Are cookie banners indeed compliant with the law?

Deciphering EU legal requirements on consent and technical means to verify compliance of cookie banners

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Abstract

In this work, we analyze the legal requirements on how cookie banners are supposed to be implemented to be fully compliant with the ePrivacy Directive and the GDPR.

Our contribution resides in the definition of 17 operational and fine-grained requirements on cookie banner design that are legally compliant, and moreover, we define whether and when the verification of compliance of each requirement is technically feasible.

The definition of requirements emerges from a joint interdisciplinary analysis composed of lawyers and computer scientists in the domain of web tracking technologies. As such, while some requirements are provided by explicitly codified legal sources, others result from the domain-expertise of computer scientists. In our work, we match each requirement against existing cookie banners design of websites. For each requirement, we exemplify with compliant and non-compliant cookie banners.

As an outcome of a technical assessment, we verify per requirement if technical (with computer science tools) or manual (with any human operator) verification is needed to assess compliance of consent and we also show which requirements are impossible to verify with certainty in the current architecture of the Web. For example, we explain how the GDPR’s requirement for revocable consent could be implemented in practice: when consent is revoked, the publisher should delete the consent cookie and communicate the withdrawal to all third parties who have previously received consent.

With this approach we aim to support practically-minded parties (compliance officers, regulators, privacy NGOs, researchers, and computer scientists) to assess compliance and detect violations in cookie banners’ design and implementation, specially under the current revision of the EU ePrivacy framework.

Keywords: legal compliance, cookies and similar technologies, consent, cookie banners, General Data Protection Regulation, ePrivacy Directive, web tracking technologies, legal requirements, technical verification, ePrivacy Regulation, detection of violations

1. Introduction

The ePrivacy Directive¹ 2002/58/EC, as amended by Directive 2009/136/EC stipulates the need for consent for the storage of or access to cookies (and any tracking technologies, e.g. device fingerprinting) on the user’s terminal equipment, as the lawfulness ground, pursuant to Article 5(3) thereof. The rationale behind this obligation aims to give users control of their data. Hence, website publishers processing personal data are duty-bound to collect consent. Consequently, an increasing number of websites now display (cookie) consent banners.²

However, there is no established canonical form for the consent request. It is clear from Recital 17 of the ePD that a user’s consent may be given by any appropriate method. Website operators are free to use or develop consent flows that suits their organization, as long as this consent can be deemed valid under EU

¹ In this paper we will only regard to the recent amended version of the ePrivacy Directive, the Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users’ rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws (Text with EEA relevance) OJ L 337, 11–36 (hereinafter named ‘ePD’).
² Jannick Sørensen, Sokol Kosta, ‘Before and After GDPR: The Changes in Third Party Presence at Public and Private European Websites’ (Proceedings of the World Wide Web Conference, ACM, NY, USA, 2019) 1590–1600.
legislation (Article 29 Working Party, WP259 rev.01). As such, excessive focus is being placed on the manufacturing of consent, taken up by consent management platforms and tools. The most known ways to collect consent is through ‘cookie banners’, or also often referred to as prompts, overlays, cookie bars, cookie pop-up-boxes that pop up or slide atop websites prominently. Their design and functionality differ – the simplest banners merely state that the website uses cookies without any options, whereas the most complex allow users to individually (de)select each third-party service used by the website.

Amid information overload and the development of manipulative dark patterns that lead to nudging users to consent, data subjects are not always able to easily understand the outcomes of data collection, and the use of their data.

The assessment as to whether or not cookie banner designs implemented by website operators fulfil all the requirements for valid consent, as stipulated by the General Data Protection Regulation (hereinafter named GDPR), is considered in the guidelines of both the Article 29 Working Party and Data Protection Authorities (hereinafter named 29WP and DPAs), as described in section 6.2. These guidelines provide a useful framework of what is a valid consent for cookie banners, but they do not define how to assess, in practice, their legal compliance. These guidelines consist mostly on interpretative elements yet rendering still a vague guidance on the consent elements implementation. Even though Recital 66 of the ePD disposes that ‘the enforcement of these requirements should be made more effective by way of enhanced powers granted to the relevant National Authorities’, this point is still under work, despite the recent guidelines issued by the UK, French, German, Irish, Danish, Finish and Spanish DPAs. The legislative provisions in the GDPR are purposefully general to cover a range of different scenarios, including unanticipated future developments. The ePD Directive does not sketch procedures to guide the enforcement of its principles, nor provides guidelines to perform systematic audits. Moreover, the lack of automatic tools which can verify whether a website violates the legislative instruments makes it possibly complicated for the deputed agencies to plan systematic audits.

The consequence of not complying with the requirements for a valid consent renders the consent invalid and the controller may be in breach of Article 6 of the GDPR. Hence, the controller may be subject to fines (Article 83). We consider in this work that there is a need for a technical perspective in the analysis of a valid consent for browser-based tracking technologies (including cookies), as processing operations of web services are technology intensive. This means that the use of the technology underlying processing operations is such, that specific guidance on the use of that technology is needed to adequately protect personal data, while managing cookies on the server side, the third-party side, and also on the side of designers and/or developers of websites. We state that a privacy by design approach, as posited in Article 25 of the GDPR, advocates

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3 In this paper, we provide many excerpts of the opinions and guidelines of the Article 29 Working Party. For readability and presentation purposes, we convey in the text of the article the abbreviation ‘29WP’, followed by the reference number of each opinion. Even if the European Data Protection Board has endorsed the endorsed the GDPR related WP29 Guidelines, for simplicity purposes, we only mention Article 29 Working Party.

4 Article 29 Working Party, ‘Guidelines on consent under Regulation 2016/679’ (WP259 rev.01, 10 April 2018).

5 For example, the Commission Nationale de l'Informatique et des Libertés (henceforth named CNIL) decided to remove its cookie banner and to leave no tracer until the user has consented by going actively to the cookie management menu or directly through the content pages. This choice not to use a banner is neither an obligation nor a recommendation for other websites that are free to adopt solutions tailored to their situation, in compliance with the GDPR, European Commission, ‘Final report on the WP259 guidelines on consent’ (2019) accessed 11 December 2019.

6 Harry Brignull, ‘What are Dark Patterns?’ (2018) <https://darkpatterns.org> accessed 11 December 2019.

7 Colin M. Gray, Yubo Kou, Bryan Battles, Joseph Hoggatt, and Austin L. Toombs, ‘The Dark Pattern: A case study of an under-regulated digital platform’ (2016) Proceedings of the CHI Conference on Human Factors in Computing Systems ACM, New York, USA, 2018.

8 CNIL’s 6th Innovation and Foresight Report ‘Shaping Choices in the Digital World, ‘From dark patterns to data protection: the influence of UX/UI design on user empowerment’ (2019) <https://linc.cnil.fr/fr/wp-report-shaping-choices-digital-world> accessed 11 December 2019.

9 Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), OJ 2016 L 119/1 (hereafter, ‘GDPR’).

10 The Data Protection Authority of Baden-Württemberg (henceforth called German DPA) acknowledges that if consent is required but not effectively granted, the setting or reading of a cookie is unlawful and data controllers face both the prohibition of data processing and fines, LfDI Baden-Württemberg, ‘On the use of cookies and cookie banners - what must be done with consent (ECJ ruling ‘Planet49’)?’ (2019) <www.baden-wuerttemberg.datenschutz.de/sum-einsatz-von-cookies-und-cookie-bannern-was-gilt-es-hei-einwilligungen-zu-tun-eugh-urteil-planet49/> accessed 21 November 2019.
good technical design which embeds privacy into IT systems and business practices from the outset (and
doesn’t just add privacy measures ex-post).

Our aim is to identify the requirements for a valid consent to assess compliance of cookie banners. Our
intention is to contribute to closing the gap between existing guidelines, interpretations and practices by
constructing a list of requirements that may help practically-minded players (e.g. compliance officers,
regulators, privacy NGOs, researchers, IT researchers, web services business owners and other services
concerned with the design or operation of web services) to discern compliant banner designs and to spot
the invalid ones.

This paper makes the following contributions:

- We have identified the legal-technical requirements for valid consent of cookie banners and their
violations;
- We have matched the requirements against existing design patterns of cookie banners and
illustrated each requirement for valid consent with compliant and non-compliant cookie banners;
- We have analyzed how compliance with each requirement can be verified: either with a human
operator and/or with technical means via automatic detection tools.

The remainder of the paper is the following. Section 2 describes the methodology adopted to construe the
requirements for a valid consent for cookie banners. Section 3 provides the background knowledge of the
paper, the terminology, the scope and exclusions of this work. Section 4 expounds on each of the
requirements and sub-requirements for a valid consent for cookie banners, providing compliant and non-
compliant examples and the means to verify compliance. Section 5 discusses scenarios and consequences
of a shared consent. Section 6 analyses the related work section on consent elements applied to cookie
banner design. Section 7 concludes the paper.

2. Methodology

In our work, we follow a bottom-up approach, using granular content from the elicited legal sources, such
as normative provisions and recitals from legislation (GDPR and ePD), paragraphs from specific case-law
and concrete arguments from the guidelines of the 29WP and the ones of DPAs to build the devised
requirements.

We analyzed its constituents separately for the general consent, and afterwards, we delved into the
specificities of consent dedicated to browser-based tracking technologies (henceforth named BTT),
including cookies. We have expanded our analysis with a regulatory overview of decisions issued by the
European Court of Justice of the EU, and the ones emanated from the DPAs guidelines on the use of
cookies. Whenever possible, we give a comparative analysis of the DPAs guidelines and we consider the
most important aspects of the ePrivacy Regulation (in its last known version of 19 November 2019). We also
accounted legal scholarship to analyze some requirements.

In websites, consent for cookies is usually presented in a form of cookie banners. A cookie banner is a mean
for getting user’s consent on the usage of cookies and potentially other web application technologies that
can store data or use browser attributes to recognize the user’s browser, such as browser fingerprinting.11

The paper proposes 17 operational and fine-grained requirements on cookie banner design and we also
identify violations. The definition of requirements emerged from a joint interdisciplinary analysis
composed of lawyers and computer scientists experts in the domain of web browsers and web tracking
technologies. The combined expertise was conducive to inspect legal and technical effects and the practical
implementation of each requirement.

Whilst deciphering each requirement and the respective sub-requirements, we propose a description thereof,
consisting of a concise designation of a requirement (e.g. ‘Prior to setting cookies’), and followed by its
concrete and objective explanation (e.g. consent must be obtained before cookies requiring consent are set).
For readability purposes, we additionally extend this description, whenever possible, with further
observations and the counterpart violations of the requirements.

As a result of a technical assessment, for each requirement, we verified if technical or manual checking is
needed for a valid consent, e.g. only by technical means it is possible to determine the case of prior consent
for setting cookies. Whereas some of the requirements are backed in explicit codified legal sources, others
result from the domain-expertise of computer scientists. For example, we explain how the GDPR’s

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11 Pierre Laperdrix, Nataliia Bielova, Benoit Baudry, Gildas Avoine, ‘Browser Fingerprinting: A survey’ (2019)
<https://arxiv.org/abs/1905.01051> accessed 11 December 2019.
requirement for revocable consent could be implemented in practice: when consent is revoked, the publisher should delete the consent cookie and communicate the withdrawal to all third parties who have previously received consent.

We have also pursued with our own interpretation regarding some requirements, demarking our explicit positioning, for example, we discuss to what extent ‘consent walls’ are allowed under current EU rules. Our requirement of ‘no consent wall’ (explained in section 5.6 of this paper), means that a website needs to be accessible, even if the user did not give a positive consent. If there are other ways to show the banner without being unnecessarily disruptive to access the service, then such banner is preferred to a consent wall.

We have matched the requirements against existing design patterns of cookie banners. We illustrate each requirement for valid consent with compliant and non-compliant cookie banners.

We have performed a legal expert validation12 to further improve the requirements. A comparative analysis of the existing Data Protection Authorities guidelines on the use of cookies is performed whenever appropriate.

3. Background

In this section, we outline a summary of the legal fabric mostly related to cookies and other browser-based technologies, personal data collection and consent as reflected in a cookie banner.

The digital economy is increasingly dominated by service providers that collect and process vast amounts of personal data. Web services are a central part of the interface of any organization for the dissemination of information, collection of input and more complex transactions. We assume that web services process personal data,13 and therefore, these web services must be operated in compliance with the privacy and data protection principles, so that the fundamental rights to privacy and to the protection of personal data are guaranteed. Examples of personal data abound: data that enables users to log-in into the web service for authentication and customization purposes, IP addresses, user identifiers, timestamps, URLs of the visited pages and other parameters that enable the user to be singled-out. Usage of cookies for storing identifiers are explicitly mentioned on Recital 30 of the GDPR:

Natural persons may be associated with online identifiers provided by their devices, applications, tools and protocols, such as internet protocol addresses, cookie identifiers or other identifiers. (…) This may leave traces which, in particular when combined with unique identifiers and other information received by the servers, may be used to create profiles of the natural persons and identify them.

It is noteworthy that personal data do not consist only in the data originally collected via the web service, but also in any other information that the controller collected through other means and that can be linked to personal data collected through the web service. It also means any other information inferred that relates to an individual. The European Data Protection Supervisor (hereinafter named EDPS) declares that the use of device fingerprinting can lead to a certain percentage of assurance that two different sets of data collected belong to the same individual.14 Thus, the GDPR applies to data that can identify users (i.e., when identification of users is likely), whether they are meant or used to track online activity of such users.

In general, any use of tracking technologies15 which involves the processing of personal data, whether to identify directly (e.g. an email address) or more often to identify indirectly (e.g. unique cookie identifier, IP address, device identifier or component of the device, device fingerprinting, identifier generated by a software program or operating system) must comply with the GDPR. While many cookies indeed contain unique identifiers, it does not hold to all types of data; for example, some of them carry information which is too coarse to identify users, while several of them can be combined to uniquely identify users. As such, website operators need to consider cookies as storage mechanisms that may potentially contain personal data and therefore protect it accordingly. Cookies used for tracking users’ online activities are unique

12 We have consulted the legal scholars Frederik Borgesius and Gaëtan Goldberg to check each requirement.
13 Personal data means any information relating to an identified or (directly or indirectly) identifiable natural person. In determining whether the information relates to an identifiable individual, website publishers need to consider any means that could reasonably be used by them or any third party to enable the identification of an individual, according to Art. 4(1) and Recital 26 of the GDPR. For a deeper analysis of this concept, see Article 29 Working Party, ‘Opinion 4/2007 on the concept of personal data’ (WP 136, 20 June 2007).
14 European Data Protection Supervisor, ‘Opinion 6/2017 on the Proposal for a Regulation on Privacy and Electronic Communications (ePrivacy Regulation)’, April 2017, 14 (henceforth named EDPS Opinion).
15 Irene Kamara, Eleni Kosta, ‘Do Not Track initiatives: regaining the lost user control’ (2016) International Data Privacy Law, Volume 6, 276–290.
identifiers used to single them out and recognize returning website visitors. As a result, such tracking cookies are personal data as defined in the GDPR, even if the traditional identity parameters (name, address, etc.) of the tracked user are unknown or have been deleted by the tracker after collection.

The ePD prescribes that websites obtain users’ informed consent before using any kind of tracking technology. Article 2(f)16 and Recital 1717 of the 2002 ePD define consent in reference to the one set forth in Directive 95/46/EC.18 The subsequent GDPR points out the conditions for obtaining valid consent in Articles 4(11) and 7 of the GDPR. Article 4(11) of the GDPR provides for the elements composing a valid consent: ‘any freely given, specific, informed and unambiguous indication of the data subject’s wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her’. The GDPR provides additional guidance in Article 7 and in Recitals 32, 33, 42, and 43 as to how the controller must act to comply with the main elements of the consent requirement.

3.1. Scope of the paper

This paper focuses on legal requirements relating to the processing of personal data from/onto the users’ devices through cookies and similar technologies. In particular, within the scope of this work, we refer to the use of cookies, and any similar technologies (browser-based tracking technology) to be stored, executed and read on the user’s terminal device, and thus falling within the scope of Article 5(3) of the ePrivacy Directive, which is worded as follows,

Member States shall ensure that the storing of information, or the gaining of access to information already stored, in the terminal equipment of a subscriber or user is only allowed on condition that the subscriber or user concerned has given his or her consent, having been provided with clear and comprehensive information, in accordance with Directive 95/46/EC, inter alia, about the purposes of the processing. This shall not prevent any technical storage or access for the sole purpose of carrying out the transmission of a communication over an electronic communications network, or as strictly necessary in order for the provider of an information society service explicitly requested by the subscriber or user to provide the service.

3.2. Terminology

Article 5(3) of the ePD applies to providers that store or gain access to information in the terminal equipment of the subscriber or user. Account must be taken to these four framing elements below:

- **Subscriber and/or user**
- **Terminal equipment**
- **Browser-based tracking technology**
- **Provider of an information society service**

The **subscriber** means the person who pays the bill for the use of the online service. The **user** is the person using either the computer or any other device to access the online service. In many cases the subscriber and the user can coincide, for example, when an individual uses the broadband connection to access a website on his computer or mobile device – this person would be both the ‘user’, as well as the ‘subscriber’, if he pays for the connection. However, this is not always the case, since end-users might include employees, tenants, hotel guests, family members, visitors, and any other individuals who are using the services, for private or business purposes, without necessarily having subscribed to it. Following the example given by the UK DPA, if a family member or a visitor visits this subscriber’s home and uses his internet connection to access that service from their own device, he would be the user.19

The ePD does not specify from whom the consent is required. The legislator did not preview which consent takes precedence (the user’s or the subscriber’s), nor if that choice should be at the discretion of the entity

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16 Art. 2(f) reads that ‘consent by a user or subscriber corresponds to the data subject's consent in Directive 95/46/EC’.
17 Recital 17 provides that ‘for the purposes of this Directive, consent of a user or subscriber, regardless of whether the latter is a natural or a legal person, should have the same meaning as the data subject’s consent as defined and further specified in Directive 95/46/EC’.
18 Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, OJ 1995 L 281/31.
19 Information Commissioner’s Office (ICO), ‘Guidance on the rules on use of cookies and similar technologies’, Privacy and Electronic Communications Regulations, (2019) 9 <https://ico.org.uk/media/for-organisations/guide-to-pecr/guidance-on-the-use-of-cookies-and-similar-technologies-1-0.pdf> accessed 11 December 2019 (henceforth named ICO Guidance).
that stores or gains access to the information.\textsuperscript{20} Whilst the web publisher, in principle, is not meant to distinguish between a consent provided by the subscriber or the user, what is relevant is that one of the parties must deliver a valid consent against cookie-related information in the landing page. Surmounting this qualification, the EDPS\textsuperscript{21} recommends including a stand-alone definition of end-user in the forthcoming ePrivacy Regulation, for purposes of providing consent, to ensure that it is the individuals effectively using the service, rather than those subscribing to it.

