

Digital Advertising and the GDPR

Identifying the (Joint) Controllers in the Real-Time Bidding Ecosystem

by Donatella Casaburo *

Abstract: In digital advertising, real-time bidding allows advertisers to place their advertisements in publishers' inventories in real time, after having participated in an auction with competing bidders. In Europe alone, personal data on users' online behaviour is collected and shared 197 billion times per day by more than 1000 firms' part of the real-time bidding ecosystem. This gives real-time bidding the title of the "biggest data breach ever recorded". Having a

clear understanding of the roles and responsibilities of the entities involved in real-time bidding becomes of paramount importance to enhance compliance with the data protection legislation and adequately safeguard data subjects' rights. This paper aims to identify the (joint) controllers for the personal data processing operations performed during a real-time bidding auction.

Keywords: Real-time Bidding, Digital Advertising, Controller, Data Protection, GDPR

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Recommended citation: Donatella Casaburo, Digital Advertising and the GDPR- Identifying the (Joint) Controllers in the Real-Time Bidding Ecosystem, 15 (2024) JIPITEC 212 para 1

A. Introduction

1 In 2023, the spending for digital advertising in Europe reached a total of €96.9 billion, registering a €69 billion increase compared to 2013.¹ While the marketing and advertising industry has always relied on

data, the rise and convergence of machine learning and big data contributed to increase the effectiveness of data-driven advertising of more than 500%.² As a result, 90% of digital advertising now involves the processing of behavioural data of online users.³

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1 Interactive Advertising Bureau Europe, 'AdEx Benchmark 2023 Study' (IAB Europe, May 2024) <https://iabeurope.eu/wp-content/uploads/IAB-Europe_AdEx-Benchmark-2023-Report.pdf> accessed 12 August 2024.

2 Interactive Advertising Bureau Europe, 'IAB Europe Press Release: The dire unintended consequences of restricting data-driven ads' (IAB Europe, 7 September 2017) <<https://iabeurope.eu/the-dire-unintended-consequences-of-restricting-data-driven-ads/>> accessed 29 January 2024.

3 IHS Markit, 'The Economic Value of Behavioural Targeting in Digital Advertising' (IAB Europe, 2017) <https://iabeurope.eu/wp-content/uploads/2019/08/BehaviouralTargeting_FINAL.pdf> accessed 29 January 2024.

- 2 Digital advertising mainly relies on the real-time bidding technology (RTB),⁴ which allows advertisers to place their ads in publishers' spaces in real time, after having participated in an auction with competing bidders. To function, RTB heavily relies on the collection and further use of online users' personal data, to an extent it has been defined as the "biggest data breach ever recorded": in Europe alone, data on users' online behaviour is collected and shared 197 billion times per day and by more than 1058 firms.⁵ Having a clear understanding of the roles and responsibilities of the entities involved in RTB becomes of paramount importance to enhance compliance with the data protection legislation and adequately safeguard data subjects' rights.
- 3 This paper aims to identify the (joint) controllers for the personal data processing operations performed during a RTB auction. To this aim, we first introduce the notion of (joint) controller, on which we build a '(joint) controllership test' [Section B.]. Then, we apply the test to the personal data processing operations of a RTB auction [Section C.]. To conclude, we present some final considerations deriving from the problematic allocation of responsibilities among the joint controllers [section D.].

B. The Notion of (Joint) Controller and the (Joint) Controllership Test

- 4 Article 4(7) of the General Data Protection Regulation (GDPR) provides that the controller is "the natural or legal person [...] which, alone or jointly with others, determines the purposes and means of the processing of personal data".⁶ To ensure effective

and complete protection of data subjects,⁷ the concept of 'controller' is an autonomous one, to be broadly interpreted according to the GDPR, as clarified by the Court of Justice (CJEU).⁸ The principles established by the CJEU are further complemented by the guidelines issued by the European Data Protection Board (EDPB).⁹

- 5 According to the EDPB, the essential characteristic of the controller is its capacity to exercise decision-making powers over the processing of personal data, thus influencing its key elements: to be qualified as controller, an entity needs to determine both that the processing needs take place and why it takes place.¹⁰ The controller decides on the purposes and means of the processing, namely on the 'why' and 'how' of the processing activities. As clarified by the CJEU in its *Wirtschaftsakademie* judgment, while the controller needs to decide on both purposes and means, the level of influence may vary and it might be sufficient to contribute to impact on the whether or not, or on the manner in which, personal data are processed.¹¹ In particular, controllers can leave some manoeuvrability in deciding the means of the entities processing personal data on their behalf, i.e., the processors. It is, then, possible to distinguish between essential and non-essential means of the processing.¹² The essential means are closely linked to the purposes pursued (e.g., type of data processed, categories of data subjects involved, disclosure of personal data and categories of recipi-

(General Data Protection Regulation) [2016] OJ L119/1.

- 4 Michael Veale and Frederik Zuiderveen Borgesius, 'Adtech and Real-Time Bidding under European Data Protection Law' (2022) 23 Ger. Law J. 226, 226.
- 5 Irish Council for Civil Liberties, 'The Biggest Data Breach – ICCL report on scale of Real-Time Bidding data broadcasts in the U.S. and Europe' (*Irish Council for Civil Liberties*, May 2022) <<https://www.iccl.ie/wp-content/uploads/2022/05/Mass-data-breach-of-Europe-and-US-data-1.pdf>> accessed 29 January 2024.
- 6 Regulation (EU) 2016/679 of the European Parliament and of the Council 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

- 7 Case C-131/12 *Google Spain SL and Google Inc. v Agencia Española de Protección de Datos (AEPD) and Mario Costeja González* [2014] ECLI:EU:C:2014:317, para 34.

- 8 European Data Protection Board, 'Guidelines 07/2020 on the concepts of controller and processor in the GDPR' (EDPB, 7 July 2021) <https://edpb.europa.eu/system/files/2023-10/EDPB_guidelines_202007_controllerprocessor_final_en.pdf> accessed 10 October 2024.

- 9 *Ibid.*

- 10 *Ibid.* 11.

- 11 Case C210/16 *Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein v Wirtschaftsakademie Schleswig-Holstein GmbH* [2018] ECLI:EU:C:2018:388, para 35.

- 12 EDPB (n 8) 14-15.

ents¹³) and their determination is of exclusive competence of the controller. On the contrary, the non-essential means are related to technical aspects of the processing (e.g., choice of the infrastructure or detailed security measures) and can be determined by the processor.

