

# Study on redefining ‘hosting’ under article 14 of the e-Commerce Directive

Final report

Client: Directie Digitale Economie, Ministerie van Economische Zaken en Klimaat

Rotterdam, 10 December 2020



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# Executive summary

Since the adoption of the E-Commerce Directive in 2000, cloud computing, social networks and other technological developments have transformed not only the online world, but also political, economic, and social spheres. The legal framework governing hosting services and liability of their providers for illegal content, misinformation, and other online wrongdoing seem outdated and not fit-for-purpose. National and EU courts have been challenged to interpret the articles of the e-Commerce Directive to capture the new types of hosting services. Yet, the notions of passive and active hosting services created in case law are difficult to apply in practice, leading to inconsistencies in jurisprudence across Member States.

The intended Digital Services Act (DSA) provides a possibility to adopt a modern framework at the EU level that better fits the needs of the market while protecting rights of EU citizens and leaving room for further innovation. To achieve this, the DSA should update the notion of hosting services to be more precise, more inclusive and more robust against the time. The notion of hosting services could also be divorced of its link to liability of service providers and be more focused on the characteristics of the hosting service as such.

This study suggests to redefine a hosting service based on its core characteristics as *storage of content by third parties (organisations and individuals) who are not the host and provide such content on behalf of said third parties to audiences selected by these third parties*. This definition better corresponds to the technological and market reality and lends itself well to creation of a general taxonomy of hosting services. An observation of today's hosting services suggests that, while many of them store and provide content, this is not the primary function for all of them. Therefore, two main categories of hosting services should be distinguished based on the primary function they serve:

1. **Category 1 services (hosting)** could be defined as *intermediation services that have as their primary function storage of content by third parties that are different from the host, and the provision of this content on behalf of the third parties to the audiences selected by these third parties*.
2. **Category 2 services (hosting plus)** are *intermediation services that use classical hosting as a necessary or supporting activity to fulfil their primary function, which is different from storage and provision of a third-party content*. To make the definition of Category 2 services more precise, the definition of information society services needs more clarity.

Category 1 services include web hosting and cloud hosting as well as data or content storage services also known as “cyber lockers” In addition to having the primary function of storing and providing content, Category 1 services are typically characterised by limited knowledge of the content stored, though for data and content storage services this is often a choice based on their business model.

Category 2 services are hosted by and therefore dependent on Category 1 services, but they are much more sophisticated than the latter. Their primary function can be almost anything, but a distinguishing feature is that although storing and providing content is necessary to fulfil their primary function, it does not constitute their primary function. Another defining characteristic of Category 2 services is that they have to process the third-party content and the (meta)data of their users in some way to fulfil their primary function. By “processing content” we mean content

curation, filtering, tagging and other types of content management as well as the extraction and analysis of metadata related to this content.

The suggested taxonomy of hosting services can be used by policymakers (1) to introduce a new category of intermediary services – in addition to the existing services of mere conduit, caching and hosting; (2) to split the existing category of hosting into two subcategories – classical hosting and hosting plus, or (3) to create a completely new classification of intermediary services based on a new knowledge standard. In addition, policymakers can distinguish sub-categories of hosting services based on their primary functions. Following regulatory needs, policymakers can also consider more fleeting factors and factors related to providers, like business model, size of providers or type of content.

# 1 Introduction

## 1.1 Objectives and scope of the study

The study was commissioned by the Dutch Ministry of Economic Affairs and Climate to provide input to policymakers who are staking out a national position on the revision of the E-Commerce Directive (ECD)<sup>1</sup> at a European Union (EU) level. The analysis re-examines the definition of hosting services under Article 14 ECD so as to understand how best to revise that section of the Directive for the purposes of a new Digital Services Act (DSA).<sup>2</sup> With this in mind, the study provides evidence and information that will deepen and further specify the initial position statement of the Dutch government. This analysis provides a logical subdivision and solid definitions of the types of hosting services that are currently covered under the scope of Article 14 ECD.

