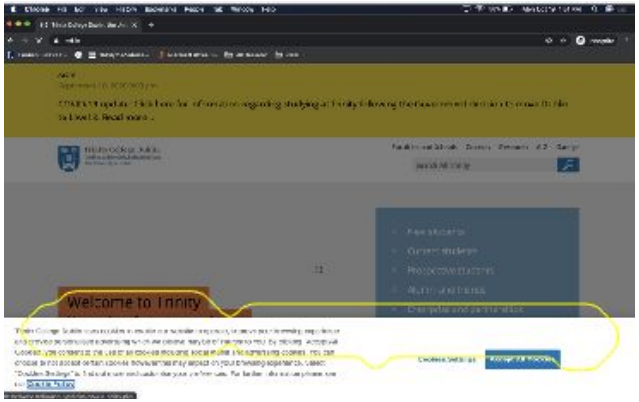
- Site Type (Mobile vs Desktop) by Category (1 vs 2 vs 3)
- DV: Time
- Mostly Interested in site type by category interaction (not main effects)
    - Is mobile or desktop faster for any of the three categories?
- No interaction, $F(2,14) = .23$, $p = .797$, $\eta^2_p = .032$

Analysis

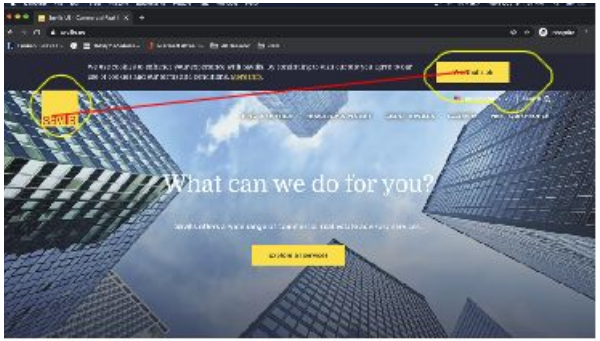
If you really care about being GDPR compliant:

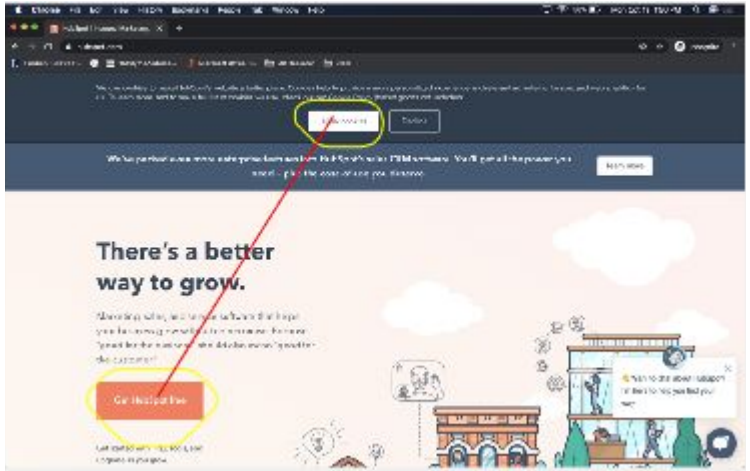

yahoo!
yahoo!
Your data. Your experience.