- 6 Article 26 of the GDPR provides that there is joint controllership when “two or more controllers jointly determine the purposes and means of processing”. This definition reflects that of ‘controller’, by restating its essential elements.¹⁴ Therefore, joint controllers are controllers jointly determining purposes and means of the processing. As noted by the EDPB, a joint controllership can take the form of either common or converging decisions on the purposes and essential means of the processing activities.¹⁵ While common decisions imply common intentions of the controllers, converging decisions are closely linked and complement each other, thus being necessary for the processing to happen in that specific form.¹⁶ As clarified by the CJEU in its *Fashion ID* judgement, the joint controllership among two or more controllers is, however, limited to those operations in the chain of processing for which the entities jointly determine both the purposes and means of the processing.¹⁷
- 7 To jointly determine the purposes of the processing, controllers do not necessarily need to share the same or common purposes: the purposes pursued may be different, as long as they are closely linked or complementary.¹⁸ For instance, in the *Fashion ID* judgement, the CJEU held that the existence of a mutual (economic) benefit of the parties may be one of the possible factors leading to joint controllership.¹⁹ However, an entity that merely receives a payment

for a service offered, and does not pursue an own purpose through the processing, cannot be qualified as a joint controller.²⁰

- 8 To jointly determine the means of the processing, as clarified by the CJEU in the *Fashion ID* and *Wirtschaftsakademie* judgements, it is sufficient that a controller decides to make use of the infrastructure allowing the personal data processing (e.g., a platform or a standardized tool) provided by another controller,²¹ especially if the former can set up some of the parameters of the processing activities.²² Again, an entity that merely relies on an infrastructure provided by a controller cannot be qualified as joint controller unless, by using such infrastructure, it exercises a true influence on the collection and processing of personal data, for instance by making the same processing possible,²³ while also being able to decide when it terminates.²⁴
- 9 Whenever multiple controllers are involved in the processing, but they do not jointly determine its purposes and means, they are separate controllers, independent from each other.

I. The (Joint) Controllership Test

- 10 The criteria to identify controllers and to qualify the joint participation of more than one entity to the processing provided by the CJEU and the EDPB can be summarised, and systematised in a ‘(joint) controllership test’.
- 11 In line with what is suggested by the EDPB,²⁵ the (joint) controllership test consists of two phases. In the first phase, we conduct a ‘micro-level’ analysis

13 CJEU (n 7) para 36.

14 EDPB (n 8) 18-19.

15 *Ibid.* 19-20.

16 *Ibid.*

17 Case C-40/17 *Fashion ID GmbH & Co.KG v Verbraucherzentrale NRW eV* [2019] ECLI:EU:C:2019:629, para 74.

18 EDPB (n 8) 20.

19 CJEU (n 17) para 80.

20 EDPB (n 8) 21.

21 CJEU (n 17) para 78; CJEU (n 11) para 35.

22 CJEU (n 11) paras 36-37.

23 CJEU (n 17) para 75.

24 Case C-210/16 *Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein v Wirtschaftsakademie Schleswig-Holstein GmbH* [2017] ECLI:EU:C:2017:796, Opinion of AG Bot, para 56.

25 EDPB (n 8) 17.

of each processing operation.²⁶ To do so, first, we decompose the chain of processing into smaller processing operations. Then, we identify the entities involved in each of them. Finally, we qualify each entity as either (joint) controller or processor vis-à-vis each of the processing operations. During this last step, we can rely on the two template tables below.

- 12 The first template table summarises the controller-ship test. The table is filled in relation to each entity involved in the processing and with regard to each processing operation in which it is involved. To facilitate the analysis, the table already lists the criteria laid down by the CJEU and the EDPB to qualify an entity as controller, which pertain to the existence of a decisive influence on purposes and essential means of the processing.²⁷

[Entity involved]	
[Processing operation(s)]	
Purpose	Essential means
[Yes, .../No]	[Determining personal data processed and/or categories of data subjects concerned]
	[Determining disclosure of personal data and (categories of) recipients]
	[Providing infrastructure for the processing]
	[Using infrastructure provided by other entity for its own purpose, but makes the processing possible, and/or sets parameters, and/or chooses when ending the processing] [No decisive influence]
Controllorship: [Yes/No/Only if ...]	

Table 1: Template table for controller-ship test

- 13 The second template table summarises the joint controller-ship test. When multiple controllers are involved in the same processing operation, the second table is filled. To facilitate the analysis, the table already lists the criteria laid down by the CJEU and the

EDPB to qualify multiple entities as joint controllers, pertaining to the joint determination of purposes and means of the processing.²⁸

[Entities involved]	
[Processing operation(s)]	
Joint determination of purpose	Joint determination of means
[The entities pursue purposes which are identical/common, or closely linked/complementary] [The entities pursue their own separate purposes]	[The entities determine together the essential means] [The entities rely on the same infrastructure, provided by one of them, while the other makes the processing possible, and/or sets the parameters, and/or chooses when ending the processing]
Joint controller-ship: [Yes/No/Only if ...]	

Table 2: Template table for joint controller-ship test

- 14 In the second phase of the (joint) controller-ship test, starting from the results of the micro-level analysis, we conduct a ‘macro-level’ analysis of the processing, to double check whether we identify further joint controller-ships.²⁹ To do so, we verify if the processing operations can be grouped into one or more unified set of operations pursuing a joint purpose using jointly defined means. This finalises the results of the analysis, by extending the responsibilities of joint controllers to those stages of the processing for which they exercise decision-making powers.³⁰

²⁶ *Ibid.*

²⁷ EDPB (n 8) 15; CJEU (n 17) paras 75, 78; CJEU (n 11) paras 35-37; CJEU (n 7) para 36; Opinion of AG Bot (n 24), para 56.

²⁸ EDPB (n 8) 19-22; CJEU (n 17) paras 75, 78; CJEU (n 11) paras 35-37; CJEU (n 7) para 36; Opinion of AG Bot (n 24), para 56.

²⁹ EDPB (n 8) 17.

³⁰ CJEU (n 17) para 70.