More specifically, two research questions were formulated by the Ministry for this study:

1. What would be a logical subdivision between the various types of services provided by intermediary service providers under the scope of Article 14 of the E-Commerce Directive (ECD)? Please clarify comprehensively what the distinctive, unique and exclusive elements of each of these types of services are.
2. How can the various types of services provided by intermediary service providers under the scope of Article 14 ECD be defined?

## 1.2 Methodology

To answer the research questions, the study combined desk-based research with interviews and a workshop with representative stakeholders to deliver the most complete, up-to-date results. The study built on the existing research, which was supplemented by interviews with stakeholders and consultations with academic experts.

The desk research was the review of academic literature that focused mainly on academic studies of the EU-level framework, because, first, this framework provides a basis for the national frameworks, especially in terms of definitions. Second, the object of the study was on the ECD and the future DSA. Considering how quickly the digital environment develops, the review focused on scholarly and policy publications from the last five years that addressed Articles 12 to 15 ECD.

The full list of the literature reviewed is annexed to the report (Annex I). However, not all of the reviewed literature proved directly relevant for the task at hand, as the references in the main body of the report indicate.

A series of semi-structured interviews with stakeholders were conducted between 21 October and 9 November 2020. In total, the research team conducted 13 interviews with different types of companies, associations and academics, of which 11 interviews were done via video conference

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<sup>1</sup> Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, OJ L 178 of 17.07.2000.

<sup>2</sup> On the background and progress of the policy and legislative process see the website of the European Commission <https://ec.europa.eu/digital-single-market/en/digital-services-act-package> and the legislative train schedule <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-digital-services-act> <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-digital-services-act> .



and two interviews in written form. The list of the interviewees, the questions, and the summary report on all interviews are annexed to the report (Annex II).

The draft results of the study were presented to stakeholders in an online workshop. The objective of the workshop was two-fold: (1) to inform the stakeholders of the study results and (2) to validate the draft findings. The validation allowed the research team to sense-check our draft results and to explore whether their presentation was clear and logical. It was also the last instance to receive input for the study. The report on the validation workshop is attached in Annex III.

The main limitation of this methodology was the short duration of the study: the study team produced results within two months. This timeframe put a natural cap on the number of interviews that could be organised and conducted. At the same time, while the sample is relatively small, it is very representative. The interviewees include both national companies and large multinationals as well as associations representing online intermediary service providers. These organisations are active in various sectors of the digital economy, and deliver a wide range of information- society services as well as electronic communications services. To further ensure the academic perspective, we engaged two experts as an advisory board for this study – in addition to the interviews conducted with experts.

Another challenge for the study was the research questions themselves and the context in which they were formulated. The notion of hosting services was introduced in the ECD (Article 14) to create the safe-harbour regime (i.e. exemption from secondary liability). Therefore, until now, the notion of hosting services and their classification has had no relevance outside of the context of liability. This coloured interviews (and much of the literature), producing a bias or perspective around how to classify hosting. At the same time – as highlighted by the interviewees – without a goal or legislative purpose, classifications make no sense.

### 1.3 Structure of the report

The report begins with a brief overview of what is currently covered by Article 14 ECD (Section 2). This overview represents a necessary baseline for the discussion on the definition of hosting services and their classification. Section 3 aims to clarify the definition of hosting services, based on the literature review and interviews, and also touches upon other terminology used in the discussions on regulation of hosting services (e.g. intermediary service provider, platform, and gatekeeper). Section 4 analyses the existing approaches to taxonomies found in the scholarly literature and discusses their main criteria, advantages and weak spots. Section 5 outlines various criteria for a taxonomy of hosting services and proposes a new taxonomy of hosting services. It also addresses additional factors that may be considered to tweak that taxonomy. Finally, Section 6 discusses potential implications of a new taxonomy for policy-making.

## 2 Scope of Article 14 ECD

This section provides a short overview of the current scope of Article 14 of the ECD (see the textbox below), including as interpreted by the EU courts. It does not claim to be a complete or in-depth legal analysis but provides a starting point for a revised taxonomy.