*Terminal equipment* refers to a device where information is accessed or stored, e.g. desk computers, laptop, pads, smartphones, but also other equipment such as wearable technologies, smart TVs, game consoles, connected vehicles, voice assistants, as well as any other object that is connected to an electronic communication network open to the public.

Our understanding of the term *web service* refers to any type of information service made accessible over the internet with which users interact usually through web browsers, mobile apps or other client software. IoT web services, accessed by IoT devices, are included.

A *browser-based tracking technology* (henceforth named BTT), the third element of this quadrant, is commonly acknowledged as any technology which enables the reading or storing of information from/onto the users’ devices for tracking purposes, in line with the text of Article 5(3) of the ePD. A typical example of BTT are *browser cookies*, but since the appearance of alternative tracking technologies that either rely on other browser storages of use browser fingerprinting, in this paper we unify all such technologies under the terminology of BTT.

Browser tracking technologies include, for example, in the context of web applications:

- HTTP cookies;
- Web caching mechanisms, such as ETag and LastModified header;
- HTML5 localStorage and sessionStorage APIs;
- Browser fingerprinting technologies.\textsuperscript{22}

There is still a distinction to be made between *first and third-party BTT*, in particular first- and third party cookies. Even if such distinction exists in practice, the GDPR does not seem to differentiate them, and therefore users have the right to reject both types of cookies. Following the definitions provided by the 29WP (WP194),\textsuperscript{23} the term *first party cookie* is used to refer to a cookie set by the data controller (or any of its processors) operating the website visited by the user, as defined by the URL that is usually displayed in the browser address bar. The term *third party cookie* to describe cookies that are set by data controllers that do not operate the website currently visited by the user. Web publishers often include third party content in their websites (e.g. from an advertising network, a streaming video service, social networking plugins or other content providers). Such content can also set and read their own cookies on a user’s device. By setting in and reading their own cookies from the user’s device, third parties can recognize and track the user even if he has never visited the corresponding third-party server directly. These cookies can store personal information, such as the visited web service or the date of visit, together with a user identifier that is unique the third-party web service and allows it to build a profile of the user. As a result, both cookies – set by the site the user requested, and by third party content, – can be set and read from users’ devices (hence named as *first party and third-party cookies*).

The *provider of an information society service* (i.e. a publisher) provides a website content service.

### 3.3. Scoping browser-based tracking technologies requiring or exempted from consent

In this paper, we only refer to the use of BTT requiring consent. According to Article 5(3) of the ePD, consent is not required when the purpose of trackers is:

- **Communication**: used for the sole purpose of enabling the communication on the web; and
- **Strict necessity**: cookies strictly necessary to enable the service requested by the user: if cookies are disabled, the service will not work.

\textsuperscript{20}Eleni Kosta, ‘Peeking into the cookie jar: the European approach towards the regulation of cookies’ (2013) *International Journal of Law and Information Technology*, Volume 21, Issue 4, 380–406 <https://doi.org/10.1093/ijlit/eat011> accessed 11 December 2019.

\textsuperscript{21}EDPS Opinion (n 14) 14.

\textsuperscript{22} cf Laperdrix (n 11).

\textsuperscript{23} Article 29 Working Party, ‘Opinion 04/2012 on Cookie Consent Exemption’ (WP 194, 7 June 2012), henceforth named 29WP (WP194).
The 29WP (WP194) analyzed these two exceptions accordingly:

- The communication exemption applies when the transmission of the communication is impossible without the use of the cookie. Hence, using TBB to merely ‘assist’ or ‘facilitate’ the communication is insufficient.

- The strict necessity exemption involves a narrow interpretation. It means that the storage of or access to information using cookies may only be considered strictly necessary (and hence essential). Thus, using TBB that is reasonably necessary or important to provide a service. This criterion implies that the service provided by the website operator, at the request of the user, would not function without the cookies. In this regard, the choice of a certain functionality that relies on cookies is not enough to justify the strict necessity if the web publisher has a different implementation choice that would work without cookies. Moreover, this criterion does not cover what could be essential for any other uses that a publisher wishes to make of that piece of data.

Both the 29WP and DPAs provide explicit examples of TBB that require the user’s consent. They assert that the following purposes for TBB are usually not strictly necessary to the user visiting a website, since they are usually related to a functionality that is distinct from the service that has been explicitly requested:

- advertising, and use of the data for marketing, research and audience measurement are not strictly necessary to deliver a service that is requested by a user (29WP (WP240));

- third party cookies (29WP (WP194) and German DPA).

We believe that such statement refers to the technical functionality of cookies instead of their purpose. In some situations, third-party cookies may be used for purposes, such as user input, authentication and security, which are usually exempted from consent.

We will further analyze which TBB are exempted from consent based solely on their purpose, and not on their technical abilities. Ultimately, as the 29WP (WP194) exposes, it is thus the purpose and the specific implementation or processing being achieved that must be used to determine whether or not a cookie can be exempted from consent.

The 29WP (WP194) clarifies further that when applying the exemptions for obtaining consent, it is important to examine what is strictly necessary from the point of view of the user, not of the service provider.

We classify the purposes of BTT that generally require consent and the ones that are exempted. Regarding multipurpose BTT, whenever a BTT covers different purposes (e.g. can be used for the purpose of remembering user preferences and for the purpose of tracking), the website still needs to seek user consent for the tracking purposes. The 29WP recalls that in practice, this should encourage website owners to use a different TBB for each distinct purpose.

For this classification of the purposes of BTT, we relied on the guidance from the 29WP. For a comparative analysis, we also consulted the recent guidelines from DPAs (ICO, CNIL, German and Dutch DPA). This classification is shown in Table 1.

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24 Article 29 Working Party, ‘Opinion 03/2016 on the evaluation and review of the e-Privacy Directive (2002/58/EC)’, (WP 240, 19 July 2016).

25 The German DPA declares that ‘Consent banners must be used if the user's consent is actually required, in particular when data is passed on to third parties or third parties are given the opportunity to collect data. Examples include analytics tools, social media plugins, external map services, and other third party elements’, see The State Commissioner for Data Protection and Freedom of Information in Baden-Württemberg (LfDI BW) ‘Guidelines for Telemedia Providers’, (2019) <www.baden-wuerttemberg.datenschutz.de/wp-content/uploads/2019/04/Orientierungshilfe-der-Aufsichtsbeh%C3%B6rden-f%C3%BCr-Anbieter-von-Telemedien.pdf> accessed 11 December 2019 (henceforth named German DPA Guidelines).

26 Article 29 Working Party, ‘Opinion 2/2010 on online behavioural advertising’, (WP 171, 22 June 2010).

27 cf 29WP (WP194) (n 23).
Table 1 Examples of purposes of BTT exempted and non-exempted of consent.

| Purposes exempted of consent | Purposes needed of consent |
|-----------------------------|---------------------------|
| **Local Analytics** – These are defined by the 29WP as statistical audience measuring tools for website owners. BTTs (often first-party cookies) can be used for counting the number of unique visits to a website, how long users stay in the site, what parts of the website they visit, detecting main search keywords that lead to a webpage, track website navigation issues. The 29WP and the EDPS\(^\text{29}\) strictly exempts from consent insofar they are limited to first party anonymized and aggregated statistical purposes, as these are not likely to create a privacy risk. The proposal of the Council (November 2019) on the ePrivacy Regulation\(^\text{30}\) also underlines the same idea. The CNIL\(^\text{30}\) points out that certain analytic cookies can be exempted from prior consent if they meet a list of cumulative requirements. The Dutch DPA\(^\text{31}\) states that analytical cookies may be limited, and these may have little or no effect on the privacy of visitors.

| **Non-local Analytics** – Even if website owner relies on self-claims of ‘strictly necessary’ first party analytics, the 29WP\(^\text{32}\) says that they are not strictly necessary to provide a functionality explicitly requested by the user, because the user can access all the functionalities provided by the website when such cookies are disabled. As a consequence, these cookies do not fall under the exemption of consent. Both the ICO\(^\text{33}\) and the German DPA\(^\text{34}\) held that third-party analytics cookies are not strictly necessary. |

\(^{28}\) European Data Protection Supervisor, ‘Guidelines on the protection of personal data processed through web services provided by EU institutions’ (2016) 10-13 (henceforth named EDPS Guidelines).

\(^{29}\) Article 8(1) (d) of the Council’s proposal for the ePrivacy Regulation reads that, ‘the use of processing and storage capabilities of terminal equipment and the collection of information from end-users’ terminal equipment, shall be prohibited, except if it is necessary for web audience measuring, provided that such measurement is carried out by the provider of the information service requested by the end-user or by a third party, or by third parties jointly, on behalf of the one or more providers of the information society service provided that conditions laid down in Article 28, or where applicable Article 26, of Regulation (EU) 2016/679 are met’, Council’s proposal for the ePrivacy Regulation (2019) <www.politico.eu/wp-content/uploads/2019/11/file.pdf> accessed 11 December 2019.

\(^{30}\) The Commission Nationale de l'Informatique et des Libertés, in its Guidelines, prescribes that cookies used to measure audiences on a web site or mobile app may be exempt from consent if the following conditions are met: ‘i. such cookies must be put in place by the web publisher or his processor; ii. the user must be informed and must be able to object to the use of such cookies on all devices, operating systems, applications and browsers; iii. the purpose of such cookies must be limited to: (1) measuring the audience that views a content in order to assess the content that is published or the ergonomics of a website or mobile app, excluding any form of unique targeting of individuals; (2) clustering of website audiences to assess the efficiency of the web editing choices that are made; (3) enabling overall dynamic changes to be made to a website. iv. the data collected must not be combined or merged with other types of data (e.g. client accounts or statistics about another website) nor disclosed to third parties; v. the use of trackers must be strictly limited to producing anonymous statistics; vi. the trackers may only be used by one publisher of content and must not enable tracking a user over different websites or mobile apps; vi. the IP address cannot be used to geolocate the user more precisely than the city. Such IP address must be deleted or anonymised once the user has been located to avoid this data from being used or combined with other data’, see Commission nationale de l'informatique et des libertés, ‘Délibération n° 2019-093 du 4 juillet 2019 portant adoption de lignes directrices relatives à l’application de l’article 82 de la loi du 6 janvier 1978 modifiée aux opérations de lecture ou écriture dans le terminal d’un utilisateur (notamment aux cookies et autres traceurs) (rectificatif)’ (2019) <www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000038783337> accessed 11 December 2019 (henceforth named CNIL Guidelines).

\(^{31}\) An explanation of the legal requirements for cookies (besides tracking cookies) is available on the website of the Netherlands Authority for Consumers and Markets (ACM), ‘Cookies’ (2019) <www.acm.nl/nl/onderwerpen/telecommunicatie/internet/cookies> accessed 11 December 2019.

\(^{32}\) Regarding first-party analytics, the 29WP (WP194) (n 23) 10 considers that, ‘first party analytics cookies are not likely to create a privacy risk when they are strictly limited to first party aggregated statistical purposes and when they are used by websites that already provide clear information about these cookies in their privacy policy as well as adequate privacy safeguards. Such safeguards are expected to include a user-friendly mechanism to opt out from any data collection and comprehensive anonymization mechanisms that are applied to other collected identifiable information such as IP addresses’.

\(^{33}\) The ICO declares that it is ‘unlikely that priority for any formal action would be given to uses of cookies where there is a low level of intrusiveness and low risk of harm to individuals’ and first party analytics cookies are given as an example of cookies that are potentially low risk, cf ICO Guidance (n 19).

\(^{34}\) cf German DPA Guidelines (n 25).
**Session User input** – The 29WP describes these as the ones used to identify the user once he has logged-in into websites, for the duration of a session. They allow users to authenticate themselves on successive loads of the website and gain access to authorized content or functionality, such as viewing their account balance, transactions in an online banking service, or third-party services that have not been explicitly requested by the user. For example, if a website uses an advertising content that contains user-security cookies, such as those of Cloudflare, then the user consent is required.

**Advertising** – The 29WP refers to cookies providing security for a content not explicitly requested by the user. For example, if a website uses an advertising content that contains user-security cookies, such as those of Cloudflare, then the user consent is required.

**User-security for a service explicitly requested by the user** – The 29WP refers to that many social networks propose ‘social plug-in modules’ that website owners integrate in their platform, to provide some services that can be considered as ‘explicitly requested’ by their members, e.g. to allow their members to share contents they like with their ‘friends’ (and propose other related functionalities such as publishing comments). These plug-ins store and access cookies in the user’s terminal equipment in order to allow the social network to identify their members when they interact with these plug-ins.

**Social media plugin for a functionality explicitly requested by the user** – The 29WP describes these as the ones used to identify the user once he has logged-in into websites, for the duration of a session. They allow users to authenticate themselves on successive loads of the website and gain access to authorized content or functionality, such as viewing their account balance, transactions in an online banking service, or third-party services that have not been explicitly requested by the user. For example, if a website uses an advertising content that contains user-security cookies, such as those of Cloudflare, then the user consent is required.

**User-security for a service not explicitly requested by the user** – The 29WP refers to cookies providing security for a content not explicitly requested by the user. For example, if a website uses an advertising content that contains user-security cookies, such as those of Cloudflare, then the user consent is required.

**Social media plugin for a functionality not requested by the user** – The 29WP refers to that many social networks propose ‘social plug-in modules’ that website owners integrate in their platform, to provide some services that can be considered as ‘explicitly requested’ by their members, e.g. to allow their members to share contents they like with their ‘friends’ (and propose other related functionalities such as publishing comments). These plug-ins store and access cookies in the user’s terminal equipment in order to allow the social network to identify their members when they interact with these plug-ins.

**Session Authentication** – The 29WP describes these as the ones used to identify the user once he has logged-in into websites, for the duration of a session. They allow users to authenticate themselves on successive loads of the website and gain access to authorized content or functionality, such as viewing their account balance, transactions in an online banking service, or third-party services that have not been explicitly requested by the user. For example, if a website uses an advertising content that contains user-security cookies, such as those of Cloudflare, then the user consent is required.

**Persistent Authentication** – The 29WP refers to that many social networks propose ‘social plug-in modules’ that website owners integrate in their platform, to provide some services that can be considered as ‘explicitly requested’ by their members, e.g. to allow their members to share contents they like with their ‘friends’ (and propose other related functionalities such as publishing comments). These plug-ins store and access cookies in the user’s terminal equipment in order to allow the social network to identify their members when they interact with these plug-ins.

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35 cf. 29WP (WP194) (n 23) 9-10.
36 cf ICO Guidance (n 19) 39.
37 Autoriteit Persoonsgegevens, ‘Cookies’ (2019) <https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/internet-telefoon-tv-en-post/cookies#mag-ik-als-organisatie-een-cookiewall-gebruiken-7111 > accessed 11 December 2019 (henceforth named Dutch DPA).
38 cf German DPA Guidelines (n 25).
39 cf German DPA Guidelines (n 25).
40 See the following purpose of a cookie ‘_cfduid’ used by Cloudflare for detection of malicious visitors:

   ‘The _cfduid cookie helps Cloudflare detect malicious visitors to our Customers’ websites and minimizes blocking legitimate users. It may be placed on the devices of our customers’ End Users to identify individual clients behind a shared IP address and apply security settings on a per-client basis. It is necessary for supporting Cloudflare’s security features’.

Such cookie requires consent when it is used by Cloudflare in advertising content or other content not explicitly requested by the user, Cloudflare, ‘Understanding the Cloudflare Cookies’ (2019) <https://support.cloudflare.com/hc/en-us/articles/200170156-What-does-the-Cloudflare-cfduid-cookie-do-> accessed 2 December 2019.
41 cf German DPA Guidelines (n 25).
banking website, online shopping. This authentication functionality is an essential part of the service a user explicitly requests. that they are anonymous whilst in fact they are still logged in to the service.

| Short-term User Interface Customization (or personalization and design cookies) – According to the 29WP, these are used to store a user’s preference regarding a service across web pages and not linked to other persistent identifiers such as usernames. These are explicitly enabled by the user, e.g. by clicking on a button or ticking a box to keep a language, display format, fonts, etc. Only session (or short term) cookies storing such information are exempted. |
|:---|---|
| Load Balancing – The 29WP says that load balancing is a technique that allows distributing the processing of web server requests over a pool of machines instead of just one. Among several techniques, a cookie may be used to identify the server in the pool in order for the load balancer to redirect the requests appropriately. These are session cookies. |
| Session Multimedia Content Player – The 29WP clarifies that these apply to any multimedia content and BTT used to keep track of the state of audio/video. When the user visits a website containing related text and video contents, both of these contents are equally part of a service explicitly requested by the user and as such, these are exempted of consent. As there is no long-term need for this information, they should expire once the session ends. |

| Long-term User Interface Customization – The 29WP says that the addition of information to remember the user’s preference for a longer duration will not be exempted of consent. |

3.3.1. Shared responsibility between publishers and third parties

As the Article 5(3) of the ePD covers any kind of information (regardless if it is personal data), it is applicable to any entity that stores or gains access to information already stored in the device of the user/subscriber, whether the latter is a data controller or data processor. If the main website content, fully controlled by the publisher, is setting cookies in his web domain (first party cookies), then the publisher will be primarily responsible for complying with the requirement to obtain valid consent.

We question if only the website publishers are obliged to display information and collect consent. Web publishers are fully responsible for all processing of personal data triggered by any interaction with the user that is performed by the web service and must ensure compliance with the existing legislation: the ePD and the GDPR. This includes when third-party services are used as processors or when third-party services act as controllers.

The recurrent scenario when multiple entities are involved in the installation of and access to a cookie is mentioned in the recent DPAs guidelines on cookies. In this segment of thought, the 29WP (WP171) contends that a website publisher that allows third parties to place cookies shares the responsibility for information and consent. The ICO\(^\text{42}\) takes the view that where the website publisher sets third-party cookies, this same controller and the third party are jointly responsible for ensuring that users are clearly informed about cookies and for obtaining valid consent. This means they are both determining the purpose and means of the processing of personal data of any user that visits the landing website. In substance, it is considerably more difficult for a third party which has less direct control on the interface with the user to achieve this. The ICO further instructs the need to include a contractual obligation into agreements between web publishers and third-parties on the allocation of responsibility to provide information about the third-party cookies and to obtain consent. The CNIL\(^\text{43}\) observes that when only one organization is involved in the use of trackers (e.g. a publisher who uses cookies for his own statistical analysis), that organization is fully responsible for providing notice and obtaining consent from the users. In other cases, several parties may be involved in the use of trackers (e.g. a web publisher and an advertising agency). In such case, they may be considered as independent controllers, joint controllers, or data processors. In all other cases, third

\(^{42}\) cf ICO Guidance (n 19) 34-35.

\(^{43}\) CNIL Guidelines (n 29) Art. 3. CNIL, ‘Cookies: CNIL extends its controls beyond site publishers’ (2016) <www.cnil.fr/fr/cookies-la-cnil-etend-ses-controles-au-dela-des-editeurs-de-sites> accessed 11 December 2019.
parties who use trackers are independent controllers, fully responsible for the trackers they use, which means that they must obtain consent directly from the users.