C. Assessment of (Joint) Controllership in a RTB Auction

- 15 The RTB ecosystem consists of two sides and involves three main entities, as illustrated in Figure 1.³¹

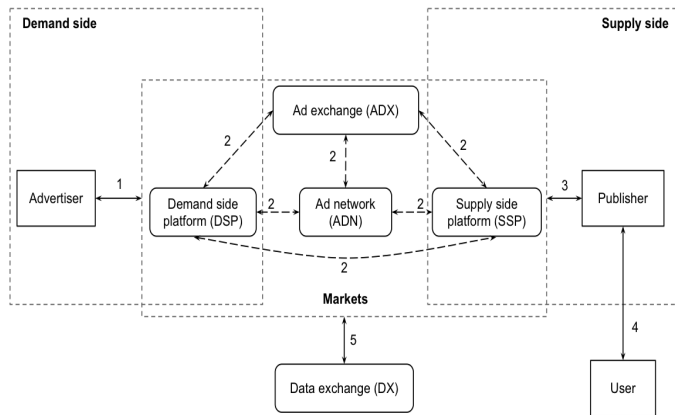


Figure 1: The RTB ecosystem. Source: Jun Wang, Weinan Zhang and Shuai Yuan (n 31).

- 16 On the one hand, in the ‘demand side’, Demand-Side Platforms (DSPs) are responsible for organizing the targeted advertising campaigns on behalf of advertisers or advertising agencies.³² But on the other hand, in the ‘supply side’, Supply-Side Platforms (SSPs) are responsible for registering the publishers’ advertising inventories and selling the spaces.³³ DSPs and SSPs are connected and interact via an Ad Exchange (AdX), responsible for conducting the auction processes.³⁴

³¹ Jun Wang, Weinan Zhang and Shuai Yuan, ‘Display Advertising with Real-Time Bidding (RTB) and Behavioural Targeting’ (*arXiv*, 2017) <<https://arxiv.org/abs/1610.03013>> accessed 29 January 2024.

³² Tobias Urban and others, ‘A Study on Subject Data Access in Online Advertising After the GDPR’ in Cristina Pérez-Solà et al. (eds), *Data Privacy Management, Cryptocurrencies and Blockchain Technology, ESORICS 2019 International Workshops, DPM 2019 and CBT 2019, Luxembourg, September 26–27, 2019, Proceedings* (Springer 2019) 63, 64.

³³ Jun Wang, Weinan Zhang and Shuai Yuan (n 31).

³⁴ Lukasz Olejnik, Tran Minh-Dung and Claude Castelluccia, ‘Selling Off Privacy at Auction’ (*HAL-Inria*, 2013) <<https://hal.inria.fr/hal-00915249/PDF/SellingOffPrivacyAtAuction>>.

- 17 In addition to these three main entities, the RTB ecosystem generally includes also Ad Networks (AdNs) and Data Exchanges (DXs). AdNs increase RTB’s efficiency, by aggregating and balancing the advertisement demand and supply.³⁵ DXs collect and analyse users’ information from different sources, enabling DSPs to perform better targeted advertising campaigns.³⁶

- 18 The RTB auction initiates when a user visits a publisher’s website³⁷ which incorporates a space to be filled with an advertisement. With a certain degree of simplification, the next steps are the following:³⁸

1. While the website page loads, the SSP sends an advertisement request on behalf of the publisher to the AdX;
2. For the incoming ad request, the AdX creates a bid request incorporating the users’ information collected through cookies and forwards it to DSPs;
3. DSPs can ask the DX for user’s data retrieved from third parties;
4. If DSPs decide to bid based on the instructions received by advertisers, they send the bid responses with the bid price to the AdX;
5. The AdX selects the winner and sends the winning notice to the selected DSP; and
6. The winner’s advertisement is displayed on the website page for the specific user.

- 19 To facilitate the implementation of RTB, the Interactive Advertising Bureau Tech Lab has standardised the technology in a common protocol, OpenRTB.³⁹

pdf> accessed 29 January 2024.

³⁵ Jun Wang, Weinan Zhang and Shuai Yuan (n 31).

³⁶ Tobias Urban and others (n 32) 64.

³⁷ While mobile applications can also support RTB, we will only refer to websites to avoid unnecessary complications in the text.

³⁸ Jun Wang, Weinan Zhang and Shuai Yuan (n 31).

³⁹ Interactive Advertising Bureau Tech Lab, ‘OpenRTB’ (*IAB Tech Lab*, January 2024) <<https://iabtechlab.com/standards/openrtb/>> accessed 12 August 2024. The protocol previously provided by Google Developers, ‘Authorized Buyers Real-time Bidding Proto’ (*Google Developers*, August 2024) <<https://developers.google.com/authorized-buyers/>>.

The types personal data collected through cookies and further processed during the RTB auction depend on the content of the bid request which, according to the latest OpenRTB protocol, may include: the user's unique identifier, details and location of the user's device, the browser used, additional known information about the user, such as their year of birth, gender, interests and relevant keywords about them.⁴⁰

- 20 While RTB can properly function with the limited number of entities and through the six steps explained above, the scenario in practice is normally far more complicated. To maximize their effectiveness and profits, both publishers and advertisers can rely on more Supply-Side and Demand-Side Platforms, which in turn rely on more AdXs and AdNs. Therefore, the process for adjudicating a single advertisement space can involve numerous entities and/or auctions, finally competing amongst themselves.⁴¹ Considering the inherent complexities of the RTB ecosystem, we focus on the simplified scenario described above. In other words, we analyse the (joint) controllership in a RTB auction involving the least possible number of entities: a publisher, a SSP, an AdX, more than one DSP and more than one advertiser.

I. Micro-Level

- 21 In the first step of the micro-level analysis of the RTB auction process, we identify the personal data processing operations. These are:

- (i) The retrieval of cookies stored in the web browser;
- (ii) The creation of a bid request;
- (iii) The transfer of the bid request to DSPs;

[rtb/realtime-bidding-guide](#) accessed 12 August 2024, has recently been deprecated to fully migrate to OpenRTB.

40 Interactive Advertising Bureau Tech Lab (n 39).

41 See Lukasz Olejnik, and Claude Castelluccia, 'To bid or not to bid? Measuring the value of privacy in RTB' (*Lukasz Olejnik*, 2014) <<https://lukaszolejnik.com/rtb2.pdf>> accessed 29 January 2024; Damien Geradin and Dimitrios Katsifis, "'Trust me, I'm fair": analysing Google's latest practices in ad tech from the perspective of EU competition law'(2020) 16 Eur. Competition J. 11, 18–19.

- (iv) The retrieval of the bid request;
- (v) Potentially, the sale of additional personal data collected by the DX;
- (vi) Potentially, the retrieval of additional personal data collected by the DX;
- (vii) The use of the personal data.