### Article 14

#### Hosting

1. Where an information society service is provided that consists of the storage of information provided by a recipient of the service, Member States shall ensure that the service provider is not liable for the information stored at the request of a recipient of the service, on condition that:
  - (a) the provider does not have actual knowledge of illegal activity or information and, as regards claims for damages, is not aware of facts or circumstances from which the illegal activity or information is apparent; or
  - (b) the provider, upon obtaining such knowledge or awareness, acts expeditiously to remove or to disable access to the information.
2. Paragraph 1 shall not apply when the recipient of the service is acting under the authority or the control of the provider.
3. This Article shall not affect the possibility for a court or administrative authority, in accordance with Member States' legal systems, of requiring the service provider to terminate or prevent an infringement, nor does it affect the possibility for Member States of establishing procedures governing the removal or disabling of access to information.

### 2.1 Legal basis

Article 14 ECD applies only to “intermediary service providers” that provide hosting services. Intermediary service providers are defined as providing an “information society service [...] that consists of the storage of information provided by a recipient of the service”. The protection afforded by Article 14 ECD is activity based,<sup>3</sup> meaning that one and the same company may be exempt from liability in relation to (some) hosting services but found liable for others.

However, the terminology used in this definition needs to be unpacked to draw a clearer picture.

Article 14 ECD suggests that hosting services are a type of intermediary service because they are provided by intermediary service providers. Their definition, however, is a complicated task due to the lack of definition within the Directive and also due to how this term has been used in legal, policy, academic, and other documents.

First, even though the ECD refers to “intermediary service provider” several times,<sup>4</sup> it does not provide a legal definition for such services. In particular, “Liability of intermediary service providers” is the title of Section 4 ECD, which encompasses Articles 12-15 and covers such services as mere conduit (Article 12), caching (Article 13) and hosting (Article 14). We could infer that all three of these services are types of intermediary services.

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<sup>3</sup> Adeyemi, Adebola (2018). Liability and exemptions of intermediary service providers (ISPs): Assessing the EU electronic commerce legal regime, pp. 2-3.

<sup>4</sup> To be exact, “intermediary service providers” are mentioned in the ECD two times: the recital 45 and as the title of section 4, under which Article 14 falls.

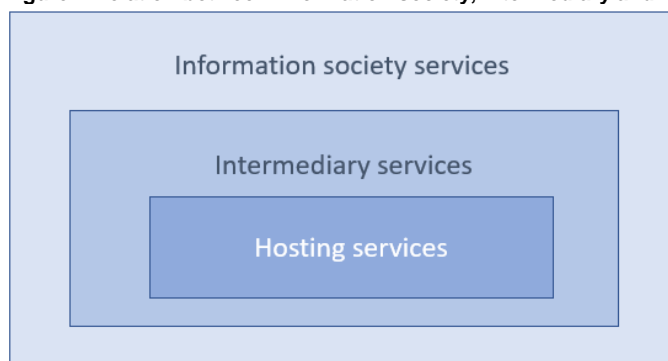


The only legal source that defines “online intermediation services” is Article 2 (2) of the Platform to Business Regulation.<sup>5</sup> Online intermediation service is an information society service that allows business users “to offer goods or services to consumers, with a view to facilitating the initiating of direct transactions between those business users and consumers” and provided on a contractual basis. This definition seems to fit the purposes of our study, but the Platform to Business Regulation explicitly excludes some of the services from its scope,<sup>6</sup> and online search engines are a separate service, not an intermediation service (see Article 1 of the Platform to Business Regulation).

Second, the ECD as a whole applies to providers of “information society services”. These services are defined as “any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services” (Article 1 (2) Directive (EU) 2015/1535).<sup>7</sup> The context for the term “intermediary service provider” suggests that it is a *subset of information society service providers* (see, for example, Recital 40 ECD: “service providers acting as intermediaries”). The ECD rules on liability only cover intermediaries, but not other information society service providers.

Based on the above, Figure 1 presents the relation between information society services, intermediary services and hosting services.

**Figure 1 Relation between information society, intermediary and hosting services**



Article 14 ECD contains several conditions that outline when a provider of hosting services can be exempted from secondary liability.<sup>8</sup> These conditions help contextualise the existing classifications of hosting services. The conditions contain two distinct knowledge standards about the illegal activity or information stored:

<sup>5</sup> Regulation (EU) 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services, OJ L 186 of 11.07.2019.