Where the parties (controllers) determine jointly the purposes and means of the processing, they must enter into a joint controllership agreement in accordance with Article 26 of the GDPR, including which party provides notice and obtains consent from the users.

Lastly, a data processor, in this context, is defined as an entity which installs information and/or has access to information stored on a user device exclusively on behalf of a data controller, without re-using the data collected via the tracker for the processor’s own purposes. In such case, the parties must enter into a data processing agreement.

3.4. Exclusions from this work

Although the ePD stipulates the need for consent for the storage of or access to cookies, the practical implementations of the legal requirements vary among website operators across EU Member States. Accordingly, different DPAs have different opinions because the ePD got implemented differently in EU countries’ national law. Hopefully, the upcoming ePrivacy Regulation will provide a unified implementation for all the member states. In this work, we are not going to study the differences of the ePD implementation in each member state, but instead study the GDPR requirements on valid consent.

We did not contemplate deliberately linguistic-dependent issues mostly related to information and accessibility-based requirements of section 4.4. Such analysis needs a language/social scientist expert knowledge.

We have excluded the requirement of explicit consent which is required whenever websites deal with: i) special categories of data (listed in Article 9 of the GDPR); ii) data transfers to third countries; and iii) automated decision-making (including profiling). As this requirement should contain a double-layer verification approach — following the recommendation by the 29WP (since ticking one box or pressing one button is not enough to ensure an affirmative and explicit act) — we decided not to contemplate this added layer verification effort.

In the analysis of the element of a freely given consent, we did not consider the cases of unbalance of power (Recital 43 of the GDPR) for the same motive as above. This is mostly observed in the context of a public authority, employer, medical service relationship, or wherever there is a dominant position in relation to the data subject. In such contexts, the data subject fearing adverse consequences has no realistic alternative to accept the processing terms.

While considering the information necessary for an informed consent (section 4.4), we excluded the analysis of the purposes of an informed consent, meaning that we don’t analyze the text inside the purposes presented in the cookie banners. We state that in the information page, each purpose should be sufficiently unambiguous and clearly expressed, specific and clear. For the same reason as explained above, these sub-requirements are language-dependent and therefore not covered in this work.

This paper does not analyze consent expressed through browser settings. We think that browser settings, as they exist today, do not correspond to the requirements of a valid consent for the following reasons: i. no purposes are specified; they do not reflect an informed decision; and iii. they also do not express an unambiguous consent. The 29WP mentions that browser settings may be considered as mechanism for expressing consent if it is clearly presented to the user. We do not agree with this statement for the reason that many browser vendors expose cookie settings in browser preferences that are hard to find. Moreover, the location and user interface of such cookie settings changes significantly from one version of the browser to another. Even though cookie settings work in some browsers, this does not generally apply to all tracking technologies. For example, since there is no precise way to detect browser fingerprinting, browser preferences are not a meaningful control mechanism for this tracking technology (and when browsers provide some settings for fingerprinting, such settings rely on blacklists and similar heuristics, thus not protecting user completely). Due to the complexities of this topic, we have excluded it from this paper.

We also do not address the specific concerns related to children’s consent. We left out for our study exceptions specified in the GDPR, e.g. research in cases of medical research conducted in the public interest or for compliance with legal obligations (Recital 51).

44 Article 29 Working Party, ‘Working Document 02/2013 providing guidance on obtaining consent for cookies’ (WP 208, 2 October 2013) 4 (henceforth named 29WP 208).
4. Requirements for valid consent for cookie banners

This section presents our interdisciplinary legal and technical analysis of the requirements applied to cookie banner design. Since there is no definition of consent given in the ePrivacy Directive, we follow the GDPR definition of consent. The GDPR constructs an onerous and prescriptive criterion for the valid acquisition of consent. We include the four cumulative validity elements given by Article 4(11) of the GDPR which amount to: freely given, specific, informed and unambiguous. Besides these mentioned elements, we make salient three other requirements: prior, readable and accessible. Even if these elements are mentioned in the legislation, they are not part of the definition of Article 4(11). We claim that these three additional requirements are meaningful to be considered for their practical effects in the online environment of cookie banners. Table 2 depicts the seven high-level requirements and their respective provenance.

Table 2 High-level requirements for a valid consent

| Provenance                        | High-level requirements                  |
|-----------------------------------|------------------------------------------|
| Article 4(11) of the GDPR         | Freely given                             |
|                                   | Specific                                 |
|                                   | Informed                                 |
| Added from our analysis            | Unambiguous                              |
|                                   | Prior                                    |
|                                   | Readable and accessible                  |
|                                   | Revocable                                 |

For the analysis of each requirement, we propose the ensuing content structure: presentation of the requirements, examples of cookie banners, and the procedure for compliance verification. This structure is shown in Table 3.

Requirements. We present the seven high-level requirements, followed by the definition of the fine-grained low-level requirements. We convey the respective legal sources upon which each requirement is based. The sources are either grounded in

- Binding legal source (legislation and/or case-law);
- Expert guidance issued by the 29WP and/or DPAs; and
- Our interpretation.

We show for each requirement the correspondent violation. This information is presented in a ‘requirement box’ (in a consolidated form, for ease of reading).

Examples. We provide examples of compliant cookie banners and also cookie banners that violate a given requirement. Each example is extracted from real-world websites, illustrated in figures duly dated.

Procedure to verify compliance. We describe the procedure that needs to be put in place in order to detect violations for each requirement. Such procedure can be assessed in three ways:

- Manual, relying only on a human operator;
- Technical, an expert using computer tools able to detect a violation; or a
- Mix of manual and technical means.

Table 3 Requirements for a valid consent on cookie banner design, assessment and source

| Requirements      | Assessment          | Source                  | Location in the paper |
|-------------------|---------------------|-------------------------|-----------------------|
|                   | Manual (M) and/or   | EDBP and/or DPA based   |                       |
|                   | Technical (T)       | based                   |                       |
|                   | Legal Source based |                        |                       |
| Prior             | Prior to setting    | M and T                 | 4.1.1                  |
|                   | cookies             |                          |                       |
| Free              | No merging into a   | M and T                 | 4.2.1                  |
|                   | contract            |                          |                       |
|                   | No tracking walls   | M                       | 4.2.2                  |
| Specific          | Separate consent    | M                       | 4.3.1                  |
|                   | per purpose         |                          |                       |
| Informed          | Accessibility of    | M                       | 4.4.1                  |
|                   | information page    |                          |                       |
4.1. Prior consent

Before storing information or gaining access to information on a user's terminal, website publishers need to request prior consent to data subjects in order to guarantee that the user has some control over the processing of their information.\textsuperscript{45} Even if no explicit provision was made manifest both in the GDPR and the ePD, the timing ‘prior’ is confirmed through the combined analysis of both legislative instruments.

Under the GDPR aegis, the 29WP (WP259 rev.01)\textsuperscript{46} claims that ‘prior consent’ can be derived from Article 6 by the wording ‘has given’.

Although the GDPR does not literally prescribe in Article 4(11) that consent must be given prior to the processing activity, this is clearly implied. The heading of Article 6(1) and the wording ‘has given’ in Article 6(1)(a) supports this interpretation. It follows logically from Article 6 and Recital 40 that a valid lawful basis must be present before starting a data processing.

From the ePD stance, such understanding of a ‘prior consent’ is derived from Article 5(3) of the ePD, according to the 29WP guidance,\textsuperscript{47,48}

\begin{itemize}
  \item Article 5(3) contains a specific rule regarding the storing of information or gaining of access to information on a user's terminal, including for the purpose of tracking the user’s on-line activities.
  \item While Article 5(3) does not use the word prior, this is a clear and obvious conclusion from the wording of the provision. (…) It makes good sense for consent to be obtained prior to the starting of the data processing.
\end{itemize}

\begin{table}
\begin{tabular}{|l|l|c|c|c|}
\hline
Information on cookies & M and T & ✔ & ✔ & 4.4.2 \\
\hline
Information about the cookie configurations & M & ✔ & ✔ & 4.4.3 \\
\hline
Information about the data controller & M & ✔ & ✔ & 4.4.4 \\
\hline
Information about the data subject rights & M & ✔ & 4.4.5 \\
\hline
Unambiguous Affirmative Action Design & M and T & ✔ & ✔ & 4.5.1 \\
\hline
Configurable banner & M & ✔ & ✔ & 4.5.2 \\
\hline
Post-consent registration & M and T & ✔ & ✔ & 4.5.3 \\
\hline
Correct consent registration & M and T & ✔ & ✔ & 4.5.4 \\
\hline
Readable and accessible & No consent wall & M & ✔ & 4.6.2 \\
\hline
Revocable & Possible to change in the future & M & ✔ & ✔ & ✔ & 4.7.1 \\
\hline
Delete ‘consent cookie’ and communicate to third parties & M and T & ✔ & 4.7.2 \\
\hline
\end{tabular}
\end{table}

\textsuperscript{45} The CNIL recalls that many site publishers have reported difficulties in obtaining prior consent from Internet users before depositing and reading cookies for two main reasons: 1. this would prevent the display of certain advertisements, resulting in a significant loss of income; 2. cookies do not come from their own servers, being linked to the activity of third-party partners, over which they have no control. As a result, publishers alone cannot bear full responsibility for enforcing tracer rules as ‘third-party cookies’ because they originate from third-party companies, cf. CNIL, ‘Cookies: CNIL extends its controls beyond site publishers’ (n 41).

\textsuperscript{46} cf 29WP (WP259 rev.01) (n 4) 17.

\textsuperscript{47} Article 29 Working Party, ‘Opinion 15/2011 on the definition of consent’ (WP187, 13 July 2011).

\textsuperscript{48} Article 29 Working Party, ‘Working Document 02/2013 providing guidance on obtaining consent for cookies’ (WP 208, 2 October 2013) 4.
In the light of the above, a consent request needs to be presented before TBB are deployed. Seconding this rule, the 29WP (WP208)\textsuperscript{49} asserts that ‘consent should be sought before cookies are set or read. As a result, a website should deliver a consent solution in which no cookies are set to user’s device (other than those that may not require user’s consent) before that user has signaled their wishes regarding such cookies’.

Moreover, processing is unlawful if carried out before the request for consent due to the lack of legal ground, as denoted by the 29WP (WP147).\textsuperscript{50} Otherwise, the processing carried out during the period of time from the moment the processing had started until the moment that consent had been obtained would be unlawful because of lack of legal ground. Furthermore, in such cases, if the individual decided against consenting, any data processing that had already taken place would be unlawful for that reason as well.

We have subdivided the requirement of ‘prior consent’ into two sub-requirements: firstly, consent must be obtained before TBB are set or stored (those requiring consent) (section 4.1.1); secondly, consent must be obtained before TBB are sent, i.e. before the content of the webpage that is associated to such cookies is loaded (section 4.1.2).

4.1.1. Prior to setting cookies

It follows from the foregoing that consent must be collected before TBB are set in the user’s device (other than those that may not require user’s consent).

| Requirement | Prior to setting cookies |
|-------------|-------------------------|
| Violation   | Consent must be obtained before cookies are set |
|            | Cookies are set before consent is given |

Examples. Figures 1 and 2 depict the case of violation of the requirement ‘Prior to setting cookies’. While accessing the eBay webpage, a banner appears affirming that by using the website, the user accepts the use of cookies to enhance their services. This overlay includes a link to ‘learn more’. This consent mechanism doesn’t allow a user to make a choice before cookies are deployed, even where the controls are located in a ‘more information’ section. Before the user gives any consent, an advertising cookie that requires consent (IDE, by doubleclick.net) was stored in the user device.

![The user has not given any consent yet](image)

Figure 1 Access to the eBay website (<www.ebay.com/> accessed 27 July 2019)

\textsuperscript{49} cf 29WP (WP208) (n 46) 4.
\textsuperscript{50} cf 29WP (WP147) (n 45) 31.
How to detect violations? One could detect a violation of the ‘Prior to setting cookies’ requirement by visiting a website with no cookies in the browser and analyzing the cookies that are set upon visiting the website (as shown in Figure 2). Such verification, however, contains two complex tasks. First, one would require more specific browser tools to detect such violations when other browser storage mechanisms are used, like Web caching mechanisms. It’s possible to detect the setting of cookies by a technical expert with the corresponding browser tools or fully automatically. Second, the purpose of each cookie (or other stored information) needs to be declared and known in order to determine whether consent is required. This is not possible to detect automatically or with technical tools. Even manually, it is not possible to estimate whether a cookie requires consent or not by reading its purpose in the cookie policy. Also, the purposes of cookies (seldom) described in cookie policies are often not clear, too vague or incomplete. For instance, the privacy policy on the pubmatic.com website indicates that the ‘repi’ cookie is ‘a short-lived cookie that is used to determine if repixeling is in progress’. This description is obscure and makes it difficult to qualify the purpose of this cookie. Another example is ‘centerVisitorId’ on the learnworlds.com website, whose only description states: ‘used by site’s popups and download forms’. For automatic verification, we would need a self-declaration of the purpose of each cookie in a standard format.

4.1.2. Prior to sending cookies

Consent must be obtained before cookies are sent, because cookies are sent automatically when the third-party content is loaded (hence, cookies are ‘read’).

| Requirement | Prior to sending cookies |
|-------------|-------------------------|
| Violation   | Consent must be obtained before cookies are sent (therefore, before the content that sends such cookies is loaded) |
|             | Cookies sent (content loaded) before consent is obtained |

We note that respecting such a requirement demands important adaptation of current technical tools. Browsers automatically attach cookies to requests, which makes it complicated for cookie banners implementation to prevent cookie transmission prior to consent.

Examples. Figures 3 and 4 show how google.com sets cookies in the user’s browser. Notice that google.com is a default search engine in most of the browsers, hence such experience is common to many users. Google.com is setting a cookie ‘NID’ prior to the user’s consent – this cookie now belongs to google.com (see Figure 4). After visiting google.com, a user goes to a different website that contains some content from google.com. Figure 5 shows an example website <www.w3schools.com>, commonly used by Web developers. While accessing this website (with Firefox 69.0.1 in our experiments), no banner is shown to the user, however requests are sent to cse.google.com in order to fetch Google Customized Search Engine that helps the user to search inside this website. Figure 6 shows a violation of the ‘Prior to sending cookies’
requirement because NID cookie (see ➊) is now sent to cse.google.com (➋) without user’s consent while fetching some (supposedly functional) content from cse.google.com (➋).

Figure 3 Access to the Google.com website (<https://google.com> accessed 24 September 2019)

![Google.com website](https://www.google.com)

Advising reminder from Google

Figure 4 Access to the Google.com website: advertising cookie NID is stored in the browser (<https://google.com> accessed 24 September 2019)

![Google.com website](https://www.google.com)

Figure 5 Access to the W3Schools.com website (<www.w3schools.com> accessed 24 September 2019)

![W3Schools.com website](https://www.w3schools.com)
How to detect violations? Detecting violations of this requirement is complex even when it comes to detect simple HTTP cookies. One would need to test the website with the corresponding cookies already set in the browser and analyze all the content loading in order to detect which content is sending such cookies. This procedure might sound easy when cookies are simply attached by the browser when the content is loading. However, Papadopoulos et al. have shown that when cookies are sent, they are often encrypted or obfuscated. Therefore, detecting when exactly they are being sent is extremely hard. Moreover, even more complex techniques are needed to detect sending of identifiers stored in other browser storages than cookies. We need to use taint-tracking technologies to monitor when cookies are read and further sent to other third parties. Browser fingerprinting also falls into this requirement: no information is explicitly stored in the user’s browser; however, a unique identifier build from a browser fingerprint is sent. It is well-known in the computer science research community that detection of fingerprinting is a complex challenge and as of today, there is no technique to detect browser fingerprinting accurately. Companies using browser fingerprinting need to declare a purpose of its usage because fingerprinting can be used for tracking (requires consent), and for security (exempted from consent).

4.2. Free

Consent must be freely given, as prescribed in the GDPR in Article 4(11) and further specified in Article 7(4). The request for consent should imply a voluntary choice to accept or decline the processing of personal data, taken in the absence of any kind of pressure or compulsion on the user in persuading to give his consent. The same holds for processing personal data through cookies. The 29WP (WP208) refers to this freedom of choice of the users in choosing their cookie settings. It asserts that ‘the user should have an opportunity to freely choose between the option to accept some or all cookies or to decline all or some cookies and to retain the possibility to change the cookie settings in the future.’

As a consequence of not having a freely given consent, the request becomes invalid, as cautioned by the 29WP (WP187), ‘any pressure or inappropriate influence exerted on the person (in different ways) preventing them from exercising their will shall invalidate consent’, and 'cannot be claimed to be a legitimate ground to justify the processing’.

51 Panagiotis Papadopoulos, Nicolas Kourtellis, and Evangelos Markatos, ‘Cookie Synchronization: Everything You Always Wanted to Know But Were Afraid to Ask’ (In The World Wide Web Conference, Ling Liu and Ryen White (Eds.). ACM, New York, NY, USA, 2019) 1432-1442.
52 cf Laperdrix (n 11).
53 The 29WP opinions provide examples of a non-freely given consent can reveal different conducts: compulsion, pressure or inability to exercise free will; being put under pressure, be it social, financial, psychological or other; deception; intimidation; inappropriate influence; coercion; significant negative consequences if he does not consent (e.g. substantial extra costs), 29WP (WP187, and WP259 rev.01).
54 cf 29WP (WP208) (n 46) 5.
Forced consent is decomposed in the 29WP guidelines considering three elements: imbalance of power,\textsuperscript{55} unconditional and non-detrimental. In this paper, we only analyze both the unconditional (in section 4.2.1) and the non-detrimental elements (in section 4.2.2). Imbalance of power is a subjective requirement that can be only evaluated in a case-per-case manner and is dependent on a specific context when consent is given, hence we excluded this analysis as explained in section 3.4.

### 4.2.1. Unconditionality related to a contract

Article 7(4) and Recital 43 of the GDPR confers a presumption of a not freely given consent in the presence of a contract or service. Article 7(4) reads: ‘When assessing whether consent is freely given, utmost account shall be taken of whether, inter alia, the performance of a contract, including the provision of a service, is conditional on consent’. Recital 43 recites as ‘consent is presumed not to be freely given (…) if the performance of a contract, including the provision of a service, is dependent on the consent despite such consent not being necessary for such performance’.

The purpose of these provisions is to ensure that services are not offered upon the condition that users give their personal information, data which are not necessary for the offering of these services. Article 7(4) prohibits any form of bundling of a service with a request for consent, when the consent is not necessary for the delivery of that service. Making online transactions (together with marketing purposes) dependent on the user consent for processing personal data that is not necessary for these purposes, can be reasonably assumed that consent is forced. As a result of the established presumption, any controller has to prove that consent was freely given.