- 22 In the second step of the micro-level analysis, we identify the different entities involved in each of the processing activities. To simplify the task, we divide the RTB auction process in two phases. During the first phase, the AdX is the entity that, on behalf of the publisher as represented by the SSP, (i) processes the personal data contained in the cookies, (ii) so to create a bid request (iii) and to transfer it to several DSPs. In the second phase, DSPs are the entities that (iv) receive the personal data contained in the bid request and, (v) after the potential sale of additional personal data by the DX and (vi) their retrieval, (vii) use them to decide on whether placing a bid on behalf of advertisers.

- 23 In sum, three entities process personal data during a RTB auction: the AdX, DSPs and the DX. However, the following entities are also part of the picture:

- 1. the publisher, mandating the AdX to carry out the RTB auction;
- 2. the SSP, acting as intermediary between the publisher and the AdX; and
- 3. advertisers, mandating DSPs to bid on their behalf.

- 24 In the third step of the micro-level analysis, we conduct the (joint) controllership test for the first [Section 1.] and second [Section 2.] phases of the RTB auction, to qualify the involved entities.

1. First Phase: Publisher, AdX and SSP

- 25 The first phase of the RTB auction sees the involvement of the publisher [Section (a)], of the AdX [Section (b)] and of the SSP [Section (c)].

a.) Publisher

- 26 The publisher does not engage directly in any processing activity, which are delegated to the AdX. As clarified in the CJEU in the *Jehovah's Witnesses*

judgement, this is not an obstacle *per se* to the qualification as controller, as long as the publisher is able to determine purposes and means of the processing.⁴²

- 27 As for the determination of purposes, the publisher has an own primary economic interest in all the processing operations performed by the AdX, as they create profit through the sale of the impression. As for the determination of the (essential) means of the processing, we need to distinguish between the different processing operations performed by the AdX. On the one hand, the publisher exercises a decisive influence on the way personal data is processed during the retrieval of cookies and the creation of the bid request. By embedding RTB in its webpage, the publisher enables the AdX to process personal data, thus triggering the start of a processing which would not be possible otherwise.⁴³ Moreover, the publisher can terminate the processing, by simply removing RTB from its webpage.⁴⁴ On the other hand, we can theorise two different cases for the transfer of the bid requests to DSPs. If the publisher cannot set any parameters on the personal data included in the bid request and on recipient DSPs, the transfer is out of the publisher's sphere of influence. Otherwise, the publisher exercises a decisive influence on the essential means of the processing.⁴⁵

- 28 Therefore, the publisher is a controller for (at least part of) the processing of personal data performed by the AdX,⁴⁶ as summarized in Tables 3 and 4 below.

Publisher	
(i) Retrieval of cookies stored in the web browser and (ii) creation of a bid request	
Purpose	Essential means
Yes, increasing profits from the sale of the impression through a RTB auction	Using infrastructure provided by AdX for its own purpose, but makes the processing possible and chooses when ending the processing
Controllershship: Yes	

Table 3: Controllershship test for publisher for the retrieval of cookies and the creation of a bid request

Publisher	
(iii) Transfer of the bid request to DSPs	
Purpose	Essential means
Yes, increasing profits from the sale of the impression through a RTB auction	Determining personal data collected
	Determining disclosure of personal data and recipients
Controllershship: Only if setting parameters on essential means	

Table 4: Controllershship test for publisher for the transfer of the bid request to DSPs

b.) AdX

- 29 The AdX is the entity processing personal data during the first phase of the RTB auction.
- 30 As for the retrieval of cookies, a preliminary observation is needed: normally, due to the domain specificity of cookies, the AdX does not only retrieve the cookies stored in the web browser, but it acts as a tracker entity itself.⁴⁷ In principle, tracker entities can be either controllers or processors, depending on whether they determine their own purposes and means.⁴⁸ The AdX benefits from the processing, enhancing the quality of its services by building users' profiles or providing statistics. The AdX also develops the software code that enables the processing, thus determining *de facto* some of its essential means,

⁴² Case C-25/17 *Tietosuojavaltuutettu v. Jehovan todistajat – uskonnollinen yhdyksunta* [2018] ECLI:EU:C:2018:551, para 69.

⁴³ CJEU (n 17) para 75.

⁴⁴ Opinion of AG Bot (n 24), para 56.

⁴⁵ CJEU (n 11) paras 36-37; CJEU (n 7) para 36; EDPB (n 8) 15.

⁴⁶ This conclusion is supported by the Article 29 Data Protection Working Party, 'Opinion 2/2010 on online behavioural advertising' WP171 11-12.

⁴⁷ Article 29 Data Protection Working Party (n 46) 10-11; Brendan Van Alsenoy, *Data Protection Law in the EU: Roles, Responsibilities and Liability* (Intersentia Ltd, 2019) 404.

⁴⁸ Brendan Van Alsenoy (n 47) 438.

including the type of data processed and the categories of data subjects involved. As principal designer of the data processing,⁴⁹ the AdX is a controller in its own right for the retrieval of cookies,⁵⁰ as summarised in Table 5 below.

AdX	
(i) Retrieval of cookies stored in the web browser	
Purpose	Essential means
Yes, enhancing the quality of its services and providing statistics	Determining personal data processed and categories of data subjects concerned
	Providing infrastructure for the processing
Controllershship: Yes	

Table 5: Controllershship test for AdX for the retrieval of cookies

- 31 As for the creation and further transfer of the bid request to DSPs, the responsibility of the AdX is even greater. The AdX pursues its own purpose, as it gains from the processing a benefit other than the mere payment for the services offered.⁵¹ Moreover, the AdX exercises a decisive influence on the means of the processing, by creating the infrastructure connecting the publisher and advertisers. Thus, the AdX organizes, coordinates and encourages both its and other actors' processing activities.⁵² This influence is stronger whenever the publisher does not set parameters on the bid request, so that the AdX determines the categories of data subjects involved and the type of personal data that will be shared during

⁴⁹ Opinion of AG Bot (n 24) para 47.

⁵⁰ This conclusion is supported by: European Data Protection Board, 'Guidelines 8/2020 on the targeting of social media users', (EDPB, 13 April 2021) <https://edpb.europa.eu/system/files/2021-04/edpb_guidelines_082020_on_the_targeting_of_social_media_users_en.pdf> accessed 30 January 2024; Article 29 Data Protection Working Party (n 46); CJEU (n 17); CJEU (n 11).

⁵¹ EDPB (n 8) 50.

⁵² CJEU (n 42) para 73.

the whole RTB auction process, as well as the DSPs recipient of the bid request.⁵³ Therefore, the AdX is a controller in its own right for the creation of the bid request and its transfer to DSPs, as summarized in Table 6 below.