<sup>6</sup> For example, peer-to-peer platforms, business-to-business platform that do not have offering for consumers, advertising services, online payment services and interfaces that connect hardware and applications (for details see Recital 11 of the Platform to Business Regulation).

<sup>7</sup> For exceptions, see Annex I of the Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services, OJ L 241 of 17.09.2015. In short, all broadcasting services and telecommunications services are not information society services.

<sup>8</sup> Secondary liability means that a party is liable for the illegal behaviour of a third party if they have contributed to the wrongdoing in a meaningful way. “The intermediary does not initiate the wrongful activity that triggers the sanction, but provides the context or infrastructure that enables and facilitates the user’s illegal behaviours, or magnifies its impacts”, according to Sartor, Giovanni (2017). Providers liability: From the eCommerce Directive to the future. In-Depth analysis for the IMCO Committee, p. 9. What constitutes a relevant or meaningful contribution to the primary wrongdoing is defined by law and differs from country to country. See Lesner, Matthias (2014). Structural aspects of secondary (provider) liability in Europe. *Journal of Intellectual Property Law & Practice* 9:1, pp. 75-90. Secondary liability is linked to and dependent on the primary liability, and the demarcation lines between them are fluid as the research demonstrates. See Husovec, Martin (2020). Remedies First, Liability Second: Or Why We Fail to Agree on Optimal Design of Intermediary Liability, in: Giancarlo Frosio (ed.) *Oxford Handbook of Online Intermediary Liability*. Oxford University Press.

1. The hosting provider does not have “actual knowledge”; and
2. The hosting provider is not “aware of facts or circumstances” from which the illegality is “apparent” (this is referred to as “constructive” or “construed” knowledge).

In addition, once the hosting provider acquires such knowledge or awareness, it must “act expeditiously to remove or to disable access to the information” (notice-and-takedown procedure, Article 14 (1) (b) ECD).

To sum up, to benefit from the protection of Article 14 ECD, intermediary service providers of hosting services need to satisfy the following conditions, cumulatively:<sup>9</sup>

1. the service in question must qualify as an information society service;
2. the service consists in the storage of information;
3. the service is provided by the recipient of the information;
4. the provider of the information does not have actual knowledge or is not aware of the illegal nature of the information; and
5. Upon obtaining such knowledge or awareness, the provider removes or disables access to illegal information quickly.

## 2.2 Interpretation by courts

European and national courts have applied Article 14 ECD to a wide range of information service providers – and therefore discussed whether the services they provide constitute hosting:

- operators of interactive sites (whether blogs with a comments section, which could be checked for spelling and grammar, constitute hosting),<sup>10</sup>
- online marketplaces whose services include processing data entered by its customer or sellers, which allows the marketplace to optimise or promote offers for sale,<sup>11</sup>
- search engine operators who provide internet referencing services and also organise the display of advertisements based on keywords,<sup>12</sup>
- providers of online chat rooms and blog spaces with advertising,<sup>13</sup>
- providers of social networking platforms,<sup>14</sup>
- collaborative/ sharing economy platforms that connect, for remuneration, clients with service providers while also providing ancillary services to this intermediation,<sup>15</sup>
- online newspapers (whether a comments section is hosting).<sup>16</sup>

An interpretation of Article 14 ECD by the EU courts has added an important qualifier to the exemption from secondary liability of hosting providers: the hosting activity needs to be “of a mere technical, automatic and passive nature, which implies that the information society service provider has neither knowledge of nor control over the information which is transmitted or stored”.<sup>17</sup> The judgment in the case *Google v Louis Vuitton* further clarifies that the liability exemption applies to

<sup>9</sup> *Google France SARL and Google Inc. v Louis Vuitton Malletier SA (C-236/08)*, *Google France SARL v Viaticum SA and Luteciel SARL (C-237/08)* and *Google France SARL v Centre national de recherche en relations humaines (CNRRH) SARL and Others (C-238/08)*, para. 128.

<sup>10</sup> *Kaschke v Gray (2010) EWHC 690 (QB) 72*.

<sup>11</sup> *L'Oréal v eBay (C-324/09)*.