In practice, this requires consent for processing to be clearly distinguishable (untied, unbundled) from contracts or agreements,\textsuperscript{56} or privacy policies and terms of contract (as posited in Article 7(2) GDPR). Consent would be deprived of any meaning if services are only offered in exchange for mandatory consent to the exploitation of personal data. As the 29WP (WP159 rev.01)\textsuperscript{57} reasserts, the ‘GDPR ensures that the processing of personal data for which consent is sought cannot become directly or indirectly the counter-performance of a contract’.

From Article 7(4) we denote the words conditionality and inter alia (i.e. among others). It follows therefrom that the European legislator chose to explicitly list ‘conditionality’ as an instructive example of a non-freely given consent. In addition, the word ‘inter alia’ refers to other cases rather than the case of conditionality. Drawing on this guidance, we deduce the requirement that the consent request should not be merged into a contract or terms of service, as depicted in the requirement box.

| Requirement | No merging into a contract |
|-------------|----------------------------|
| Violation   | A request for consent cannot be merged into a contract or service |
|             | When both consent and a contract (for which consent is not needed) are merged |

**Example.** Figure 7 represents a case of a bundled consent request where the website offers news service, provided by the Washington Post website, and requests consent of the user.

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\textsuperscript{55} Recital 43 of the GDPR clarifies situations in which consent cannot be seen as freely given ‘where there is a clear imbalance between the data subject and the controller (…) and it is therefore unlikely that consent was freely given in all the circumstances of that specific situation.’ The Recital concerns authorities, but also corporations in a dominant market position (e.g. in the area of social networking service of relevance, as in the case of Facebook), and/or in a closed and proprietary network where the data subject is factually forced to join or maintain a profile with the controller, to be able to interact with persons that are not available on other services. A representative related complaint on forced consent was issued by NOYB against Facebook. See NOYB, ‘Complaint filed against Facebook Ireland Ltd.’ (2018) \texttt{<https://noyb.eu/wp-content/uploads/2018/05/complaint-facebook.pdf>} accessed 11 December 2019.

\textsuperscript{56} An illustrative example is the complaint filed by NOYB against Google that we transcribe for the practical relevance of this requirement ‘bundling happens when the controller requires the data subject to consent to the privacy policy and to the terms as a whole, which in fact cover all the ‘services’, that the controller offers e.g. YouTube, Chrome Browser, Google Services, Google Maps, Google Search, Google News, Gmail, AdWords, as well as several other services’, NOYB, ‘Complaint filed against Google LL’ (2018) \texttt{<https://noyb.eu/wp-content/uploads/2018/05/complaint-android.pdf>} accessed 11 December 2019.

\textsuperscript{57} cf 29WP (WP259 rev.01) (n 4) 8.
How to detect violations? Detection of such violation can only be made manually because it requires humans to read the text in the cookie banner, understand its meaning, and conclude that by pressing ‘I agree’ button, he gives consent to the use of third-party cookies and agrees with the privacy policy and terms of service at the same time. Experimental techniques using machine learning or keywords could be tested, with the inherent lack of perfect accuracy of these methods. See, for instance, Libert’s work on privacy policies using keywords, and Harkous et al. contribution using machine learning techniques. Such inaccurate methods would not be usable within judicial proceedings and would need to be verified manually.

4.2.2. Non detrimental – the case of cookie walls

A freely given consent implies also the consent request to be non-detrimental. Detrimental consent refers to the case where the data subject is unable to refuse or withdraw consent without detriment, which means, facing significant negative consequences (Recital 42 of the GDPR). For the purposes of this paper, detrimental practices occur in different situations, suchlike:

- When users, even before expressing any choice, face a cookie wall blocking access to an online service’s content (e.g. stating ‘to access our site you must agree to our use cookies’);
- When users, after refusing tracking cookies, have denied access to the webpage they want to consult, or the service is downgraded;
- Paid services or extra costs.

The first two listed practices refer to the appearance of a barrier page and are known by the designation of tracking wall, cookie wall, take-it-or-leave-it-choices approaches which means that users who do not accept tracking across other sites will be denied access to the websites they seek to access. However, users should have the possibility to refuse cookies and still be able to browse the page.

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56 Timothy Libert, ‘An Automated Approach to Auditing Disclosure of Third-Party Data Collection in Website Privacy Policies’ (Proceedings of the 2018 World Wide Web Conference. International World Wide Web Conferences Steering Committee, Republic and Canton of Geneva, Switzerland, 2018) 207-216.
59 Hamza Harkous, Kassem Fawaz, Rémi Lebret, Florian Schaub, Kang G. Shin, and Karl Aberer, ‘Polisis: automated analysis and presentation of privacy policies using deep learning’ (Proceedings of the 27th USENIX Conference on Security Symposium (SEC’18) USENIX Association, Berkeley, CA, USA, 2018) 531-548.
60 cf 29WP (WP259 rev.01) (n 4) 11.
61 Regarding extra costs, such an obligation could foster social/economic discrimination (i.e. the rich, who can pay to protect their privacy, and the poor, who cannot) which would run against the universal nature of the fundamental rights to privacy and data protection. Forcing websites to offer a paid subscription service could also interfere with the development of new innovative business models which might be advantageous to consumers.
62 cf EDPS Opinion (n 21) 17.
63 Ronald Leenes, ‘The Cookiewars: From regulatory failure to user empowerment?’ (M. van Lieshout, & J-H. Hoepman (Eds.), The Privacy & Identity Lab: 4 years later, 3, The Privacy & Identity Lab, Nijmegen (2015) 31-49.
As mentioned in section 3.3, if certain cookies are not necessary for the services requested and only provide for additional benefits of the website operator, the user should be in a position to refuse them (29WP 208). The ePrivacy Directive refers to the ‘conditional access to website content’ in Recital 25. It states: ‘access to specific website content may be made conditional on the well-informed acceptance of a cookie or similar device, if it is used for a legitimate purpose’. A literal interpretation of this excerpt apparently legitimizes conditional access to a website and this literal reading is sometimes used to justify the use a cookie wall. Notably, this interpretation derives from an incorrect analysis of this Recital, for it makes access to a website conditional on the acceptance of cookies, and such conditionality renders a non-freely given consent. In this regard, the 29WP (WP126) recommends clarification or review of this Recital. More recently, the 29WP makes explicit that ‘in order for consent to be freely given, access to services and functionalities must not be made conditional on the consent of a user to the processing of information related to or processed by the terminal equipment of end-users, meaning that cookie walls should be explicitly prohibited’. In the 29WP (WP 240) understanding, these take it or leave it approaches rarely meet the requirements for freely given consent. It specifically stated that ‘if the consequences of consenting undermine individuals’ freedom of choice, consent would not be free. The Working Party invites the EC to develop a specific prohibition on such take it or leave it choices with regard to electronic communications, where such choices would undermine the principle of freely given consent.’

The resulting analysis, also consolidated by the positioning of the majority of the stakeholders shown in the next section 4.2.3., sustains that websites need to give access to content when a user does not consent to BTT beyond strictly necessary to provide the service, and hence, consent request should not present a tracking wall.

| Requirement | No tracking walls | Violation | Existence of a tracking wall for cookies that require consent. |
|-------------|------------------|-----------|---------------------------------------------------------------|
|              | Blocking access to a website unless the user gives a positive consent, is not a valid consent. |          |                                                               |

**Examples.** Figure 8 shows an example of a cookie wall on the MedicalNewsToday website. When the page first loads, the website prevents a visitor from viewing any other page unless the user clicks the *Accept and continue to site* button displayed. Figure 9 shows the resulting page after the user clicked on the *Deny permission* link: the website only provides access to 10 articles, preselected by the website (and not articles requested by the user). The banner above reminds the user that he has a limited access to the website because he disallowed cookies and proposes to update the privacy settings.

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64 cf 29WP (WP208) (n 46) 6.
65 cf. Kosta (n 20) 1.
66 Frederik Borgesius, Sanne Kruikemeier, Sophie Boerman and Natali Helberge, ‘Tracking Walls, Take-It-Or-Leave-It Choices, the GDPR, and the EPrivacy Regulation’ (2017) European Data Protection Law Review, Volume 3, Issue 3, 353-368.
67 cf. Leenes (n 61).
68 The 29WP states that ‘the last paragraph of Recital 25, stipulating that access to specific website content may be made conditional on the acceptance of a cookie, might be contradictory with the position that the users should have the possibility to refuse the storage of a cookie on their personal computers and therefore may need clarification or revision’, Article 29 Working Party, ‘Opinion 8/2006 on the review of the regulatory Framework for Electronic Communications and Services, with focus on the ePrivacy Directive’ (WP 126, 26 September 2006) 3.
69 Statement of the EDPB on the revision of the ePrivacy Regulation and its impact on the protection of individuals with regard to the privacy and confidentiality of their communications, <https://edpb.europa.eu/sites/edpb/files/files/file1/edpb_statement_on_eprivacy_en.pdf> accessed 11 December 2019.
70 The 29WP identifies five circumstances in which forced consent should be specifically prohibited, namely: 1. Tracking on websites, apps and or locations that reveal information about special categories of data. 2. Tracking by unidentified third parties for unspecified purposes. 3. All government funded services; 4. All circumstances identified in the GDPR that lead to invalid consent; 5. Bundled consent for processing for multiple purposes. Finally, the 29WP alerts to the position of news media, since they seem to be the heaviest users of tracking cookies and cookie walls, cf 29WP (WP240) (n 24) 17.
Figure 8 Violation of the requirement ‘No tracking wall’ by the MedicalNewsToday website (<www.medicalnewstoday.com/> accessed 25 September 2019)

Figure 9 Result of denying consent on MedicalNewsToday website (<www.medicalnewstoday.com/> accessed 25 September 2019)

How to detect violations? Detection of such a violation is possible manually. The user needs to understand whether a website allows the user to access the website without expressing consent and whether there is an option to refuse consent. We also consider a violation of this requirement when refusing consent leads to a restrictive access to the service, like in the example of MedicalNewsToday website.

4.2.3. Stakeholders positioning on tracking/cookie walls

There is some inconsistency in the positions taken by EU DPAs and other stakeholders on whether a tracking/cookie wall consists in a violation of a valid consent.
The European Data Protection Supervisor, the European Parliament, and the Bureau Européen des Unions de Consommateurs (BEUC) are of the opinion that tracking walls and any other type of detrimental rendering of consent should be forbidden, as the GDPR mandates. NOYB.eu filed four complaints over forced consent against Google, Instagram, WhatsApp and Facebook. The French, Dutch, and Belgian DPAs share the same positioning as the 29WP.

The ICO in its recent guidance states that consent which is forced via a cookie wall is ‘unlikely to be valid’. However, it also notes that GDPR must be balanced against other rights, including freedom of expression and freedom to conduct a business. The ICO seems to adopt a wait and see approach, as it argues that

In some circumstances, this approach is inappropriate; for example, where the user or subscriber has no genuine choice but to sign up. (…) If your use of a cookie wall is intended to require, or influence, users to agree to their personal data being used by you or any third parties as a condition of accessing your service, then it is unlikely that user consent is considered valid.

The Dutch DPA published on its website in December 2019 its viewpoint that websites must remain accessible when refusing tracking cookies and that cookie walls are not permitted under the GDPR. It adds that with a cookie wall, websites, apps or other services cannot receive valid permission from their visitors or users. The regulator explains that the inspected websites are involved in an ongoing investigation into cookie walls. Alongside, the Minister for Legal Protection of the Netherlands adverts that when a website is visited, the visitor not be denied access to the content of the website if he does not agree with the placement of the cookies (cookie wall). Only functional cookies and non-privacy sensitive cookies do not need permission. It states further that the government is arguing in the European Council for a ban on cookie walls in the new e-privacy regulation.

In the same light, the Belgian DPA issued its own guidance stating that blocking a user’s access to a website, on the basis that the user had not consented to cookies, was not a compliant solution. The German DPA on its own guidance Guidelines for Telemedia Providers contends that a visit to a website should still be possible if data subjects decide against the setting of cookies. The same reasoning is upheld by the Danish DPA in its report on consent.

Conversely, the Austrian DPA issued a decision on 30 November 2018, pronouncing that consent was freely given via a cookie wall in the case of an Austrian newspaper, ‘Der Standard’, that gave users the option to either: i) accept cookies and receive full access to the website; ii) refuse cookies and receive a limited access to the website; or iii) pay a fee for a monthly subscription without accepting cookies. The

71 cf EDPS Opinion (n 21) 17.
72 In the Proposal for the ePrivacy Regulation of the European Parliament, it is proposed that ‘the Regulation should prevent the use of so- called “cookie walls” and “cookie banners” that do not help users to maintain control over their personal information or become informed about their rights’, Draft European Parliament Legislative Resolution accessed 11 December 2019.
73 BEUC Position Paper, ‘Proposal For A Regulation On Privacy And Electronic Communications (E-Privacy)’ (2017) www.beuc.eu/publications/beuc-x-2017-059_proposal_for_a_regulation_on_privacy_and_electronic_communications_e-privacy.pdf accessed 11 December 2019.
74 NOYB, ‘GDPR: noyb.eu filed four complaints over “forced consent” against Google, Instagram, WhatsApp and Facebook’ (2018) https://noyb.eu/wp-content/uploads/2018/05/pa_forcedconsent_en.pdf accessed 11 December 2019.
75 cf ICO Guidance (n 19) 31.
76 cf Dutch DPA ‘Cookies’ (n 35); and ‘Many websites incorrectly request permission to place tracking cookies’ (2019) https://autoritepersoonsgegevens.nl/nl/nieuws/ap-veel-websites-vragen-op-onjuiste-wijze-toestemming-voor-plaatsen-tracking-cookies accessed 11 December 2019.
77 House of Representatives of the Netherlands, ‘Answer to questions from members Middendorp and Van Gent about a possible cookie wall ban’ (2019) www.tweedekamer.nl/kamervragen/detail?id=2019D49667&did=2019D49667 accessed 11 December 2019.
78 Belgian DPA, ‘Cookies’ www.autoriteprotectiondonnees.be/faq-themas/cookies accessed 11 December 2019.
79 cf German DPA Guidelines (n 25).
80 Danish DPA, ‘Guide on consent’ (2019) www.datatilsynet.dk/media/6562/samtykke.pdf accessed 11 December 2019.
81 Austrian DPA decision on the validity of consent (2018) www.ris.bka.gv.at/Dokumente/Osk/DSBT_20181130_DSB_D122_931_0003_DSB_2018_00/DSBT_20181130_DSB_D122_931_0003_DSB_2018_00.pdf accessed 11 December 2019.
authority indicated that cookie walls are not prohibited because the newspaper’s own settings provide a degree of choice. First, Der Standard only places cookies after the user makes an informed decision to allow the placement of cookies. Second, the individual can withhold consent by either entering into a paid subscription or leaving Der Standard’s website. Thirdly, the DPA considered Der Standard’s prices to be ‘not unreasonably high.’ In fact, giving consent to cookies results in a positive outcome for the individual, because they gain unlimited access to the newspaper’s articles. The Austrian DPA did not, however, discuss what would happen if an individual withdrew their consent to the usage of cookies.

The Spanish DPA acknowledges limiting access to a website where consent to the use of cookies has not been granted (where information duties were duly complied with). We consider that these guidelines allow websites to block access if the user rejects cookies, hence implementing tracking walls.

There may be certain cases in which the non-acceptance of the use of cookies prevents the total or partial use of the service, provided that the user is properly informed about it. However, access to the service cannot be denied in case of rejection of cookies, in those cases in which such denial prevents the exercise of a right legally recognized to the user, since access to said website is the only means provided to the user to exercise such right.83

Borgesius et al., in their commissioned study on the Proposal for the ePrivacy Regulation, mentioned a circumstance catalogue composed of a non-exhaustive black list of circumstances in which tracking walls are banned (list of illegal practices), supplemented with a grey list (practices presumed to be illegal). The study refers that if a situation is on the grey list, there is a legal presumption that a tracking wall makes consent involuntary, and therefore invalid. Hence, the legal presumption of the grey list shifts the burden of proof, e.g. for situations on the grey list, it’s up to the company deploying the cookie wall to prove that users gave a free consent, even though the company installed a tracking wall. We are instead of the opinion of a complete ban to cookie walls.

Further developments need to be consolidated through case law from the European Court of Justice. In addition, businesses using tracking/cookie walls to obtain consent may want to consider preemptively streamlining their method for obtaining consent (e.g., by switching to a cookie banner that allows to refuse consent). Table 4 summarizes the different positioning made public from some stakeholders.

| Stakeholders          | Cookie Wall as a violation of valid consent |
|-----------------------|--------------------------------------------|
| 29WP                  | ✔                                          |
| EDPS                  | ✔                                          |
| BEUC                  | ✔                                          |
| European Parliament   | ✔                                          |
| Dutch DPA             | ✔                                          |
| UK DPA - ICO          | (not clear)                                |
| Austrian DPA          | x                                          |
| French DPA - CNIL     | ✔                                          |
| German DPA            | ✔                                          |
| Spanish DPA           | (not clear)                                |
| Danish DPA            | ✔                                          |

The Recital 21 of the current draft of the ePrivacy Regulation Proposal addresses indirectly the case of legitimizing cookie walls for advertising purposes. This indirect indication reveals that it is a topic of political controversy between the stakeholders. These draft signals that consent is valid (freely given) when the processing related to a service the user requested has advertising purposes. The Recital reads,

82 Spanish DPA ‘Guide on the use of cookies’ (2019) <www.aepd.es/media/guia-cookies.pdf> accessed 11 December 2019 (author’s translation of the Spanish version) (henceforth named ‘Spanish DPA Guide’).
83 Author’s translation of the Spanish version.
84 Frederik Borgesius, Joris van Hoboken, Ronan P. Fahy, Kristina Irion, Max Rozendaal, ‘An Assessment of the Commission's Proposal on Privacy and Electronic Communications’ (Study for the LIBE Committee. Brussels: European Parliament, Directorate-General for Internal Policies, Policy Department C: Citizens’ Rights and Constitutional Affairs, Chapter 3.5.5, 2017) <www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU(2017)583152> accessed 11 December 2019.
85 cf Council of the European Union proposal (n 27).
In some cases the use of cookies may also be necessary for providing a service, requested by the end-user, such as services provided to safeguard freedom of expression and information including for journalistic purposes, such as online newspaper or other press publications (…), that is wholly or mainly financed by advertising provided that, in addition, the end-user has been provided with clear, precise and user-friendly information about the purposes of cookies or similar techniques and has accepted such use.

4.3. Specific

Specific consent involves granularity of the consent request in order to avoid a catch-all purpose acceptance. In the following subsections we decomposed further this requirement.