AdX	
(ii) Creation of a bid request and (iii) transfer of the bid request to the DSPs	
Purpose	Essential means
Yes, enhancing the quality of its services and providing statistics	Determining personal data processed and categories of data subjects concerned
	Determining disclosure of personal data and recipients
	Providing infrastructure for the processing
Controllershship: Yes	

Table 6: Controllershship test for AdX for the creation of a bid request and its transfer to the DSPs

c.) SSP

- 32 The SSP is not processing personal data and acts as an intermediary between the publisher and the AdX.
- 33 The SSP exercises some influence on the means of the processing performed by the AdX, as it creates the infrastructure connecting it with the publisher. However, the SSP does not pursue its own purposes in the processing: normally, the services offered by SSPs consist in aggregating publishers' advertising inventories and organising advertising campaigns.⁵⁴ Both services are neither linked to the processing or performed to the only interest of publishers, as the mere fact of receiving remuneration is not *per se* sufficient to identify a SSP's purpose in the processing.⁵⁵ Therefore, since its activity is limited to that of an

⁵³ CJEU (n 7) para 36.

⁵⁴ Jun Wang, Weinan Zhang and Shuai Yuan (n 31).

⁵⁵ EDPB (n 8) 50.

intermediary service, the SSP is GDPR-irrelevant, as shown in Table 7 below.

SSP	
(i) Retrieval of cookies stored in the web browser, (ii) creation of a bid request and (iii) transfer of the bid request to DSPs	
Purpose	Essential means
No	Providing infrastructure for the processing
Controllership: No	

Table 7: Controllership test for SSP for the retrieval of cookies, creation of a bid request and its transfer to DSPs

d.) Joint Controllership

- 34 Since both the publisher and the AdX are controllers for the processing operations performed during the first phase of the RTB auction, we now assess whether they are joint controllers.
- 35 The processing operations would not occur without the decisions taken by both the publisher and the AdX. Even though the purposes pursued by the two entities differ, both entities are benefitting from the same processing, so that their own commercial purposes are mutually complementary.⁵⁶ Moreover, both entities participate in determining the means of the processing: while the AdX provides the infrastructure for the processing, the publisher actively decides to make use of it, thus enabling the processing.⁵⁷ The processing cannot be considered separable, as it could not be performed by one party without the intervention of the other:⁵⁸ Therefore, the publisher and the AdX are joint controllers for (at least part of) the processing.
- 36 The extent of the joint control depends on the publisher’s contribution to the determination of the es-

sential characteristics of the processing. By enabling the AdX to process the data, the publisher exercises a decisive influence on the retrieval of cookies and creation of the bid request. However, the joint controllership for the transfer of the bid request to DSPs depends on whether the publisher can set parameters on the data to be shared and their recipients. If that is not the case, the last processing operation is out of the publisher’s sphere of influence and under the sole control of the AdX. Tables 8 and 9 below summarise the assessment of the joint controllership between the publisher and the AdX.

Publisher and AdX	
(i) Retrieval of cookies stored in the web browser and (ii) creation of a bid request	
Joint determination of purpose	Joint determination of means
The entities pursue purposes which are complementary	The entities rely on the same infrastructure, provided by the AdX, while the publisher makes the processing possible, sets the parameters and chooses when ending the processing
Joint controllership: Yes	

Table 8: Joint controllership test for publisher and AdX for the retrieval of cookies and creation of a bid request

Publisher and AdX	
(iii) Transfer of the bid request to DSPs	
Joint determination of purpose	Joint determination of means
The entities pursue purposes which are complementary	The entities rely on the same infrastructure, provided by the AdX, while the publisher sets the parameters
Joint controllership: Only if publisher is setting parameters on essential means	

Table 9: Joint controllership test for publisher and AdX for the transfer of the bid request to the DSPs

56 Case C-40/17 *Fashion ID GmbH & Co.KG v Verbraucherzentrale NRW eV* [2018] ECLI:EU:C:2018:1039, Opinion of AG Bobek, para 105.

57 CJEU (n 17) para 75.

58 EDBP (n 8) 19-20.

2. Second Phase: Advertisers, DSPs and DX

- 37 The second phase of the RTB auction sees the involvement of advertisers [Section (a)], DSPs [Section (b)] and of the DX [Section (c)].

a.) Advertisers

- 38 Advertisers do not engage directly in any processing activity, which are delegated to DSPs. Again, this is not an obstacle *per se* to the qualification as controller, as long as advertisers are able to determine purposes and means of the processing.⁵⁹
- 39 As for the determination of purposes, advertisers have their own primary economic interest in the processing operations performed by the DSPs and DX, as they increase the advertisers' chances to deliver their ads to a specific targeted audience and, ultimately, enhance their overall profit. As for the determination of the (essential) means of the processing, we need to distinguish between the different processing operations performed by DSPs. On the one hand, advertisers exercise a decisive influence on the way personal data is processed during the retrieval of the bid request and the use of the data therein contained. By deciding to initiate a RTB advertising campaign and accordingly accepting the terms and conditions, the advertisers enable DSPs to process personal data, thus triggering the start of a processing which would not be possible otherwise.⁶⁰ Moreover, advertisers can stop the processing, by simply terminating the contract with DSPs.⁶¹ On the other hand, we can theorise two different cases for the potential sale and retrieval of additional personal data from the DX. If advertisers cannot decide on whether requesting this additional data transfer or on selecting the DX, the retrieval of additional data is out of the advertisers' sphere of influence. Otherwise, advertisers exercise a decisive influence on the means of the processing.⁶²

- 40 Therefore, advertisers are controllers in their own right for (at least part of) the processing of personal data performed by DSPs. The controllership test is summarized in Tables 10 and 11 below.

Advertisers	
(iv) Retrieval of the bid request and (vii) use of personal data	
Purpose	Essential means
Yes, increasing profits from the delivery of the ad to a targeted audience through a RTB auction	Using infrastructure provided by DSPs for their own purpose, but make the processing possible and choose when ending the processing
Controllership: Yes	

Table 10: Controllership test for advertisers for the retrieval of the bid request and use of personal data

Advertisers	
(v) Sale and (vi) retrieval of additional personal data	
Purpose	Essential means
Yes, increasing profits from the delivery of the ad to a targeted audience through a RTB auction	Determining personal data processed and categories of data subjects concerned
Controllership: Only if setting parameters on essential means	

Table 11: Controllership test for advertisers for the retrieval of additional personal data

- 41 DSPs are the entities performing three of the four processing operations during the second phase of the RTB auction.