<sup>12</sup> *Google France SARL and Google Inc. v Louis Vuitton Malletier SA (C-236/08)*, *Google France SARL v Viaticum SA and Luteciel SARL (C-237/08)* and *Google France SARL v Centre national de recherche en relations humaines (CNRRH) SARL and Others (C-238/08)*.

<sup>13</sup> *Tamiz v Google (2012) EWHC 449 (QB) 52*.

<sup>14</sup> *SABAM v Netlog (C-360/10)*.

<sup>15</sup> *Asociación Profesional Elite Taxi (C-434/15)* and *Uber France (C-320/16)* as well as *AirBNB (C-390/18)*.

<sup>16</sup> *Estonia v Delfi*, ECHR, 64569/09.

<sup>17</sup> *L'Oréal and others v eBay (C-324/09)*.

“an Internet referencing service provider in the case where that service provider has not played an active role of such a kind as to give it knowledge of, or control over, the data stored”.<sup>18</sup>

This distinction made in the case law was dubbed as a distinction between passive (i.e. “mere technical, automatic and passive nature”) and active providing of hosting services. Against this backdrop, scholars debate where to draw the line (especially considering the absence of a general obligation to monitor by Article 15 ECD).<sup>19</sup> Scholars also point out that the case law on what constitutes active or passive behaviour is inconsistent, citing the following examples:<sup>20</sup>

- The Court of Paris found the social networking platform Myspace to be an editor of online content it hosted (i.e. active host). The main reasons were the pre-defined structure of the personal pages of users and the presence of profit-generating adverts on the platform.<sup>21</sup>
- Italian courts interpreted the role of the video-hosting platform IOL in a similar way. IOL was believed to have “actual knowledge” of the illegal content because it indexed the information uploaded and allowed users to find videos through a “related search” service.<sup>22</sup>
- The French Court of Cassation qualified the video platform Dailymotion as a passive hosting provider because its involvement with online content (such as re-encoding, formatting and organising) was purely technical rather than editorial.<sup>23</sup>
- The news portal Delfi was qualified as an “active” provider by the European Court of Human Rights (ECHR) because “Delfi kept track of the number of comments that accompanied each article, established rules for users leaving comments, and did not enable users to remove or modify comments once posted to the site”. Other characteristics of an active host included an automatic filtering mechanism, a notice-and-takedown system and occasional removal of comments by Delfi staff. This all signified that Delfi “exercised a substantial degree of control over the comments published on its portal”.<sup>24</sup>

## 2.3 Main insights from the legal overview

The short legal overview in Sections 2.1 and 2.2 demonstrates that there is a lack of clarity around central notions, like “intermediary service provider”. The legal definition of hosting is also not entirely fit for purpose due to the developments in technology, economy and society, but also given the evolution of public policy objectives. The EU courts are trying to adjust the legal provisions to the changing reality by introducing the distinction between active and passive hosting. These efforts, however, do not seem to resolutely improve the situation. The case law of national courts has been quite disparate, placing “hosting providers in a position to decide which content can remain online and which should be removed”.<sup>25</sup> It seems to send the wrong signal to stakeholders

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<sup>18</sup> Google France SARL and Google Inc. v Louis Vuitton Malletier SA (C-236/08), Google France SARL v Viaticum SA and Luteciel SARL (C-237/08) and Google France SARL v Centre national de recherche en relations humaines (CNRRH) SARL and Others (C-238/08).

<sup>19</sup> The CJEU is criticised by some scholars for introducing this distinction for hosting providers because Recital 42 ECD – the only place in the Directive mentioning “passive nature” – clearly refers to mere conduit and caching.

<sup>20</sup> For more examples, see Chapter 6 of DLA Piper (2009). EU study on the Legal analysis of a Single Market for the Information Society: New rules for a new age? <https://op.europa.eu/en/publication-detail/-/publication/a856513e-ddd9-45e2-b3f1-6c9a0ea6c722https://op.europa.eu/en/publication-detail/-/publication/a856513e-ddd9-45e2-b3f1-6c9a0ea6c722>

<sup>21</sup> Hornik, Joanna and Villa Llera, Carmen (2017). An Economic Analysis of Liability of Hosting Services: Uncertainty and Incentives Online. Bruges European Economic Research Papers 37 / 2017, p. 4.