4.3.1. Separate consent per purpose

The request for consent should be granular in the options for consenting to cookies, so that the user is able to give consent for an independent and specific purpose (29WP WP208). This reasoning is given by the following recitals of the GDPR. Recital 32 of the GDPR states that consent should be given per purpose (or set of purposes). The provision is worded as follows: ‘consent should cover all processing activities carried out for the same purpose or purposes. When the processing has multiple purposes, consent should be given for all of them’.

This element of a specific consent relates to the purpose limitation ‘principle observed in Article 5(1)(b) of the GDPR. Therein rely two elements: i) data must be collected for specified, explicit and legitimate purposes only; and ii) data must not be further processed in a way that is incompatible with those purposes. The Article reads: ‘personal data shall be ‘collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes [...] (“purpose limitation”).’

In this same line, the 29WP (WP 203) analysis this principle of ‘purpose limitation’ and explains that any purpose must be specified, which means, be precisely and fully identified. The 29WP (WP259 rev.01) additionally comments on the needed consent for each purpose to comply with the conditions of a valid consent:

‘Data subjects should be free to choose which purpose they accept, rather than having to consent to a bundle of processing purposes. (…) If the controller has conflated several purposes for processing and has not attempted to seek separate consent for each purpose, there is a lack of freedom. This granularity is closely related to the need of consent to be specific. (…) When data processing is done in pursuit of several purposes, the solution to comply with the conditions for valid consent lies in granularity, i.e. the separation of these purposes and obtaining consent for each purpose’.

The 29WP (WP259 rev.01) instructs further that ‘a controller that seeks consent for various different purposes should provide a separate opt-in for each purpose, to allow users to give specific consent for specific purposes’.

Planet49 Judgment of the Court of Justice of the EU determined that specific consent means that ‘it must relate specifically to the processing of the data in question and cannot be inferred from an indication of the data subject’s wishes for other purposes’. This means that consent should be granularly for each purpose of processing.

The resulting analysis sustains that the banner should present each purpose separately (but also, it should allow accepting or rejecting each purpose separately), as depicted in the requirement box.

| Requirement    | Separate consent per purpose                                                                 |
|----------------|---------------------------------------------------------------------------------------------|
| Violation      | A consent should be separately requested for each purpose.                                   |
|                | General consent request under conflated purposes                                             |

86 cf 29WP (WP208) (n 46) 3.
87 Article 29 Working Party, ‘Opinion 03/2013 on purpose limitation’ (WP 203, 2 April 2013).
88 cf 29WP (WP259 rev.01) (n 4) 11.
89 Case C-673/17 Verbraucherzentrale Bundesverband v. Planet49, [2019] ECLI:EU:C:2019:801, para 58 (henceforth named Planet49 case).
Examples. Figure 10 shows a website of wordreference.com, where a user cannot give consent per purpose, but instead is presented with a ‘Learn More & Set Preferences’ link that only allows to give consent per third-party. Figure 11 shows (a part of) the list of vendors, which is longer than several screens and is obviously overwhelming and not usable for an average user. Figure 12 outlines the Dailymail website banner, which conflates together different data processing purposes (e.g. personalization, ad selection, content selection and measurement) under a single acceptance request, therefore violates the requirement that consent should be given per purpose. On the other hand, Figure 13 depicts a compliant design banner from the website senscritique.com.

Figure 10 A settings accessible from the cookie banner on website of wordreference.com (wg:www.wordreference.com/enfr/sf> accessed 24 September 2019)

Figure 11 The cookie banner of wordreference.com does not allow to refuse consent for all third-parties at once, only on a ‘per third party’ basis. (<www.wordreference.com/enfr/sf> accessed 24 September 2019)
Figure 12 Non-compliance with the requirement ‘separate consent per purpose’ (<www.dailymail.co.uk/home/index.html> accessed 17 May 2019)

Figure 13 Compliance with the requirement ‘separate consent per purpose’ (<www.senscritique.com/> accessed 18 May 2019)

How to detect violations? A human operator can observe violations with no technical support. However, it would be possible to detect such violations if the user interface of cookie banner was standardized, which is not the case nowadays.

4.3.2. Consent not required per cookie, per publisher, per third party

Under the following three subheadings we add the observation that a request for consent per purpose does not include a request: per cookie; per publisher; nor per third-party, for the reasons explained below.

• Not per cookie. We argue that the requirement of granular purposes does not mandate that the consent request should be provided on cookie basis. We claim that the consent request for each cookie is not user friendly and it might be too overwhelming for users. Moreover, few users are familiar with the concept of cookies and tracking technologies and therefore may lead to certain choices as a consequence of user’s lack of knowledge. We derive this conclusion from several
bases. The text of the Recital 25 of the ePD states that the cookie consent request covers its further uses, insofar as these uses are compatible with the initial purposes, for which the consent is provided. The 29WP (WP208)\textsuperscript{90} mentions that each website could prominently display a link to a location where all cookies used by the website are presented through types (and hence, not per cookie). In the same line, the ICO\textsuperscript{91} gives the same reasoning when referring to cookie categories,

Some sites might use tens or even hundreds of cookies and therefore it may also be helpful to provide a broader explanation of the way cookies operate and the categories of cookies in use. For example, a description of the types of things you use analytics cookies for on the site will be more likely to satisfy the requirements than simply listing all the cookies you use with basic references to their function.

The Danish DPA\textsuperscript{92} refers an example of a specific consent per purpose (and not per cookie),

[A] website has a cookie pop-up in which the user can accept or decline cookies by purpose, i.e. the user can freely decide whether he or she wants functional, statistical and/or marketing cookies to be set by the website. The user can easily toggle cookies by purpose on and off. Then the website’s cookie consent is specific.

- **Not per publisher.** The need of a separate and renewed consent per publisher is also discussable: if one publisher receives consent, it is questionable that it might share the consent with other publishers. In this regard, we refer to the case law of the European Court of Justice and adapt its reasoning to our consent-cookie request context. The Court (in its two decisions of Tele 2 and Deutsche Telekom\textsuperscript{93} in the context of electronic public directories), refers to the extension of the initial consent to the subsequent processing of the data by third-party companies, provided that such processing pursues that same purpose, and that the user was informed thereof. The Court hold that where a user consented to the passing of his personal data to a given company, the passing of the same data to another company, with the same purpose and without renewed consent from that user, does not violate the right to protection of personal data. The Court adds that a user will generally not have a selective opinion to object to the sharing of the same data through another, yet similar, provider. From these arguments, we conclude that there is no need for a separate and renewed consent per publisher whenever further processing follows that same purpose, and the user was informed thereof. In these cases, consent could be shared with other publishers.

- **Not per third-party.** We believe it is not required a fine-grained customization per third parties. In fact, showing the full advertiser list, configures a deceptive design. The 29WP (WP259 rev.01)\textsuperscript{94} suggests that the categories of third parties who receive personal data and wish to rely upon the consent at the cookie consent request covers its further third party access to data collected by the cookies on the website: ‘necessary information would be the purpose(s) of the cookies and, if relevant, an indication of possible cookies from third parties or third party access to data collected by the cookies on the website’ 29WP (WP208).\textsuperscript{95}

The Italian DPA\textsuperscript{96} adopted the same reasoning and postulated that ‘publishers may not be required to include, on the home page of their websites, also the notices relating to the cookies installed by third parties via the publishers’ websites’.

### 4.4. Informed Consent

Whenever BTT are accessed or stored on a user’s device, the user must be given clear and comprehensive information on what is accessed or stored and on the purposes of this action. Besides, means for expressing their consent must be given, pursuant to Article 5(3) of the ePD.

\textsuperscript{90} cf 29WP (WP208) (n 46) 3 and 5.

\textsuperscript{91} cf ICO Guidance (n 19) 10.

\textsuperscript{92} cf Danish DPA (n 78).

\textsuperscript{93} C-543/09 Deutsche Telekom AG v Bundesrepublik Deutschland [2011] EU:C:2011:279, para 62 to 65; and C-536/15 Tele2 (Netherlands) BV and Others v Autoriteit Consument en Markt (ACM) [2017] ECLI:EU:C:2017:214.

\textsuperscript{94} cf 29WP (WP259 rev.01) (n 4) 14.

\textsuperscript{95} cf 29WP (WP208) (n 46) 3 and 5.

\textsuperscript{96} Italian DPA, ‘Simplified Arrangements to Provide Information and Obtain Consent Regarding Cookies’ (2014) <www.garanteprivacy.it/web/guest/home/docweb/-/docweb-display/docweb/3167654> accessed 11 December 2019.
The type and accuracy of the information provided needs to be such as to put users in control of the data on their own device. The 29WP (WP131)\textsuperscript{97} envisioned that the data subject’s consent is ‘based upon an appreciation and understanding of the facts and implications of an action’.

The judgment of the Court of Justice of the EU on the Planet49 case\textsuperscript{98} elucidated that providing ‘clear and comprehensive’ information means ‘that a user is in a position to be able to determine easily the consequences of any consent he might give and ensure that the consent given is well informed’. The information must be also ‘clearly comprehensible and sufficiently detailed so as to enable the user to comprehend the functioning of the cookies employed.’

Regarding the timing to provide the information, the delivery of information should be concomitant to the time and place when consent is requested. As posited by the 29WP (WP208), information should be provided ‘at the time and place where consent is sought, for example, on the webpage where a user begins a browsing session (the entry page). As such, when accessing the website, users must be able to access all necessary information.’

From the analysis of the legal provisions, the 29WP guidance and the mentioned case-law, we derive two points:

- the approach to deliver information; and
- the content of the information to be given on cookies.

Sections 4.4.1 refers to the approach recommended to deliver information, while sections 4.4.2, 4.4.3, 4.4.4 and 4.4.5 provide the content of the information to be given to the user.

### 4.4.1. Accessibility of information page

On the recommended approach, the 29WP (WP208) proposes a visible notice on the use of cookies, displaying a link to an information page where the cookie-related information is presented (preferably through a layered approach). The built-in possibilities therein considered are:

- The mechanism should provide for a visible notice on the use of cookies;
- Prominently display a link to a designated location where all the types of cookies used by the website are presented;
- Providing information in a layered approach, typically providing a link, or series of links, where the user can find out more about types of cookies being used.

We have defined the requirement prescribing that the information page (entry page or cookie policy) on the use of BTT should be accessible through a banner, with a clickable link.

| Requirement | Accessibility of information page |
|-------------|-----------------------------------|
| Violation   | The information page should be accessible through a cookie banner, via a visible link or a button |
|             | Inexistence of an information page |

**Examples.** Figure 14 shows a cookie banner compliant example, where the ‘information page’ is accessible through a link.

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\textsuperscript{97} 29WP Working Document on the processing of personal data relating to health in electronic health records (EHR) (WP 131, 15 February 2007) 8.

\textsuperscript{98} cf Planet49 Judgment (n 87) para 74.

\textsuperscript{99} Interestingly, for the EU institutions, the EDPS recommends a layered approach, where the information is given at different stages, providing greater detail. The essential information should be present at a sufficient level of detail to already put the user in control at the first layer. A notice providing (the reference to) the first level of information on cookies must be clearly visible to web service users whatever their landing page is. Further, the EDPS strongly recommends that EU institutions provide information on cookies on the web service under their control and not rely on external sources. If, for some reasons, the institution uses external sources, they should set up measures to manage relevant risks, where possible, cf. EDPS Guidelines (n 28) 15.
29

Figure 14 Compliant example. The ‘information page’ should be accessible through a cookie banner (via a link or a button) (<www.lemonde.fr> accessed 18 May 2019)

How to detect violations? A simple manual analysis of a cookie banner content is enough to identify whether a link to the privacy policy is accessible. Some technical means are also possible to be used to detect links on a cookie banner with a ‘privacy policy’ keyword or related phrases. The problem with a technical approach is that there is no unified standard for the names of the information pages (often called ‘privacy policy’ or ‘cookie policy’, but sometimes simply named ‘here’ with a link). If a standard way to show privacy policies is established in the future, it would become possible to detect a violation of this requirement automatically. Experimental methods using keywords or machine learning to detect if the link leads to a privacy policy may work. Such inaccurate methods would not be usable in a law suit and would need to be verified manually anyway. The same analysis holds for all the following requirements in this section 4.

4.4.2. Content of the information on cookies

Regarding the content of the information to be given, both the 29WP (WP208) and the recent Planet 49 judgment100 set the necessary information to be disclosed. In particular, the Court of Justice signals that expiration date of cookies and third party sharing should be disclosed to users when obtaining consent, as listed in the requirement box.

| Requirement | Information on cookies |
|--------------|------------------------|
|              | The ‘information page’ should contain: |
|              | • Cookie name (an identifier of a cookie) and a responsible party for setting it |
|              | • Purposes |
|              | • Third parties with whom the cookie and corresponding information is shared (e.g. cookie syncing and cookie forwarding) and for what purpose |
|              | • Duration of cookies101 |
|              | • Typical values |
| Violation    | Absence of any of these elements in the information page |

Examples. Figure 15 renders a partially-compliant example. Even if the ‘information page’ should contain all the required information for each cookie, this website contains only cookie names, responsible parties, purposes and retention period. Figure 16 depicts a non-compliant example wherein the ‘information page’ contains only groups of purposes (analytics, social, etc.) of cookies but does not provide detailed information on each cookie.

100 cf. Planet49 Judgment (n 87) Verbraucherzentrale Bundesverband v. Planet49, Case C-673/17, [2019] OJ C 112 (ECLI:EU:C:2019:801) para 75.
101 According to the CNIL, the validity period of cookies for France is 13 months maximum.
4.4.3. Information about cookie configurations

The 29WP (WP208)\(^{102}\) instructs that information should refer to how the user can express his choice by accepting all-some-or-none cookies and how to change this choice afterwards through the settings; it states that ‘the ways they can signify their wishes regarding cookies i.e. how they can accept all, some or no cookies and to how change this preference in the future (…) and how to later withdraw their wishes regarding cookies’. Accordingly, information on the possibility of a refined configuration of the user’s preferences was designed as a sub-requirement presented in the requirement box.

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\(^{102}\) cf 29WP (WP208) (n 46).
Requirement | Information about cookie configurations
---|---
The banner or the ‘information page’ should explain how the user can accept all, some or no cookies and how to change this preference in the future. For example, via banner’s buttons or links

Violation | Non-existence of information on configuration possibilities

**Examples.** Figure 17 depicts a non-compliant banner example. This banner, besides showing general purposes, does not give any information on how the user can accept all, some or no cookies and how to change this preference in the future. Figure 18 shows a compliant banner that explains how the user can configure his choices.

![Non-compliant banner example](image1)

**Figure 17** Violation example: this ‘information page’ only renders general purposes (not requesting consent per purposes) nor any information on how the user can accept all, some or no cookies and how to change this preference in the future (<www.dailymail.co.uk/home/index.html> accessed 18 May 2019)

![Compliant banner example](image2)

**Figure 15** Compliant example banner: this ‘information page’ explains how the user can configure his choices (<www.lemonde.fr/gestion-des-cookies> accessed 18 May 2019)

4.4.4. Information about the data controller

The GDPR establishes obligations to provide contact details of the controller, as defined in Article 4(7) and, where applicable, of the controller’s representative. Such information must be shown both when personal data are collected from the data subject (Article 13(1)(a)) and when they have not been obtained from the data subject (Article 14(1)(a)) to enable the exercise of the data subject’s rights toward the controller or its representative, in application of the transparency principle (Article 5(1)).
We defined as a sub-requirement the need for the information page to incorporate the identity of the controller, contact details and whenever applicable, the representative.

| Requirement | Information about the data controller |
|-------------|-------------------------------------|
|             | The ‘information page’ should contain, for each third-party data controller: its identity, contact details, name of its representative in the EU, contact of the Data Protection Officer (DPO) |

| Violation | Absence of any reference about the data controller |

### 4.4.5. Information about the data subject rights

The GDPR stipulates the need to provide information on the rights of the users (right to access and erasure; right to withdraw consent), about the use of data for automated decision-making and the risks of data transfers to a third country or an international organization. We have reproduced these rules into another sub-requirement for a valid consent, as shown below in the requirement box.

| Requirement | Information about the data subject rights |
|-------------|------------------------------------------|
|             | The ‘information page’ should contain the user’s rights: |
|             | 1. rights to access, erasure |
|             | 2. right to withdraw consent |
|             | 3. information on the use of data for automated decision-making |
|             | 4. risks of data transfers to a third country or an international organization |

| Violation | Absence to any reference on the rights and risks |

**Examples.** Figure 19 shows an information page in which the rights of the subjects are illustrated. However, as shown on Figure 20, it does not provide for all the informative elements, such as the risks of transfers of data.

Figure 19 Compliant example on informed consent: the page refers the rights of the data subjects, such as the right of access or deletion (<www.avendrealouer.fr/RealEstate/Other/InfosCookies> accessed 18 May 2019).
4.5. Unambiguous consent

For the consent to be valid, the user must give an ‘unambiguous indication’ through a ‘clear and affirmative action’ (Article 4(11) of the GDPR). In the following subsections we decompose further this requirement.

4.5.1. Affirmative Action Design

This requirement refers to an active behavior of the user through which he indicates acceptance or refusal of BTT (Article 5(3) and Recital 66 of the ePD). The 29WP (WP208) explains this active behavior,

‘Active behaviour means an action the user may take, typically one that is based on a traceable user-client request towards the website. (…) The process by which users could signify their consent for cookies would be through a positive action or other active behaviour [...] The consent mechanism should present the user with a real and meaningful choice regarding cookies on the entry page.’\(^{103}\)

Both Recital 32 GDPR and the 29WP (WP208)\(^{104}\) provide for concrete for cookie-based opt-in consent mechanisms to make sure consent is clearly given: ‘clicking on a link, or a button, image or other content on the entry webpage, ticking a box in or close to the space where information is presented (…) or by any other active behavior from which a website operator can unambiguously conclude it means specific and informed consent’.

Planet49 Judgment\(^{105}\) made even more precise this requirement. The ruling asserts that ‘only active behavior on the part of the data subject with a view to giving his consent may fulfil that requirement’, and this wording (‘with a view to’) denotes the element of willfulness towards giving an affirmative consent.

An active behavior leaves no scope for interpretation of the user’s choice. As such, behaviors presenting a margin of doubt do not deliver a choice and therefore are void.\(^{106}\) Stakeholders pinpoint instances of ambiguous behaviors, such as:

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\(^{103}\) cf 29WP (WP208) (n 46) 4 and 5.

\(^{104}\)The 29WP refers that opt-in consent is the mechanism most aligned to Art. 5(3) of the ePD: ‘in general users lack the basic understanding of the collection of any data, its uses, how the technology works and more importantly how and where to opt-out. As a result, in practice very few people exercise the opt-out option’, cf 29WP (WP208) (n 46) 4 and 5.

\(^{105}\) cf Planet49 Judgment (n 87) Verbraucherzentrale Bundesverband v. Planet49, Case C-673/17, [2019] OJ C 112 (ECLI:EU:C:2019:801) para 54.