⁵⁹ CJEU (n 42) para 69.

⁶⁰ CJEU (n 17) para 75.

⁶¹ Opinion of AG Bot (n 24) para 56.

⁶² CJEU (n 11) paras 36-37; EDPB (n 8) 15.

b.) DSPs

42 In principle, DSPs can be either controllers or processors, depending on whether they determine their own purposes and means. DSPs benefit from both the processing they perform on behalf of advertisers' and that potentially performed by the DX, by using the data acquired to gain an advantage over other competitor DSPs and by enriching the users' profile to better target them, thus enhancing the quality of the services they offer.⁶³ This holds, *a fortiori*, whenever DSPs collect additional data from the DX. DSPs also develop the infrastructure that enables the processing, thus determining *de facto* some of its essential means. The influence on the processing is even greater whenever advertisers do not set any parameters on the sale and retrieval of additional data from the DX: in this case, DSPs are also determining the essential characteristics of the transfer of the additional data. As principle designers of the data processing,⁶⁴ DSPs are controllers in their own right for the data processing operations performed by them and by the DX,⁶⁵ as summarised in Table 12 below.

DSPs	
(iv) Retrieval of the bid request, (v) sale and (vi) retrieval of additional personal data and (vii) use of personal data	
Purpose	Essential means
Yes, enhancing the quality of the services to win as many auctions as possible	Determining personal data processed and categories of data subjects concerned
	Providing infrastructure for the processing
Controllershship: Yes	

Table 12: Controllershship test for DSPs for the retrieval of the bid request, the retrieval of additional personal data and their use

c.) DX

- 43 The DX is another tracker entity, which collects, aggregates and analyses personal data from various sources and for its own purposes,⁶⁶ thus qualifying as sole controller for the processing operations performed outside of the RTB ecosystem.⁶⁷ If solicited by advertisers or DSPs, the DX may intervene in the RTB auction process to sell the personal data to better target users.
- 44 As for the retrieval of the bid request and the use of personal data, the DX does not exercise any influence on the processing: the DX neither pursues a purpose of its own or decides on the means, nor does it perform the operations. Therefore, the DX is GDPR irrelevant, as shown in Table 13 below.

63 Michael Veale and Frederik Zuiderveen Borgesius (n 4) 232.

64 Opinion of AG Bot (n 24) para 47.

65 This conclusion is supported by MED 2018-042 *Décision n° MED 2018-042 du 30 octobre 2018 mettant en demeure la société X* [CNIL, 2018].

66 EDPB (n 50) 10-11.

67 Brendan Van Alsenoy (n 47) 439.

DX	
(iv) Retrieval of the bid request and (vii) use of personal data	
Purpose	Essential means
No	No decisive influence
Controllershship: No	

Table 13: Controllershship test for DX for the retrieval of the bid request and the use of personal data

- 45 As for the sale and retrieval of the additional personal data, the legal qualification of the DX is context-dependent. In principle, the sale of personal data as a ‘product’⁶⁸ can be qualified as a processing operation performed by either a controller or a processor, depending on whether the seller determines its own purposes and means.⁶⁹ The decisive factor is whether the service provided is specifically targeted at processing personal data. If so, likely, the service provider cannot determine the purpose of the processing activities.⁷⁰ In the RTB auction, the DX offers the sale of data as a product, as a specific service and against remuneration, which is *per se* not sufficient to identify an own purpose in the processing.⁷¹ Not gaining any additional benefits from the sale of data to DSPs, the DX is a processor for the sale and the retrieval of additional personal data,⁷² as summarised in Table 14 below. However, the result of this assessment would be different, for instance, in all those cases in which the transfer of personal data is bidirectional (i.e., both from the DX to DSPs and from DSPs to the DX). If so, it is reasonable to argue for the existence of an own purpose in the processing for the DX as, through the process-

⁶⁸ Namely, personal data already collected, aggregated and analysed.

⁶⁹ For two different qualifications, see EDPB (n 8) 17-18 and Brendan Van Alsenoy (n 47) 405.

⁷⁰ EDPB (n 8) 27.

⁷¹ *Ibid.* 50.

⁷² This conclusion is supported by: Jaap Wieringa and others ‘Data analytics in a privacy-concerned world’(2021) 122 J. Bus. Res. 915, 917, 923; Brittany Martin ‘The Unregulated Underground Market for Your Data: Providing Adequate Protections for Consumer Privacy in the Modern Era’ (2020) 105 Iowa Law Rev. 865, 885.

ing operations performed, it can enrich the amount of personal data collected and enhance the quality of the services offered.

DX	
(v) Sale and (vi) retrieval of additional personal data	
Purpose	Essential means
No	Using infrastructure provided by DSPs, but makes the processing possible and choose when ending the processing
Controllershship: No	

Table 14: Controllershship test for DX for the sale and retrieval of additional personal data

d.) Joint Controllershship

- 46 Since both advertisers and DSPs are controllers in their own right for the processing operations performed during the second phase of the RTB auction, we now ascertain whether they are joint controllers.
- 47 The processing operations would not occur without the decisions taken by both advertisers and DSPs. Even though the purposes pursued by the two types of entities differ, both are benefitting from the same processing operations, so that their commercial purposes are mutually complementary.⁷³ Moreover, both types of entities participate in determining the means of the processing: while DSPs provide the infrastructures for the processing, advertisers actively decide to make use of them, thus enabling the processing.⁷⁴ The processing cannot be considered separable, as it could not be performed by one party without the intervention of the other:⁷⁵ therefore, advertisers and DSPs are joint controllers for (at least part of) the processing.
- 48 The extent of the joint control depends on the advertisers’ contribution to the determination of the essential characteristics of the processing. By decid-

⁷³ Opinion of AG Bobek (n 56) para 105.

⁷⁴ CJEU (n 17) para 75.

⁷⁵ EDPB (n 8) 19-20.

ing to start a RTB advertising campaign and signing a contract with DSPs, advertisers exercise a decisive influence on the retrieval of the bid request and further use of personal data. However, the joint controllership for the sale and subsequent retrieval of additional personal data depends on if advertisers can decide on whether to buy the data and from which DX. If that is not the case, these two processing operations are out of the advertisers' sphere of influence and under the sole control of DSPs.

Tables 15 and 16 below summarise the assessment of joint controllership between advertisers and DSPs.