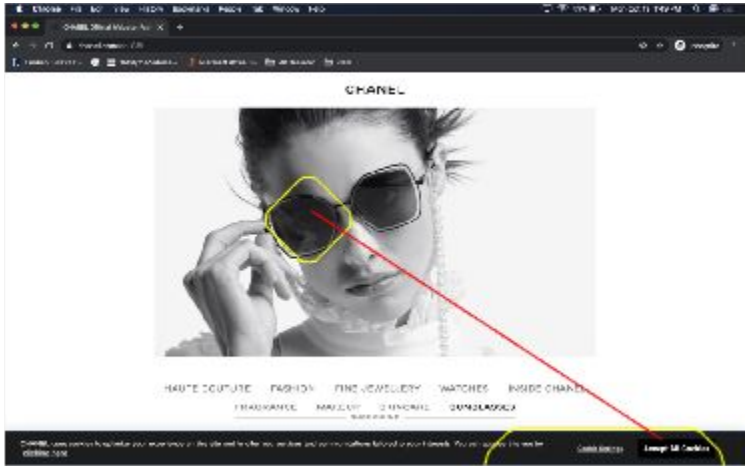

Condé Nast Traveller
THE BEST OUTDOOR RESTAURANTS IN LONDON RIGHT NOW


Welcome to Trinity

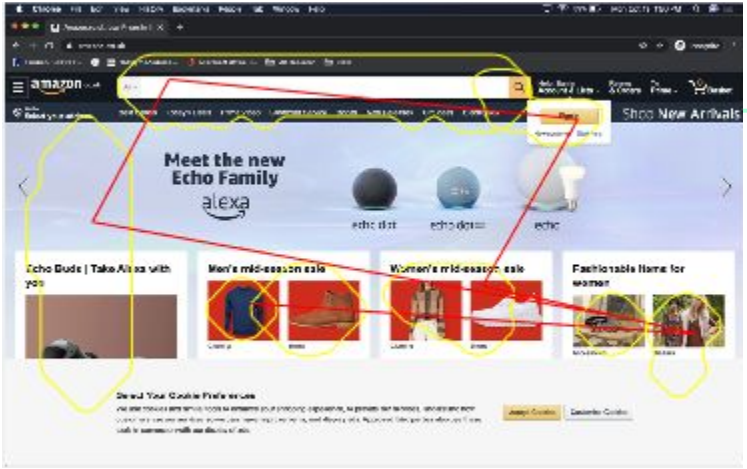
If you care about being GDPR compliant, but it's not your number one priority:

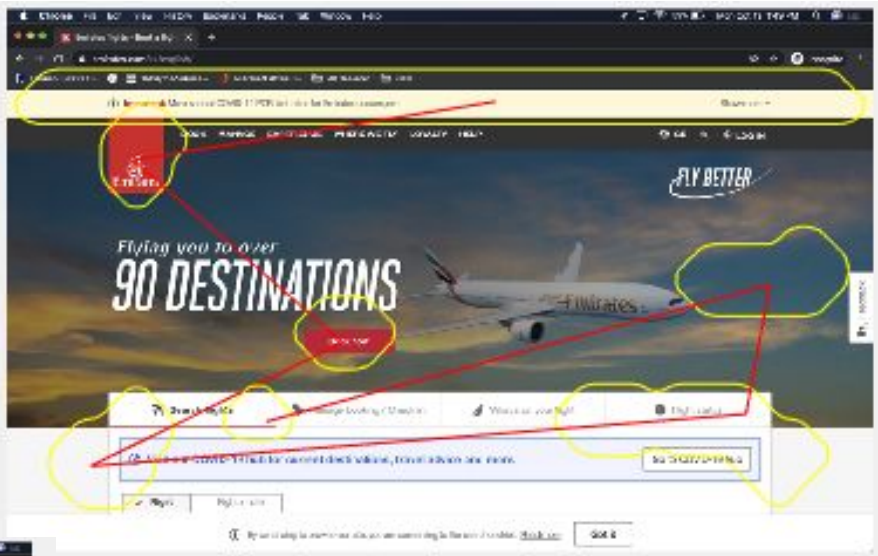

What can we do for you?

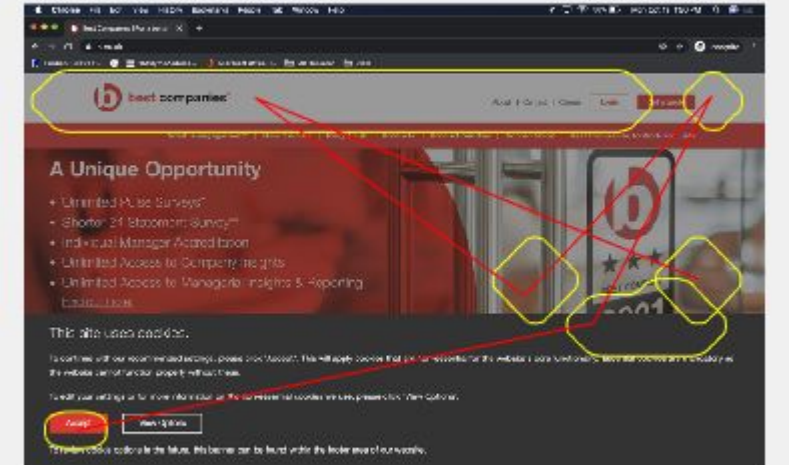

There's a better
way to grow.


CHANEL

If you don’t care about GDPR compliance at all:


Meet the new
Echo Family
alexa
Shop New Arrivals
Echo Buds | Take Alexa with you
Men's mid-season sale
Women's mid-season sale
Fashionable Items for women


Flying you to over
90 DESTINATIONS
FLY BETTER


best companies
A Unique Opportunity
This site uses cookies.

Limitations of study

- Only measured saliency:
  - Does not take into account other user/banner behaviors
  - Does not take into account user intent
- Would benefit from measuring eye tracking and mouse heatmap.
- GDPR laws are very intricate; there are ways that companies bypass having users explicitly consent through legalese and calculated risks that we did not take into account for our analysis.

Thank You!

References

- Cookies, the GDPR, and the EPrivacy Directive.” GDPR.eu, 9 May 2019, gdpr.eu/cookies/.
- The European convention on human rights. (1952). Strasbourg: Directorate of Information.
- Walther, D. & Koch, C. (2006). Modeling attention to salient proto-objects. *Neural Networks, 19*, 1395-1407