\(^{106}\)cf 29WP (WP187) (n 45) 35.
• Presumed or implied consent from inactivity or silence on the part of the data subject\(^\text{107}\) (Recital 32 of the GDPR), e.g. ‘This website uses cookies to improve your experience. Find out more’;
• Proceeding with a service,\(^\text{108}\) e.g. ‘We’ve placed cookies on your device to help make this website better. By continuing to use the site we assume you consent to this’, or ‘We use cookies to give you the best online experience. By accessing the website, you give your consent to our use of cookies’;
• Disappearance of the cookie banner without an affirmative action of the user, and a positive consent is registered by the fact that the user scrolled the website, visited other pages, clicked on links or other actions on a website;\(^\text{109}\)
• User only clicked on a ‘more information’ on the provided link;\(^\text{110}\)
• Pre-ticked boxes.\(^\text{111}\)

In the light of the above, we define the ‘Affirmative Action Design’ requirement to make prominent this positive action. The consent must be registered only after an affirmative action of a user, like clicking on a button, checking a box, or actively selecting settings. Notice that closing a cookie banner without a consent being registered as ‘positive’ does not configure a violation of this requirement.

| Requirement | Affirmative Action Design | Violation |
|-------------|---------------------------|-----------|
|             | The consent must be registered only after an affirmative action of a user, like clicking on a button or checking a box | The action of closing a cookie banner. Allowing only closing the banner and forcing agreement on consent is a violation. Pre-ticked boxes. Disappearance of the cookie banner without an affirmative action of the user with a positive consent registered |

**Examples.** Figure 21 is an non-compliance example of the requirement of ‘Active Action Design’. It shows the Twitter account of the European Data Protection Board and a cookie banner provided by twitter.com, wherein it is not possible to exercise an active consent since the only possible action is to close the cookie banner, while agreeing to the use of cookies.

![The only possible action is to close the cookie banner.](https://twitter.com/eu_edpb?lang=en)

**Figure 21** Violation of the ‘Affirmative Action Design’ requirement (accessed 24 September 2019)

\(^{107}\) On implied consent, the ICO observes that ‘statements such as “by continuing to use this website you are agreeing to cookies” should not be used as they do not meet the requirements for valid consent required by the GDPR. Pre-ticked boxes or any equivalents, such as sliders defaulted to “on”, cannot be used for non-essential cookies. Users must have control over any non-essential cookies and they must not be set on landing pages before consent is obtained’. cf ICO Guidance (n 19).

\(^{108}\) Controllers must avoid ambiguity (…). Merely continuing the ordinary use of a website is not conduct from which one can infer an indication of wishes by the data subject to signify his or her agreement to a proposed processing operation, cf 29WP (WP187) (n 45) 17.

\(^{109}\) cf 29WP (29WP208) (n 46) 5.

\(^{110}\) ibid.

\(^{111}\) cf Planet49 Judgment (n 87) *Verbraucherzentrale Bundesverband v. Planet49*, Case C-673/17, [2019] OJ C 112 (ECLI:EU:C:2019:801).
How to detect violations? To detect a violation of this requirement one needs to perform an action on the website, like closing the banner or scrolling the website and verify whether a positive consent has been registered. While an action on a website must be done by a human operator (because there is no standard design of closing banners that can be automated), verification of a registered consent can be done only with technical means, and only if it is known a priori how exactly (using which technology) the consent will be stored by the publisher. For instance, this is the case if the publisher is using IAB Europe’s Transparency and Consent Framework, as demonstrated by Matte et al. 112

4.5.2. Configurable banner

The 29WP (WP208) recommends a mechanism by which ‘the user should have an opportunity to freely choose between the option to accept some or all cookies or to decline all or some cookies and to retain the possibility to change the cookie settings in the future’. Following this guidance, we believe that a sufficient level of granularity of choice is demanded in the website banner design. We posit that a cookie banner must give the user an option to customize consent. Moreover, following Article 7(4) of the GDPR, which states that withdrawing consent should be as easy as giving it, we derive that giving and revoking consent should be easy. We argue that the choice between ‘accept’ and ‘reject’ cookies must be easy and balanced (or equitable).

In a recent decision from the Spanish DPA 113 it was acknowledged the need for a management system or cookie configuration panel that allows the user to accept and/or reject cookies in a granular way, by enabling a mechanism or button to reject all cookies, another to enable all cookies or to be able to do it in a granular way in order to manage the preferences of each user.

In our opinion, several implementations are possible, suchlike: i) one ‘configure’ button; or ii) ‘accept’, ‘reject’ and ‘configure’. We define the requirement related to the possibility of customization or configuration of the banner, as shown in the requirement box.

| Requirement | Configurable banner |
|-------------|---------------------|
| A cookie banner must give the user an option to customize his consent. Several implementations are possible: | |
| - One ‘Configure’ button | |
| - Accept, Reject and Configure | |
| For a fair design choice, we argue that the choice between ‘accept’ and ‘reject’ must be balanced | |
| Violation | A banner does not provide a fair choice in a banner configuration. When it is not possible to configure. |

Examples. Figure 22 illustrates a non-compliant design banner, curiously from one of the most referenced security and privacy conferences (IEEE Symposium on Security and Privacy, also known as ‘Oakland’ in the computer security research community). In this banner, the only available option is to accept and close the banner, not offering a sufficient level of granularity of choice demanded by the GDPR. Figure 23 shows a banner design which is closer to be compliant with the ‘Configurable’ consent requirement. Through the indication of the ‘yes’ and ‘no’ buttons, it is possible to accept and withhold consent, rendering a balanced choice. Configuring the choice at any time in the privacy center is also possible. As the customization of the preferences is easy and user friendly, the banner seems to comply with the above-mentioned requirement.

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112 Celestín Matte, Nataliia Bielova, Cristiana Santos, ‘Do Cookie Banners Respect my Choice? Measuring Legal Compliance of Banners from IAB Europe’s Transparency and Consent Framework’ (2019) (arXiv preprint, 2019) <https://arxiv.org/abs/1911.09964> accessed 11 December 2019.

113 The Spanish DPA decision reads accordingly, ‘III. It does not provide a management system or cookie configuration panel that allows the user to eliminate them in a granular way. To facilitate this selection the panel may enable a mechanism or button to reject all cookies, another to enable all cookies or do so in a granular way to manage preferences. In this regard, it is considered that the information offered on the tools provided by several browsers to configure cookies would be complementary to the previous one, but insufficient for the intended purpose of allowing to set preferences in a granular or selective way’. See Spanish DPA decision, ‘Procedimiento PS/00300/2019’ (2019) <www.aepd.es/resoluciones/PS-00300-2019.ori.pdf?utm_source=POLITICO.EU&utm_campaign=fc1f5e664f-EMAIL_CAMPAIGN_2019_10_17_04_52&utm_medium=email&utm_term=0_10959edeb5-fc1f5e664f-190359285> accessed 11 December 2019 (our translation).
How to detect violations? To detect violations, a human operator needs to evaluate whether a banner gives a set of options to the user, which are fair and balanced. As of today, it’s not possible to verify this requirement automatically because of lack of standards in cookie banner design.

4.5.3. Post-consent registration

The GDPR mandates in Article 7(1) that controllers have the obligation to demonstrate that the data subject has consented to processing of his personal data, in line with accountability obligations. One way of having an auditable consent, according to the 29WP, is to keep a record of the received consent statements, so the controller can show how/when consent was obtained. Consent receipt mechanisms can be helpful in automatically generating such records.

We underline that, after a certain user action done via a user interface, user consent is normally ‘registered’ in the user’s device (a browser in our case). We therefore use the adjective ‘registration’ to mean the consent is stored. Accordingly, we include the ‘Post-consent registration’ requirement, as depicted in the requirement box below.
Requirement | Post-consent registration
---|---
The consent can be registered (e.g., stored on a terminal equipment) in a ‘consent cookie’ (or any other browser storage) only after an affirmative action of the user.

Violation | A consent registered without any user action.

**Example.** Figure 24 refers to an example of non-compliant design of the ‘Post-consent registration’ requirement. When accessing the tpi.it website, it is possible to check that the user’s consent was registered before the user has made his choice.

![Image of tpi.it website with consent banner]

**Figure 16** Violation of the ‘Post-consent registration’ requirement (<www.tpi.it> accessed 17 May 2019).

**How to detect violations?** Detecting violations is only possible with technical means, but only on websites where it is known how the consent is registered by the publisher (e.g., for websites using the IAB’s Transparency and Consent Framework, as demonstrated by Matte et al.114 For the majority of websites, it is not the case and therefore, detecting violations without standardizing the storage of consent is not possible.

### 4.5.4. Correct consent registration

We also design a requirement on the basic functionality of cookie banners: the consent that the user chooses in the user interface should be identical to the consent that gets registered by the website.

| Requirement | Correct consent registration
---|---
The registered consent must be identical to the user’s choice of consent in user interface.

Violation | A registered consent is different from the user’s choice.

**Example.** In figure 25, by using Matte et al. Cookie Glasses tool,115 it is possible to verify whether consent is correctly registered by cookie banners of IAB Europe’s Transparency & Consent Framework.

114 cf Matte et al. (n 111).
115 Browser extension tool available at <https://github.com/Perdu/Cookie-Glasses> accessed 11 December 2019.
How to detect violations? Detecting violations is possible only by a combination of manual and technical means and only on websites where it is known how the consent is registered by the publisher. Manual verification is needed for the evaluation of the user interface in the banner. For the majority of websites, it is not known how consent is registered, and therefore it is not possible to detect violations without standardizing the storage of consent. Matte et al. demonstrated consent verification on the IAB Europe’s Transparency and Consent Framework.

4.6. Readable and accessible

Article 7(2) of the GDPR, the consent request shall be presented in a manner which is clearly distinguishable from the other matters, in an intelligible and easily accessible form, using clear and plain language. We develop each of these elements of the consent request in the following sections.

4.6.1. Readable and accessible consent request

We built the requirement of ‘Readable and Accessible’ consent request from the analysis of the following provisions: Article 7(2) GDPR, and its further articulation in Recitals 32 and 42 of the GDPR. Herewith we transpose their excerpts for readability. In the wording of Recital 32, ‘if the data subject’s consent is to be given following a request by electronic means, the request must be clear, concise and not unnecessarily disruptive to the use of the service for which it is provided’. Pursuant to Recital 42, ‘a declaration of consent pre-formulated by the controller should be provided in an intelligible and easily accessible form, using clear and plain language and it should not contain unfair terms’.

From these three precepts of the GDPR, we derive that the request for consent should:

i. Be clearly distinguishable from the other matters,
ii. Have an intelligible form,
iii. Be in an easily accessible form,
iv. Use clear and plain language, and
v. Not contain unfair terms.

The GDPR mandates that a failure to comply with these elements constitutes an infringement and renders a non-binding consent. Article 7(2) GDPR. These attributes were mostly elaborated in the 29WP Guidelines on Transparency and relate to how information should be disclosed. We apply them as sub-requirements within the consent request for cookie banners, as depicted in Table 5. However, these sub-requirements are language-based and accessibility-dependent, and we don’t cover these linguistic aspects in this paper, thereby excluding their compliance assessment.

116 cf Matte et al. (n 111).
117 ‘The GDPR puts several requirements for informed consent in place, predominantly in Article 7(2) and Recital 32. This leads to a higher standard for the clarity and accessibility of the information’, cf 29WP (WP259 rev.01) (n 4) 14.
118 The 29WP mentions that ‘transparency requirements in the GDPR apply irrespective of the legal basis for processing and throughout the life cycle of processing’, Article 29 Working Party, ‘Guidelines on transparency under Regulation 2016/679’ (WP260 rev.01, 29 November 2017) 6.
Table 5 Sub-requirements of ‘Readable and Accessible Consent Request’

| Sub-requirements                           | 29WP Guidelines on Transparency (applied to information in general)                                                                 |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Clearly distinguishable from the other matters | ‘This information should be clearly differentiated from other non-privacy related information such as contractual provisions or general terms of use. In an online context, the use of a layered privacy statement/notice will enable a data subject to navigate to the particular section of the privacy statement/notice which they want to immediately access rather than having to scroll through large amounts of text searching for particular issues’. |
| Intelligible form                          | ‘[$should be understood by an average member of the intended audience’.                                                                 |
| Easily accessible form                     | ‘[$The data subject should not have to seek out the information; it should be immediately apparent to them where and how this information can be accessed’. |
| Using clear and plain language            | ‘Information should be provided in as simple a manner as possible, avoiding complex sentence and language structures. The information should be concrete and definitive; it should not be phrased in abstract or ambivalent terms or leave room for different interpretations. In particular the purposes of, and legal basis for, processing the personal data should be clear. (…) The information provided to a data subject should not contain overly legalistic, technical or specialist language or terminology’. |

We included the requirement of ‘Readable and Accessible Consent Request’ considering two main factors:

- The reasonable expectations of data subjects (which are, in general, laymen), as evoked by the recent jurisprudence of the European Court of Justice, in Planet49 judgment that reads: ‘due to the technical complexity of cookies, the asymmetrical information between provider and user and, more generally, the relative lack of knowledge of any average internet user, the average internet user cannot be expected to have a high level of knowledge of the operation of cookies’;

- The average user needs specific information to easily determine the consequences of any consent he might give, in an intelligible, clear way, where layered information is amenable.

4.6.2. No ‘consent wall’

Recital 32 of the GDPR states that the consent request should not be unnecessarily disruptive to the use of the service for which it is provided. In our opinion, unnecessary disruption reflects a common practice that we name ‘consent walls’. It means that the cookie banner is visually limiting the access to the content of the website (the content can also be blurred out or dimmed) before the user expresses his consent. Notice that ‘on interpreting ‘unnecessarily disruptive’ consent request: ‘it may be necessary that a consent request interrupts the user experience to some extent to make that request effective’. In line with Reenes, this disruption could merely occur depending on the user’s choice, e.g. a certain functionality may be lacking, such as a forum if the user does not accept social media cookies, or be replaced by other content, such as behavioral advertisements being replaced by other types of advertisements.

We take the view that if there are other ways to display the overlay without blocking the access to the service, then such banner is preferred to a consent wall. In practical settings, the website should still be accessible even if the user didn’t respond to the consent request. If there are other ways to show the banner

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119 ibid p 7-8.
120 cf Planet49 Judgment (n 87) para 114.
121 On the terminology in the area of consumer protection, see Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council (Text with EEA relevance), ELI: http://data.europa.eu/eli/dir/2011/83/2018-07-01. See, by way of example, the judgments of the following cases: Case C-485/17 Verbraucherzentrale Berlin eV v Unimatic Vertriebs GmbH [2018] ECLI:EU:C:2018:642, para 44; Case C-44/17 Scotch Whisky Association v Michael Klotz [2018] ECLI:EU:C:2018:415, para 47; Case C-210/96 Gut Springenheide and Tusky v Oberkreisdirektor des Kreises Steinfurt [1998] ECLI:EU:C:1998:369, para 31
122 The Handbook on European Data Protection Law refers to the ‘accessibility in an online environment’, as follows: ‘The quality of the information is important. Quality of information means that the information’s language should be adapted to its foreseeable recipients. Information must be given without jargon, in a clear and plain language that a regular user should be able to understand. Information must also be easily available to the data subject (…)’. Accessibility and visibility of the information are important elements: the information must be clearly visible and prominent. In an online environment, layered information notices may be a good solution, as these allow data subjects to choose whether to access concise or more extensive versions of information’, European Agency for Fundamental Rights, ‘Handbook on European Data Protection Law’ (2018 edition) (Publications Office of the European Union, 2018) 147
123 cf Leenes (n 61).
without blocking (disturbing) the access to the service, or disrupting the user experience, then it is preferred to a consent wall. Thus, we argue that consent walls do not configure a valid design for consent mechanisms they are confusing and unnecessarily disruptive of the user experience. Other consent design implementations could be sought while engaging the users.

This requirement has even stronger practical significance with mobile devices. Its small configuration implies that consent walls can be more obvious while users do not consent. Relevantly, the ICO\textsuperscript{124} emphasizes the user experience along with the electronic consent request implementation:

Message boxes such as banners, pop-ups, message bars, header bars or similar techniques might initially seem an easy option for you to achieve compliance. However, you need to consider their implementation carefully, particularly in respect of the implications for the user experience. For example, a message box designed for display on a desktop or laptop web browser can be hard for the user to read or interact with when using a mobile device, meaning that the consents you obtain would be invalid (...) so you need to consider how you go about providing clear and comprehensive information without confusing users or disrupting their experience.

The requirement box summarizes the ‘No consent wall’ requirement.

| Requirement          | No consent walls                                                                 |
|----------------------|----------------------------------------------------------------------------------|
|                      | The website needs to be accessible even if the user didn’t respond to request for consent. If there are other ways to show the banner without blocking (or disturbing) the access to the service, then it is preferred than a consent wall |
| Violation            | ‘Consent wall’ that blocks the service before the user accepts or rejects consent |

Example. Figure 26 depicts a consent wall displayed by the website fandom.com. This consent wall allows to accept or reject consent. Figure 27 shows a cookie banner that is compliant with the ‘No consent wall’ requirement on a desktop version of the website but becomes non-compliant on a mobile device because the cookie banner covers the majority of the screen. Moreover, as the cookie banner of LBC website only proposes to accept consent, it is non-compliant with the ‘Configurable banner’ requirement (Unambiguous consent). As a result, the mobile version of the LBC website has a cookie banner that forces the user to accept the data collection and at the same time blocks access to the website, which violates the ‘No tracking wall’ requirement.

\textsuperscript{124} cf UK DPA (n 19) 28.
Figure 27 The Desktop version of the LBC website does not violate the ‘No consent wall’ requirement, however the mobile version of the same website does (<www.lbc.co.uk/> accessed 25 September 2019).

**How to detect violations?** Detection of such violation is possible manually, by evaluating whether the cookie banner blocks access to the website or not. Currently, it’s not possible to detect this with technical means because there is no specification that defines which part of the website is a cookie banner.

### 4.7. Revocable

The GDPR establishes the right of the data subject to withdraw consent in Art. 7(3). We have made the ‘withdrawal of consent’ an additional explicit requirement due to the practical implications of this right. Primarily, this right is explicitly referenced in many provisions. Article 7(3) explicitly states this right as one of the “conditions for consent”, or condition for consent validity. Among other provisions, Recital 42 mentions the revocability of consent.

The 29WP (WP259 rev.01)\(^\text{125}\) confirms that the GDPR gives a prominent place to the withdrawal of consent. The German DPA\(^\text{126,127}\) also makes salient the requirement for revocability. It states that ‘anyone using cookies to analyze and track user behavior for advertising purposes or have them analyzed by third parties generally requires the informed, voluntary, prior, active, separate and revocable consent of the user’.

By endorsing the 29WP (WP259 rev.01)\(^\text{128}\) we claim that consent should be withdrawn through the same media that was obtained in the first place.