Advertisers and DSPs	
(iv) Retrieval of the bid request and (vii) use of personal data	
Joint determination of purpose	Joint determination of means
The entities pursue purposes which are complementary	The entities rely on the same infrastructure, provided by DSPs, while advertisers make the processing possible and choose when ending the processing
Joint controllership: Yes	

Table 15: Joint controllership test for advertisers and DSPs for the retrieval of the bid request and the use of personal data

Advertisers and DSPs	
(v) Sale and (vi) retrieval of additional personal data	
Joint determination of purpose	Joint determination of means
The entities pursue purposes which are complementary	The entities rely on the same infrastructure, provided by the DSPs, while advertisers set the parameters
Joint controllership: Only if advertisers are setting parameters on essential means	

Table 16: Joint controllership test for advertisers and DSPs for the sale and retrieval of additional personal data

II. Macro Level

49 In the micro-level analysis [Section I.], we qualified the entities of the RTB ecosystem vis-à-vis the processing operations in which they are involved. The results of the analysis are summarised in Table 17 below

Processing operation	Actor(s) involved	Legal qualification(s)	Joint controllership
(i) Retrieval of cookies	Publisher	Controller	Yes
	AdX	Controller	
	SSP	n/a	n/a
(ii) Creation of bid request	Publisher	Controller	Yes
	AdX	Controller	
	SSP	n/a	n/a
(iii) Transfer of bid request	Publisher	Controller, if setting parameters on means	Only if publisher sets parameters on means
	AdX	Controller	
	SSP	n/a	n/a
(iv) Retrieval of bid request	DSPs	Controllers	Yes
	Advertisers	Controllers	
	DX	n/a	n/a
(v) Sale of additional personal data	DSPs	Controllers	Only if advertisers set parameters on means
	Advertisers	Controllers, if setting parameters on means	
	DX	Processor	n/a
(vi) Retrieval of additional personal data	DSPs	Controllers	Only if advertisers set parameters on means
	Advertisers	Controllers, if setting parameters on means	
	DX	Processor	n/a
(viii) Use of personal data	DSPs	Controllers	Yes
	Advertisers	Controllers	
	DX	n/a	n/a

Table 17: Results of the micro-level analysis

- 50 Starting from these results, we conduct the macro-level analysis of the RTB auction process, to identify further joint controllerships.
- 51 On the one hand, we can imagine the seven processing activities as a unified set of operations pursuing a unified and jointly determined purpose, that of performing a RTB auction, to the economic benefit of all the four entities involved. Even though the publisher, the AdX, DSPs and advertisers pursue their own diverse purposes, all of them can be considered as closely linked and mutually complementary, as they all contribute to substantiate the RTB auction process, which would be impossible without the participation of all these entities.⁷⁶
- 52 On the other hand, the argument does not hold for the means of the processing. For instance, while the publisher is exercising a decisive influence on the processing means used by the AdX, an equally decisive influence is not exercised on the means of DSPs. Similarly, while advertisers are influencing the processing of DSPs, they are not equally influencing the processing of the AdX. Therefore, the publisher, the AdX, DSPs and advertisers are joint controllers only vis-à-vis those processing operations of the processing chain for which they exercise a decisive influence on the means of processing.⁷⁷
- 53 As for the retrieval of cookies and the creation of a bid request, the micro-level analysis still stands: since the processing is not separable and could not be performed by only one party, the publisher and the AdX are joint controllers.
- 54 As for the transfer of the bid request to DSPs, the assessment is more context-dependent. The publisher and the AdX are joint controllers whenever the first can set any of the parameters on the transfer of personal data. Otherwise, the processing is out of the publisher's sphere of influence. Additionally, we can theorise a further joint controllership between (the publisher,) the AdX and DSPs, whenever DSPs rely on the AdX's infrastructure to transfer the bid request, and especially if they set parameters on the types of requests they process. Otherwise, the transfer of personal data involves sole controllers.
- 55 As for the retrieval of the bid request, the micro-level analysis still stands: DSPs and the advertisers are joint controllers, as the processing is, again, not separable. Additionally, we can theorise a further joint controllership between DSPs, advertisers and the AdX, whenever the AdX provides the infrastructure enabling the transfer and retrieval of the bid request by DSPs.
- 56 As for the sale and retrieval of additional personal data and their further use, the micro-level analysis still stands: advertisers and DSPs are joint controllers for the sale and retrieval of additional personal data whenever they set parameters on the processing, while they are always joint controllers for the use of the personal data.
- 57 The final results of the (joint) controllership assessment are summarised in Table 18 below.

⁷⁶ CJEU (n 17); CJEU (n 11).

⁷⁷ CJEU (n 17) para 70.

Processing operation	Actor(s) involved	Legal qualification(s)	Joint controllership
(i) Retrieval of cookies	Publisher	Controller	Yes
	AdX	Controller	
(ii) Creation of bid request	Publisher	Controller	Yes
	AdX	Controller	
(iii) Transfer of bid request	Publisher	Controller, if setting parameters on means	Only if publisher sets parameters on means or if DSPs use infrastructure and set parameters on means
	AdX	Controller	
	DSPs	Controller, if using infrastructure and setting parameters on means	
(iv) Retrieval of bid request	DSPs	Controllers	Yes
	Advertisers	Controllers	
	AdX	Controller, if providing infrastructure	Only if AdX provides infrastructure
(v) Sale of additional personal data	DSPs	Controllers	Only if advertisers set parameters on means
	Advertisers	Controllers, if setting parameters on means	
	DX	Processor	n/a
(vi) Retrieval of additional personal data	DSPs	Controllers	Only if advertisers set parameters on means
	Advertisers	Controllers, if setting parameters on means	
	DX	Processor	n/a
(viii) Use of personal data	DSPs	Controllers	Yes
	Advertisers	Controllers	

Table 18: Final results of the controllership assessment

D. The Problematic Consequences of Joint Controllership in RTB

58 Pursuant to Article 26 of the GDPR, when two or more controllers are joint controllers, they must determine their respective responsibilities to ensure compliance with the data protection obligations in a transparent manner, particularly regarding the data subjects' rights and the duty to provide information. In other words, joint controllers have the flexibility to decide among themselves who will comply with what obligations established by the GDPR, as long as

full compliance is ensured.⁷⁸ However, reaching an effective allocation responsibilities in the context of RTB is particularly difficult.