The GDPR does not say that giving and withdrawing consent must always be done through the same action. However, when consent is obtained via electronic means through only one mouse-click, swipe, or keystroke, data subjects must, in practice, be able to withdraw that consent equally as easily. Where consent is obtained through use of a service-specific user interface (for example, via a website, an app, a log-on account, the interface of an IoT device or by e-mail), there is no doubt a data subject must be able to withdraw consent via the same electronic interface, as switching to another interface for the sole reason of withdrawing consent would require undue effort.

Furthermore, the data subject should be able to withdraw his/her consent without detriment. This means that a controller must make withdrawal of consent possible free of charge or without lowering service levels (29WP WP259 rev.01)\(^\text{129}\).

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\(^\text{125}\) cf 29WP (WP259 rev.01) (n 4) 21.
\(^\text{126}\) cf German DPA (n 10).
\(^\text{127}\) ‘Since a consent is revocable, a corresponding option for revocation must be implemented. The revocation must be as easy as the granting of consent, Art. 7 (3) sentence 4 GDPR’ (our translation), cf German DPA (n 25) 9.
\(^\text{128}\) cf 29WP (WP259 rev.01) (n 4) 21.
\(^\text{129}\) ibid.
In this line, a recent decision\(^{130}\) of the Polish DPA against the company - ClickQuickNow Sp. z o.o. established that it violated the GDPR, because the mechanism of the consent withdrawal, involving the use of a link included in the commercial information, did not result in a quick withdrawal. It explained that after the link was set up, messages addressed to the person interested in withdrawing consent were misleading. Moreover, the company forced stating the reason for withdrawing consent, which is not required by the law. Furthermore, failure to indicate the reason resulted in discontinuation of the process of withdrawing consent.

Revocability is foreseen for future storing/reading of cookies, hence no cookies are further set in the browser. This right does not have retroactive effects, meaning that it does not apply for processing that had taken place before withdrawal. Revocation cannot affect nor devalue already conducted research, decisions or processes previously taken on the basis of this data. This reasoning is supported by Article 7(3) of the GDPR that lays down that ‘the withdrawal of consent shall not affect the lawfulness of processing based on consent before its withdrawal’. Moreover, the 29WP (WP187)\(^{131}\) supports also this view that ‘withdrawal is exercised for the future, not for the data processing that took place in the past, in the period during which the data was collected legitimately’.

Moreover, revocability offers also a possibility for the user (that has given consent to TBB on a website) to make subsequent changes/configurations to his preferences, at any time. In this line, the 29WP (WP 208)\(^{132}\) mentions that revocability is ‘an option for the user to subsequently change a prior preference regarding cookies’. In another opinion, the 29WP (WP 259 rev.01)\(^{133}\) ascertains that ‘consent is a reversible decision’.

### 4.7.1. Possible to change in the future

Under the revocability requirement explained above, we define the sub-requirement of the possibility to withdraw consent in the future.

| Requirement | Possible to change in the future |
|-------------|----------------------------------|
| Violation   | It is not possible to withdraw consent by the same means it was asked: It is cumbersome to revoke – the means of withdrawing are more complex that initial consent; It is rather complex to understand for an average user how to remove cookies, and it’s only accessible to the technical experts if other browser storages, such as HTML5 localStorage or cache should be cleaned. Moreover, there are no means to withdraw from browser fingerprinting. Revoking poses a delay, while positive consent was instantaneus. |

**Examples.** Figures 28 and 29 show compliant banners to this requirement based on the possibility to change preferences in the future. The banner from the faktor.io website offers users the possibility to review and manage their choices by clicking the fingerprint icon on the bottom right of the screen. This icon is available on every page of the site.

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\(^{130}\) Polish DPA, ‘Polish DPA: Withdrawal of consent shall not be impeded’ (2019) [https://edpb.europa.eu/news/national-news/2019_en]\(^{131}\) accessed 11 December 2019.

\(^{131}\) cf 29WP (WP187) (n 45) 33.

\(^{132}\) cf 29WP (WP208) (n 46) 2.

\(^{133}\) cf 29WP (WP 259 rev.01) 5.
How to detect violations? Detection of this violation is possible manually, by evaluating whether there is a mean to change the consent after it has been given and how easy it is to revoke consent.

4.7.2. Delete ‘consent cookie’ and communicate to third parties

Revoking consent has two results: blocking and posterior deletion of cookies\textsuperscript{134,135} in the user’s browser, and as such, data processing will no longer occur. The CNIL\textsuperscript{136} states that once the consent is revoked, both the reading and the deposit of new cookies should be blocked. The 29WP (WP 259 rev.01)\textsuperscript{137} reasons in the same line,

\textsuperscript{134} ‘Data is deleted unless it can be processed on another legal ground (for example storage requirements or as far as it is a necessity to fulfill the contract’ EU Commission, ‘What if somebody withdraws their consent?’<https://ec.europa.eu/info/law/law-topic/data-protection/reform/rules-business-and-organisations/legal-grounds-processing-data/grounds-processing/what-if-somebody-withdraws-their-consent_en> accessed 11 December 2019.

\textsuperscript{135} It is noticeable that the request for revoking consent doesn’t imply data erasure. For the data to be erased, the data subject needs to exercise this right to erasure. However, revoking consent should imply deletion of data as an immediate consequence.

\textsuperscript{136} cf CNIL (n 41).

\textsuperscript{137} cf 29WP (WP 259 rev.01) (n 4) 22.
As a general rule, if consent is withdrawn, all data processing operations that were based on consent and took place before the withdrawal of consent - and in accordance with the GDPR - remain lawful, however, the controller must stop the processing actions concerned. If there is no other lawful basis justifying the processing (e.g. further storage) of the data, they should be deleted by the controller (art. 17(1)(b) and (3) GDPR. (…) Controllers have an obligation to delete data that was processed on the basis of consent once that consent is withdrawn, assuming that there is no other purpose justifying the continued retention.

Pursuant to the above analysis, we defined as a sub-requirement that the publisher should delete the registered consent and communicate this withdrawal to all the third parties who have previously received consent.

| Requirement | Delete ‘consent cookie’ and communicate to third parties |
|-------------|--------------------------------------------------------|
| Violation   | When the ‘consent cookie’ is not deleted, and the publisher does not communicate to third parties that have received the consent |

**Example.** We cannot provide an example for this requirement. As of 2019, cookie banners rarely give users a way to modify their choice, and when they do, it's still unclear whether this change is actually communicated to third-party.

**How to detect violations?** Detection of such violation is a complex task because it requires checking whether the publisher has communicated the withdrawal of consent to all the third parties who have received it in the first place. As of today, there is no system that would be able to certify this – only if consent storage and communication is standardized and is observable in the web browser, computer scientists could provide tools for complete transparency and verification of this requirement.

5. **Discussion on shared consent**

In this section, we discuss compliant scenarios related to the possibility of a shared consent. In this regard, it is apparent from the case law from the European Court of Justice (in its two decisions of Tele 2 and Deutsche Telekom, that we adapt to this context) that consent can be shared among publishers, insofar the processing operations pursues the same purposes, and that the user was informed thereof, as analyzed in section 4.3.2 (in point ii. ‘consent not required per publisher’). From these legal sources, we reason that if consent is collected in a lawful way, consent can be shared. Note that this observation is not explicitly prohibited by the law-maker.

From practical side, however, such reasoning raises questions about shared responsibility of the data controllers and, most importantly, implies reliance and trust on the way consent was collected by either other publishers or providers of third party content.

In section 5.1 we foresee a scenario in which content that a priori does not require consent, when merged with content requiring consent from another website, will then demand the website publisher to rely on the way that consent was collected by the third party. In section 5.2 we conclude that only a negative consent can be safely shared among publishers and third parties.

5.1 **Content that doesn’t require consent merged with BTT that requires consent**

Let us firstly analyze one example of a user visiting two hypothetical websites: search.com and info.com. Firstly, the user visits a website search.com, where a cookie named SID of search.com is placed in the user’s browser. This cookie is used for advertising purposes, and hence requires consent. Let’s assume a valid consent was collected by search.com before placing of cookies in the user’s browser. Then, the user visits the website info.com, and it contains a customized search engine from search.com. Therefore, while visiting the website info.com, the user’s browser automatically sends a request to search.com to fetch the needed functional content, i.e., the customized search engine. Upon this request, the browser also automatically attaches the cookie SID of search.com. Therefore, search.com receives its advertising cookie SID when the user visits the website info.com.

In this hypothetical scenario, let us analyze how info.com can be compliant with the requirements of a valid consent:
• The publisher of the website info.com decides to collect its own consent for the search.com’s advertising cookie SID. To be compliant, the consent should be collected before cookies are sent (see ‘Prior to sending cookies’ requirement in section 4.1.2). But this prevents the loading of website’s functional content before consent is given (the customized search engine is not loaded before consent is given), and hence violates requirement on ‘No tracking walls’ (see section 4.2.2). The publisher, in this case, cannot collect a valid consent by itself without violating legal requirements and thus, has to rely on the consent collected by search.com;
• If the publisher of info.com relies on the consent already collected by search.com, then the website info.com has to place full trust in how search.com has collected consent. This scenario will have practical and legal consequences. If the consent is not obtained in a valid way through search.com, then the website info.com will become jointly responsible for the non-compliant consent collection.

In conclusion, when a third party merges content that doesn’t require consent (e.g., functional content) with the content that requires consent (e.g., advertising cookies), this forces the website publisher to rely on the consent collected by the third party.

5.2 Only a negative consent can be safely shared

We now discuss a scenario where a publisher relies on other publishers, previously visited by the user, for the collection of valid consent, or on third parties (as in section 5.1). If the user gives a positive consent (i.e., allows at least one type of data processing for at least one purpose), then if the consent collection has violated at least one of the requirements on valid consent (see Table 3), then the publisher can also be claimed responsible for such unlawful consent collection.

This triggers a heavy responsibility burden on the publisher side, because he has no control over all the publishers or third parties on the way in which they collect consent (also, websites are very dynamic and quickly change over time, hence even if a publisher has verified consent collection in the past, such evidence might not hold upon a consequent visit to the same website). We underline that such model is not sustainable and very hard to manage for the publishers.

However, consent can be shared if the user gives a negative consent (if the user refused all types of data processing for all purposes). In this case, the publisher can safely rely on this consent collected by other parties. Even in the case of an invalid consent in which the user gives a positive consent, but the collected consent is registered as a negative consent, the publisher would be complaint: he would respect a negative consent, and hence would not process any data (processing less data than allowed by the user’s consent is always valid).

5.3 Conclusion on shared consent

Given the concerns raised in section 5.1, we believe that the legislator, when updating the EU ePrivacy framework, should clarify that content requiring consent must not be merged or served with BTTs that require consent. Otherwise that publisher either violates one of the requirements on valid consent or is forced to rely on the way consent was collected by other parties. As we discussed in 5.2, relying on consent collected by other parties is not sustainable in practice and therefore puts a publisher in a weak and at the same time liable position for consent collection. We also insist that shared consent is acceptable in practice only when the consent is negative, however a positive shared consent places again a publisher in a complex and liable position at the same time.

6. Related work

In this section, we give the reader a summary of the current context on legal compliance to TBB. Notably, consent for TBB deployment has been analyzed through different prisms that we regard in this paper: audits to websites in order to promote responsible behavior of web publishers; through guidance policy from stakeholders; through enforcement decisions of the Court of Justice and DPAs; and finally, through legal scholarship literature. For readability issues, this section is divided in four parts. Section 6.1 refers to relevant audits on websites performed by DPAs, the EDPS and the 29WP. Section 6.2 considers DPAs guidance on the elements for a valid consent, including those for cookie banner design. Section 6.3 explains some of the issued complaints related to valid consent. Section 6.4 shows the related work on consent analysis portrayed by legal scholarship and automatic auditing of websites by computer scientists.
6.1. Relevant Audits on websites

29WP Cookie Sweep Combined Analysis Report, 2015.138 This sweep included 478 websites in the e-commerce, media and public sectors across 8 Member States. Both the automated scan and manual review provide the results, thusly: 74% of studied websites displayed banners, 54% of them did not request user's consent but were merely informative. 70% of the 16555 cookies recorded were third party cookies. More than half of the third party cookies were set by just 25 third party domains. The sweep showed that a banner was a popular method of informing visitors on the use of cookies in addition to a link in the header or footer to more information. Only 16% of sites offered a configurable banner. The majority relied on browser settings or an opt-out tool provided on a third party site (e.g. a third party advertising site). Amongst those sites which set the highest number of cookies, most had taken some steps to inform users about the use of cookies through a banner which was either permanent (requiring an active click from the user within the banner), a banner which disappears on the next user click anywhere on the page or timed to disappear after a certain length of time.

EDPS inspection, 2019.139 This inspection was carried out on the websites of major EU institutions and bodies, e.g. the shared website of the European Council and the Council of the EU, the Commission, the Court of Justice of the EU, Europol and the European Banking Authority. The EDPS also inspected the websites of the European Data Protection Board (EDPB), the 2018 International Conference of Data Protection and Privacy Commissioners (ICDPPC 2018) and the EDPS website itself. The EDPS developed a tool that automatically collects information on personal data processed by websites. This information includes the use of cookies, web beacons, page elements loaded from third parties and the security of encrypted connections. The inspection revealed that several of the websites were not compliant with the Regulation nor with the ePrivacy Directive and did not follow the EDPS Guidelines on web services. One of the issues encountered was third-party tracking without prior consent. Other issues encountered included the use of trackers for web analytics without visitors’ prior consent.

Bavarian State Office for Data Protection Supervision Audit, 2019.140 This audit found that forty Bavarian providers (online stores, media companies, insurance companies, banks, sports teams, etc.) use tracking tools, but only a quarter of the websites inform users about the use of these tools. The remaining providers either did not inform users at all or only informed them insufficiently about the use of tracking tools as part of their Privacy Policies. Regarding the use of cookie banners, 20% of websites failed to ask users to consent to the use of cookies. Consent obtained were either not given in advance, they were given uninformed, or there was a lack of voluntariness.

Dutch Data Protection Authority Check, 2019.141 This DPA carried out a check on approximately 175 websites of web shops, municipalities and media, etc. to determine whether they meet the requirements for placing tracking cookies. All checked websites are not compliant. The organizations behind these websites have received a letter from the AP calling on them to adjust their working methods accordingly.

6.2. Guidance on a valid consent for TBB

The analysis of the requirements for a valid consent is contained in the guidelines of the 29WP and the EDPS. Other Data Protection Authorities (French, UK, German, Finish and Spanish) provide guidance on obtaining consent for cookies and similar technologies. In this section we give a brief account of the significant aspects of these guidelines.

EDPS Guidelines on the protection of personal data processed through web services provided by EU institutions, 2016.142 While these Guidelines are in principle aimed at the EU institutions, anyone or any organization interested in data protection and web services might find them useful. The main topics covered in these Guidelines that are useful for this paper are: the use of cookies, scripts and any other tools to be

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138 Article 29 Working Party, ‘Cookie sweep combined analysis – Report’ (WP229, 3 February 2015).
139 European Data Protection Supervisor, ‘EDPS flags data protection issues on EU institutions’ websites’ (2019) <https://edps.europa.eu/sites/edp/files/edpsweb_press_releases/edps-2019-04-website_inspections_en.pdf> accessed 11 December 2019.
140 Bavarian DPA, ‘Safe on the Internet – Data Protection Check on Digital services’ (our translation) (2019) <www.la.bayern.de/media/sid_ergebnis_2019.pdf> accessed 11 December 2019.
141 Dutch DPA, ‘Many websites incorrectly request permission to place tracking cookies’ (our translation) (2019) <https://autoriteipersoonsgegevens.nl/nl/nieuws/ap-veel-websites-vragen-op-onjuiste-wijze-toestemming-voor-plaatsen-tracking-cookies> accessed 11 December 2019.
142 cf EDPS Guidelines (n 28).
stored or executed on the user terminal device; server-side processing of personal data and the wider issue of tracking.

**29WP Guidance on cookies.** Per the 29WP guidelines, the following guidance documents were observed in our study, for they interpret closely the consent requirements in respect of cookies and BTT and were quoted alongside this paper.

- ‘Opinion 15/2011 on the definition of consent’ (WP187, 13 July 2011);
- ‘Guidelines on consent under Regulation 2016/679’ (WP259 rev.01, 10 April 2018);
- ‘Working Document 02/2013 providing guidance on obtaining consent for cookies’ (WP208, 2 October 2013);
- ‘Opinion 04/2012 on Cookie Consent Exemption’ (WP194, 7 June 2012);
- ‘Opinion 2/2010 on online behavioral advertising’, (WP171, 22 June 2010);
- ‘Opinion 9/2014 on the application of Directive 2002/58/EC to device fingerprinting’ (WP224, 25 November 2014).

**French DPA Guidelines on cookies and trackers, 2019.**143 The CNIL published new guidelines on cookies and trackers. The guidelines will be supplemented, at a later stage, with sectoral recommendations setting out practical methods for obtaining consent. Hereby we consider the most relevant points related to our work on consent for cookies. Consent. By continuing to browse a website after its cookie banner is displayed will no longer be considered to be valid consent for cookie use. Auditable: Operators that use cookies and trackers will have to be able to prove that they have obtained affirmative consent from the user, at all times. Scope: The new guidelines apply to all types of operations involving cookies and trackers on any type of device, including smart phones, computers, connected vehicles and any other object connected to a telecommunications network open to the public. Cookie Wall: The user should not suffer any major inconvenience if they refuse to give or withdraw their consent. The practice of blocking access to a website or a mobile application unless consent is provided does not comply with the GDPR. Revocable: Users should be able to withdraw their consent at any time. User-friendly solutions must therefore be implemented to allow users to withdraw their consent as easily as they have given. Operator’s Roles and Responsibilities: An operator using cookies and trackers is considered to be a controller and is therefore fully responsible for obtaining valid consent.

**UK DPA Guidance on the rules on use of cookies and similar Technologies, 2019.**144 The ICO updated its guidance on the use of cookies and other similar technologies. Some of the key points to note from the guidance are herewith described. Cookie walls may not comply with the cookie consent requirements and it states these as inappropriate if the use of a cookie wall is intended to require, or influence, users to agree to their personal data being used as a condition of accessing its service, as a user has no genuine choice but to accept cookies. The authority clarifies that implied consent conveyed through statements such as ‘by continuing to use this website you are agreeing to cookies’, pre-ticked boxes or any equivalents, such as sliders defaulted to ‘on’, cannot be used for non-essential cookies. Consent mechanisms incorporating a ‘more information’ section, rather than as part of the initial banner are also deemed non-compliant on the basis that they do not allow users to make a choice before non-essential cookies are set. On the types of cookies, the ICO enunciates that advertising and analytics cookies are not ‘strictly necessary’ and are subjected to consent rules.