59 First, due to the high number of entities participating to a single RTB auction, the implementation of Article 26 of the GDPR is complex. While contractually assigning responsibilities among the publisher and the AdX can be feasible, this becomes ex-

⁷⁸ EDPB (n 8) 43.

tremely more complicated, for instance, whenever DSPs are joint controllers: this scenario requires as many joint controllership agreements as many as there are DSPs participating in the auction. This complexity is exacerbated when the group of joint controllers extends to advertisers, since the number of joint controllership agreements needed increases exponentially.

- 60 Second, the high number of joint controllers in a single RTB auction inevitably leads to a lack of clarity and transparency.⁷⁹ In the words of the CJEU's Advocate General Bobek, "[...] effective protection of something tends to dramatically decrease if everyone is made responsible for it. Making everyone responsible means that no-one will in fact be responsible. Or rather, the one party that should have been held responsible for a certain course of action, the one actually exercising control, is likely to hide behind all those others nominally 'co-responsible', with effective protection likely to be significantly diluted."⁸⁰ Paradoxically, this lack of transparency particularly impacts the two controllers' obligations expressly mentioned by Article 26 of the GDPR: the duty to ensure data subjects' rights and the related duty to provide information.
- 61 This diluted distribution of control leads to a problematic unpredictability.⁸¹ As concluded above [Section C.II.], the entities involved in the RTB auction are joint controllers only for some of the processing operations in the chain, with the extent of the joint controllership highly depending on the parties' practical implementation of the RTB protocol. As a result, it is extremely difficult to predict which entity is a joint controller for each processing operation.⁸² This unpredictability primarily affects data subjects, who should always be aware of the identity of the responsible controller so to effectively exercise their rights. However, it also negatively impacts

joint controllers. For instance,⁸³ controllers will particularly struggle to respect their duty to inform data subjects about the processing performed.⁸⁴ The controller contractually assigned by the joint controllers to ensure compliance with Article 13 of the GDPR is obliged to provide data subjects with the identities and contact details of all the controllers, the purposes of the processing, and the specific⁸⁵ recipients of the personal data.⁸⁶ Since controllers have the duty to provide meaningful information on the most important consequences of the processing,⁸⁷ the assigned controller cannot only provide information restricted to those processing operations in the chain it controls without violating the principle of transparency.⁸⁸ However, the assigned controller can provide meaningful information only if it can rely on the cooperation of all the controllers involved in the processing operations in the chain, including those outside of the assigned controller's sphere of influence. Since there is no central entity with a complete overview of who is involved in the auction, the assigned controller will face great difficulties in obtaining the information required by Article 13 of the GDPR. The assigned controller will face even more troublesome difficulties while trying to comply with data subjects' right to access a faithful reproduction of all their personal data processed, including any further data that may be generated during the processing⁸⁹ (e.g., users' profiles generated through aggregated data). Still, this compliance burden is unreasonably shifted towards a (joint) control-

79 Article 29 Data Protection Working Party 'Opinion 1/2010 on the concepts of "controller" and "processor"' WP169, 24.

80 Opinion of AG Bobek (n 56) para 92.

81 Benjamin Wong 'Problems with controller-based responsibility in EU data protection law' (2021) 11 Int. Data Priv. Law 375, 379.

82 *Ibid.*

83 See René Mahieu and Joris van Hoboke 'Fashion-ID: Introducing a phase-oriented approach to data protection?' (*European Law Blog*, 30 September 2019) <<https://europeanlawblog.eu/2019/09/30/fashion-id-introducing-a-phase-oriented-approach-to-data-protection/>> accessed 31 January 2024.

84 GDPR (n 6) Article 13.

85 Case C-154/21 *RW v Österreichische Post AG* [2023] ECLI:EU:C:2023:3, para 46.

86 GDPR (n 6) Article 13(1)(a), (b), (e).

87 Article 29 Data Protection Working Party 'Guidelines on transparency under Regulation 2016/679' WP260 rev.01, 7.

88 René Mahieu and Joris van Hoboke (n 84).

89 Case C-487/21 *FF. v Österreichische Datenschutzbehörde* [2023] ECLI:EU:C:2023:369, para 70.

ler that does not have real control on some stages of the processing.⁹⁰

- 62 The problematic allocation of responsibilities among the high number of joint controllers in a RTB auction has serious consequences for the possibility to ensure effective and complete protection of data subjects' rights.⁹¹ Over the last years, national data protection authorities have investigated the RTB ecosystem's (often poor) compliance with the GDPR.⁹² Recently, the issue escalated to the CJEU, which analysed the personal data processing in the Transparency & Consent Framework, a standardised tool provided by the European branch of the Interactive Advertising Bureau (IAB) to facilitate compliance with the GDPR.⁹³ While the CJEU applied its established doctrine [Section B.I.] to shed light on the personal data controllership within the Transparency & Consent Framework,⁹⁴ the narrow focus of the proceeding did not allow the Court to delve into the broader topic of the (joint) controllership within RTB in general. This occasion will probably be seized soon by Hamburg's data protection authority, which is currently investigating the GDPR-compliance of the data sharing operations within the broader RTB ecosystem.⁹⁵ Meanwhile, the (joint) controllership test performed in Section C. of this paper sheds some light on the roles and, therefore, responsibilities of the entities involved in a RTB auction to the bene-

fit of both data subjects and joint controllers. While the controllership assessment, as summarised in Table 18 above, cannot *per se* resolve all the challenges created by RTB, it can lessen its lack of transparency and unpredictability, thus facilitating the exercise of data subjects' rights and a clearer allocation of responsibilities among the joint controllers.

90 Benjamin Wong (n 82) 379.

91 CJEU (n 7) para 34.

92 DOS-219-01377 *Decision on the merits 21/2022 of 2 February 2022* [Gegevensbeschermingsautoriteit, 2022]; MED 2018-042 (n 65); MED 2018-043 *Décision n° MED 2018-043 du 8 octobre 2018 mettant en demeure la société x* [CNIL, 2018]; MED-2018-023 *MED-2018-023 du 25 juin 2018 mettant en demeure la société X* [CNIL, 2018].

93 Interactive Advertising Bureau Europe, 'Transparency & Consent Framework' (IAB Europe, May 2023) <<https://iabeurope.eu/transparency-consent-framework/>> accessed 12 August 2024.

94 Case C604/22 *IAB Europe v Gegevensbeschermingsautoriteit* [2024] ECLI:EU:C:2024:214, paras 52-77.

95 Mattia Fosci, 'The Death and Rebirth of the Real-Time Bidding' (*Anonymised*, 6 March 2023) <<https://www.anonymised.io/blog-posts/the-death-and-rebirth-of-real-time-bidding>> accessed 12 August 2024.