**German DPA Guidance, 2019.** The German DPA published the ‘Guidelines for Telemedia Providers’145 and Frequent Asked Questions (FAQ)146 about web tracking and cookie banners. According to the guidance, a cookie banner is only necessary if cookies are set through the website that require data protection consent; if a website only sets cookies for which the site operator does not require consent, the guidance considers the banner avoidable. In this guidance, consent is needed when a web service uses web services on its website that analyze the user across several domains, e.g., social media plugins, advertising networks or analysis tools such as Google Analytics. The regulator alerts that consent to the use of cookies must not be preselected and does not consider the opt-out procedure to be sufficient. The authority published also a note147 on the use of cookies and cookie banners – ‘what must be done with consent (ECJ ruling ‘‘Planet49’’)?’.

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143 cf CNIL Guidelines (n 29).
144 cf ICO Guidance (n 19).
145 cf German DPA Guidelines (n 25).
146 German DPA, ‘FAQ about Cookies and Tracking’ (2019) <www.baden-wuerttemberg.datenschutz.de/wp-content/uploads/2019/04/FAQ-zu-Cookies-und-Tracking.pdf> accessed 11 December 2019.
147 cf German DPA (10).
Finish DPA Guidance on Confidential Communications, 2019. The NCSC-FI at Traficom mentioned in the guidelines that consent can be requested by using any preferred method (e.g. browser/application setting or pop-up window) as long as it is not requested by using a pre-ticked checkbox. The use of cookies and the related practices must also be indicated on a website in such a manner that a user can obtain additional information about them.

Spanish DPA Guide on the Use of Cookies. The AEPD published new Guidelines on the Use of Cookies and similar technologies, which were prepared in collaboration with different organizations in the marketing and online advertising industries (e.g., Adigital, IAB Spain, etc.). The Guidelines provide factors for categories of cookies:

- **Who manages cookies** (proprietary or third-party cookies);
- **Purpose** (technical, customization, analytical, and behavioral advertising cookies); and
- **Duration** (session or persistent cookies).

The AEPD provides the following examples of actions that could be considered an affirmative action: the use of the scroll bar, insofar as the information on cookies is visible without using it; clicking on any link contained in the site other than those in the second layer of information on cookies or the privacy policy link; on devices such as mobile phones or tablets, by swiping the initial screen and accessing the content. Apparently, the Guidelines indicate that users can grant their consent to the use of cookies by continuing browsing of a website after adequate notice has been given. Even if the Planet49 Judgment ruled otherwise, the AEPD Guidelines state:

For the action of continuing browsing to be deemed a valid consent, the information notice must be displayed in a clearly visible place, so that due to its shape, color, size or location, it can be secured that the notice has not gone unnoticed to the user. Additionally, it will be necessary, for the consent to be deemed granted, that the user performs an action that can be qualified as a clear affirmative action. For instance, a clear affirmative action may be considered to browse to a different section of the website (other than the second layer of information on cookies or the privacy policy), to slide the scroll bar, closing the first layer notice or clicking on any content of the service. The mere fact of viewing the screen, moving the mouse or pressing the keyboard cannot be considered an acceptance.

### 6.3. Enforcement of consent by the Court of Justice of the European Union (CJEU) and DPAs

In this section we show the enforceable decisions in connection to consent requirements for TBB referred in judgements of the Court of Justice of the EU (CJEU) and administrative decisions issued by DPAs.

**Planet49 Judgment of the CJEU.** On the 1st of October of 2019, the CJEU decided that the consent which a website user must give to the storage of and access to cookies on his or her equipment is not validly constituted by way of a prechecked checkbox which that user must deselect to refuse his or her consent. The Court notes that consent must be specific so that the fact that a user selects the button to participate in a promotional lottery is not sufficient for it to be concluded that the user validly gave his or her consent to the storage of cookies. Furthermore, according to the Court, the information that the service provider must give to a user includes the duration of the operation of cookies and whether or not third parties may have access to those cookies.

**French DPA decision.** The CNIL, in 2018, sued an advertisement company Vectaury using the IAB framework, invoking a lack of informed, free, specific and unambiguous consent. For the CNIL, the consent text was not clear enough regarding the final use of collected data, and the formulation may lead users to incorrectly assume that refusing consent prevents a free access to the website or lead to more intrusive advertisement. It was also noted that pre-ticking consent-related checkboxes was not compliant

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148Finish Guidance, ‘Confidential Communications’ (2019) accessed 11 December 2019 (our translation).
149 cf Spanish DPA Guide (n 82).
150 cf Planet49 Judgment (n 87).
151 cf Planet49 Judgment (n 87).
152 Author’s translation from the Spanish version.
153 Commission Nationale de l’Informatique et des Libertés, ‘Decision n° MED 2018-042 of October 30th, 2018 enforcement notice against the company VECTAURY’ (2018) accessed 11 December 2019 (henceforth named CNIL decision).
with the Recital 32 of the GDPR. It was required the list of recipients of users’ data to appear immediately when consent text is displayed.

**Complaint by the Austrian DPA and NOYB, 2018.**[^154] The ‘take it or leave it’ approach is one of the main points of a complaint against Facebook in 2018. NOYB claims that this sort of ‘take it or leave it’ method is not in accordance with the GDPR.

**Spanish DPA decisions.** This DPA[^155] on the 17 of October of 2019 fined Vueling for failing to provide a compliant cookie banner. The poorly constructed banner did not provide a cookie configuration panel that allows the user to delete cookies in a granular way. It was considered that the information was insufficient for the intended purpose of allowing users to configure preferences in a granular or selective form.[^156]

This DPA also fined IKEA[^157] for placing cookies before users clicked the only option in the banner: the ‘OK’ button. Users were prompted with a cookie banner stating that ‘IKEA website uses cookies that make browsing much easier. More information about cookies’. Initially, users were instructed to block cookies through browser settings, also including ‘strictly necessary’ cookies like e.g. shopping cart cookies rendering the website basically impossible to use. It did not identify the purposes of the different cookies used, nor informed about the possibility of setting the usage preferences of the cookies. It did not provide a link to the panel or cookie configuration system enabled to select them in granular form. It did not include a specific button or mechanism for rejecting all cookies. The warning that ‘If you do not change your browser settings, we will understand that you agree to receive all cookies from the IKEA website’ breaches consent requirements. It did not report on how to revoke the consent given.

### 6.4. Related work on consent and cookie banners

In the following we outline related work in consent rendered through cookie banners.

In 2013, Borghi et al.[^158] studied the lawfulness of the collection of consent for commercial communications (advertisement and emails) on 200 websites from the UK. They found that, while 69% of studied websites asks for consent in some way, only 16.2% of them obtain a valid consent.

Carpineto et al.[^159] developed a tool to automatically check the legal compliance of cookie banners in Italian Public Administration websites in 2016. They used language-dependent text-analysis methods and list based tracking cookie detection. In this study, the only considered criteria for non-compliance is whether the website uses tracking cookies but do not display a banner. Running their tool on these websites, they identified 1140 non-compliant websites placing tracking cookies in the user’s browser.

Traverso et al.[^160] measured the impact of the ePD’s cookie policy on web tracking on 100 Italian websites. Visiting the same website before and after giving consent to tracking by clicking on the accept button of the cookie banner, they measured the difference in the number of included trackers. Their results are alarming: there was few differences between both scenarios. In the no-consent-given scenario, they found an average of 29.5 trackers per webpage, none of them containing 0 tracker, and half of them containing more than 16.

Trevisan et al.[^161] built an automatic tool ‘CookieCheck’ to check violations of the ePD in 36 000 popular websites popular in the European Union (plus 4 extra-EU countries) in early 2017. Using a list-and heuristic-based tracking cookie detection method, they tested whether websites requested consent before

[^154]: cf NOYB Complaint (n 55).
[^155]: cf Spanish DPA decision (n 113).
[^156]: EDPB press release, ‘The Spanish Data Protection Authority fined the company Vueling for the cookie policy used on its website with 30,000 euros’ (2019) <https://edpb.europa.eu/news/national-news/2019/spanish-data-protection-authority-fined-company-vueling-cookie-policy-used_en> accessed 11 December 2019.
[^157]: Spanish DPA decision, ‘Procedimiento PS/00127/2019’ (2019) <www.aepd.es/resoluciones/PS-00127-2019.ORL.pdf> accessed 11 December 2019.
[^158]: Maurizio Borghi, Federico Ferretti, Stavroula Karapapa, ‘Online Data Processing Consent Under EU Law: A Theoretical Framework and Empirical Evidence from the UK’ (2013) *International Journal of Law and Information Technology*, Volume 21, Issue 2.
[^159]: Cadio Carpineto, Davide Lo Re, Giovanni Romano, ‘Automatic assessment of website compliance to the European cookie law with CoolCheck’ (Proceedings of the 2016 ACM on Workshop on Privacy in the Electronic Society, ACM, Vienna, Austria, 2016) 135-138.
[^160]: Stefano Traverso, Martino Trevisan, Leonardo Giannantoni, Marco Mellia, Hassan Metwalley less, ‘Benchmark and comparison of tracker-blockers: Should you trust them?’ (Network Traffic Measurement and Analysis Conference, Dublin, Ireland, 2017) 1-9.
[^161]: Martino Trevisan, Stefano Traverso, Eleonora Bassi and Marco Mellia, ‘4 Years of EU Cookie Law: Results and Lessons Learned’ (Proceedings on Privacy Enhancing Technologies, Issue 2, 2019 ) 126-145.
installing cookies. They found that 49% of websites installed profiling cookies before user consent, a number raising to 74% when considering any third-party cookie. On a smaller set of 241 websites from 3 European countries, they observed that 80.5% of those installing tracking cookies did not regard the user's consent. Interestingly, they observed no significant difference in the number of installed tracking cookies between desktop and mobile browsers.

Van Eijk et al.\(^\text{162}\) studied cookie banners after the GDPR application. Leveraging a crowd-sourced list, they automatically detected cookie banners on 40.2% of European Union websites. Accessing websites from different countries using VPNs, they found that the provenance of the user has not so much impact as the expected audience of a website regarding the prevalence of banners. They also observed important variations between websites of different top-level domains.

Degeling et al.\(^\text{163}\) performed a study comparing the information presented to users of EU websites before and after the GDPR, focusing on the changes in privacy policies and information presented to users. In particular, the authors studied characteristics of 31 cookie banner libraries, including several of them provided by CMPs of IAB Europe’s TCF, by installing them locally. They observed a 6% increase in cookie banners adoption by website pre- and post-GDPR. They have identified the following categories within existing implementations of consent notices:

- ‘No option notices’ to simply inform the user that the website uses cookies and if the user continues to use the website, they agree to this use;
- ‘Confirmation-only banners’ displays button with an affirmative text, such as ‘OK’, or ‘I agree’, through which, by clicking on it expresses the user’s consent;
- ‘Binary notices’ provide users with a button to accept and another to reject the use of all cookies on the website;
- ‘Category-based notices’ assembles the cookies used by the website into categories. Users can allow or disallow cookies of each category individually by (un)checking a settings menu or toggling an ‘on-off’ switch;
- ‘Vendor-based notices’ allow visitors to accept or decline cookies for each third-party service used by the website (conceding more fine-grained control). They originate from third-party libraries, as the IAB Europe’s Transparency and Consent Framework, which refers to its advertising partners as ‘vendors’.

Sanchez Rola et al.\(^\text{164}\) performed a wider evaluation of the tracking in 2,000 websites, inside and outside of the EU. The aim was to measure how easy it is to opt-out from web tracking if the user desires to do so and assessing whether it is possible at all. Their results show that tracking is prevalent, happens mostly without user’s consent, and opt-out is difficult.

Concerning tracking, Libert et al.\(^\text{165}\) in a factsheet for the press, studied the impact of the GDPR on the amount of third-party content and cookies on news websites. On about 180 European news sites, they observe a 22% drop in the number of third-party cookies before (April 2018) and after (July 2018) the GDPR, but only 2% drop in third-party content.

Another prominent work related to ours is the research from Utz, Degeling et al.\(^\text{166}\). The authors ran a number of studies, gathering ~5,000 of cookie notices from leading websites to compile a snapshot (derived from a random sub-sample of 1,000) of the different cookie consent mechanisms. They also worked with a German ecommerce website over a period of four months to study how more than 82,000 unique visitors to the site interacted with various cookie consent designs. In their recent study, the authors reached the following findings significant to our paper:

\[^{162}\] Rob Van Eijk, H. Asghari, Philipp Winter, Arvind Narayanan, ‘The Impact of User Location on Cookie Notices (Inside and Outside of the European Union)’ (Workshop on Technology and Consumer Protection (ConPro ’19), San Francisco, CA, 2019).

\[^{163}\] Martin Degeling, Christine Utz, Christopher Lentzsch, Henry Hosseini, Florian Schaub, Thorsten Holz, ‘We value your privacy... now take some cookies: Measuring the GDPR’s impact on web privacy’ (Proceedings of the Network and Distributed System Security Symposium Symposium (NDSS), Internet Society, 2019).

\[^{164}\] Iskander Sanchez-Rola, Matteo Dell’Amico, Platon Kotzias, Davide Balzarotti, Leyla Bilge, Pierre-Antoine Vervier, and Igor Santos, ‘Can I Opt Out Yet? GDPR and the Global Illusion of Cookie Control’ (ACM Asia Conference on Computer and Communications Security (AsiaCCS ’19), Auckland, New Zealand, 2019).

\[^{165}\] Timothy Libert, Lucas Graves and Rasmus Kleis Nielsen, ‘Changes in third-party content on European news websites after GDPR’ (Reuters Institute for the Study of Journalism Reports: Factsheet, Reuters Institute for the Study of Journalism, 2018).

\[^{166}\] Christine Utz, Martin Degeling, Sascha Fahl, Florian Schaub, and Thorsten Holz, ‘Uninformed Consent: Studying GDPR Consent Notices in the Field’ (2019 ACM SIGSAC Conference on Computer and Communications Security (CCS’19), London, United Kingdom, 2019) 973-990.
Cookie consent notices do not offer a choice to the users; they are placed at the bottom of the screen (58%); not blocking the interaction with the website (93%); and offering no options other than a confirmation button that does not do anything (86%);

The more choices offered in a cookie notice, the more likely visitors were to decline the use of cookies;

A majority also try to nudge users towards consenting (57%) — such as by using ‘dark pattern’ techniques like using a color to highlight the ‘agree’ button (which if clicked accepts privacy-unfriendly defaults) vs displaying a much less visible link to ‘more options’ so that pro-privacy choices are buried off screen;

Mentioning cookies in a consent notice decreases the chance that users allow cookie use.

The Transparency and Consent Framework (TCF), by the IAB Europe implements consent solutions for parties in the digital advertising chain. In 2018, a decision by the CNIL held that this framework lacks on a valid consent, and in April 2019 a formal complaint was filed against the IAB for showing a consent notice on its own website that forces visitors to consent if they want to access the website.

From a legal perspective, both studies of Kosta and Leenes on a regulatory approach towards cookies were prominent to our analysis on the legal and technical analysis of consent requirements for BTT. Of particular relevance to our work is the study performed by Leenes and Kosta, in which the authors examined manually the practices of 100 Dutch websites with regard to cookie consent mechanisms. They found that most of these websites do not respect the eP. Those researchers defined a four-tier classification of consent implementation from the analyzed banners:

- explicit agreement to all cookies used on the site, without possibility to opt out;
- implicit agreement to all cookies used on the site, i.e. banners whose button’s text is not a response to a question regarding the user’s consent;
- coerced agreements to all cookies, i.e. ‘cookiewalls’, when users can’t access the website without accepting tracking cookies;
- detailed choice/consent of cookies, i.e. banners containing a ‘settings’ button.

Among the 100 sites studied, they found 25 banners of the 1st type, 54 of the 2nd one, none of the 3rd one and 6 of the last one. 87% of visited websites installed cookies ‘of various type’ on first page load, i.e., irrespective of the choice of the user.

## 7. Conclusion

In this paper, we have analyzed the legal requirements on how cookie banners are supposed to be implemented to be fully compliant with the ePrivacy Directive, the GDPR and the latest case-law. As a result, we defined 17 operational fine-grained technical requirements on cookie banner design. For each requirement we illustrated examples of compliant and non-compliant cookie banners whenever possible.

We summarize the guidelines for compliant banners in Table 6.

| Requirements | High-Level Requirements | Sub-Level Requirements | Guidelines |
|--------------|-------------------------|-----------------------|------------|
| Prior        | Prior to setting cookies| Consent must be obtained before cookies are set |
|              | Prior to sending cookies| Consent must be obtained before cookies are sent (therefore, before the content that sends such cookies is loaded) |
| Free         | No merging into a contract | A request for consent cannot be merged into a contract or service |
|              | No tracking walls | Blocking access to a website unless the user gives a positive consent, is not a valid consent |
| Specific     | Separate consent | A consent should be separately requested for each purpose |

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167 IAB Europe, ‘What Is The Transparency & Consent Framework (TCF)?’ <https://iabeurope.eu/transparency-consent-framework/> accessed 11 December 2019.
168 Johnny Ryan, ‘French regulator shows deep flaws in IAB’s consent framework and RTB’ (2018) <https://brave.com/cnil-consent-rtb/> accessed 11 December 2019.
169 cf Cnil decision (n 154).
170 cf Kosta (n 20).
171 cf Leenes (n 61).
172 Ronald Leenes, Eleni Kosta, ‘Taming the Cookie Monster with Dutch Law - A Tale of Regulatory Failure’ (2015) *Computer Law & Security Review*, Volume 31, Issue 3, 317-335.
**For each requirement, we verified if technical (with computer science tools, such as browser extensions) or manual (by a human operator) verification is needed to assess compliance with valid consent, (see Table 3 in section 4). We evaluated which of the requirements are impossible to verify with certainty in the current architecture of the Web. In fact, the majority of the requirements (ten) are only possible to be verified manually by a human operator (Table 8), which means that its assessment is time-consuming and not scalable.**

**Table 7 Requirements that can be verified only manually**

| Manual          | Free                          | Specific                  | Informed          | Readable and accessible | Unambiguous | Revocable   |
|-----------------|-------------------------------|---------------------------|-------------------|--------------------------|-------------|-------------|
|                 | No merging into a contract   | Separate consent per purpose | Accessibility of information page | Information about the cookie configurations | Configurable banner | Possible to change in the future |
|                 | No tracking walls            |                           | Information about the data controller | Information about the data subject rights |             | Delete "consent cookie” and communicate to third parties |
|                 |                               |                           |                   |                          |             |             |

Additionally, our analysis of requirements applies only to cases when browser-based tracking technology (BTT) is used for the purposes that require consent (see Table 1). However, even if computer scientists can detect the presence of a BTT on a given website, it is not possible to identify what purpose BTT is used for (see the discussion on the usage of browser fingerprinting in section 5.2.5). We therefore believe that legislators should propose standardized and machine-readable means to specify purposes for each BTT that can be further analyzed automatically with technical tools at scale.