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

<sup>24</sup> Brunner, Lisl (2016). The Liability of an Online Intermediary for Third Party Content the Watchdog Becomes the Monitor: Intermediary Liability after Delfi v Estonia. Human Rights Law Review 16, p. 166.

<sup>25</sup> Aleksandra Kuczerawy (2017). The Power of Positive Thinking: Intermediary Liability and the Effective Enjoyment of the Right to Freedom of Expression. JIPITEC – Journal of Intellectual Property, Information Technology and E-Commerce Law: <https://www.jipitec.eu/issues/jipitec-8-3-2017/4623>.

discouraging them from taking more active role.<sup>26</sup> This study looks to define what is going to be taxonomised before moving on to classification schemes.

We also note that the ECD currently defines hosting services only in the context of liability, and this report looks to move beyond this limitation and towards a wider classification, which requires a clear understanding of hosting services independent of the current approach in Article 14 ECD.

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<sup>26</sup> Hornik, Joanna and Villa Llera, Carmen (2017). An Economic Analysis of Liability of Hosting Services: Uncertainty and Incentives Online. Bruges European Economic Research Papers 37 / 2017.

## 3 Clarifying the terminology

### 3.1 Hosting service

In the technical literature, hosting means the provision of storage space allowing organisations and individuals to serve content to selected audiences. From a technological point-of-view, there are different types of hosting, including different web hosting services (physical and virtual, e.g. cloud) and application-specific hosting (e.g. file hosting, e-mail hosting, and DNS hosting).

As mentioned in Section 2, Article 14 ECD defines hosting as “storage of information provided by a recipient of the service”. This partially corresponds to the technical definition as the part regarding “serving content to selected audiences” is missing.

Interviewees identified the core element of hosting to be the storage of content on behalf of a party different from the host. It is essential that the stored content did not originate with the host. Because of that, the host does not have (full) knowledge and control over the stored content.

In addition to this core element of hosting, other actions or services can be performed on the stored content. The content may be processed and/or communicated (e.g. distributed, published, displayed, shared or facilitated) to a select audience. When the act of communication takes place, the service provider plays the role of intermediary because both the originator of the content and the audience have the primary interaction with the service provider and not with each other.

According to the interviewees, the legal and technical definitions largely correspond with each other. Storage of data is clearly the defining feature of this service, while additional elements are likely to be responsible for the variety of hosting services on the market. This could be helpful in creating a taxonomy of these services.

At the same time, the case law of EU and national courts indicates (see Section 2 above) that hosting has often been used as a catch-all term for all possible services that are not a “mere conduit” (Article 12 ECD) or “caching” (Article 13 ECD). The likely reason for this is that “mere conduit” and “caching” are much easier to delimit from other services.

Yet, it remains unclear to which category some services belong. For instance, the Court of Justice of the European Union (CJEU) established in a recent ruling that a web-based email service is not an electronic communications service.<sup>27</sup> This means that the service is an information society service, but it is unclear whether it is an intermediary service and, specifically, a hosting service. Search services were qualified as hosting by the CJEU<sup>28</sup>, but companies consider them more similar to caching because search services index, transmit and only temporarily store information. Last but not least, there is some debate over cloud services and the provision of advertising space. Here, the opinions of stakeholders and scholars differ on whether these are hosting services or other type(s) of intermediary services. The interviewees were able to identify services that are not hosting but still are information society services, such as messenger services like provided by Viber, Signal, and WhatsApp; chat services like Slack; and voice communications like Skype-to-

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<sup>27</sup> Google v Germany (C--193/18).

<sup>28</sup> Google France SARL and Google Inc. v Louis Vuitton Malletier SA (C-236/08), Google France SARL v Viaticum SA and Luteciel SARL (C-237/08) and Google France SARL v Centre national de recherche en relations humaines (CNRRH) SARL and Others (C-238/08).

Skype and SkypeOut<sup>29</sup> that are subject to the European Electronic Communications Code (EECC) or mobility, accommodation and similar services, where hosting is a supporting element to the main service (as also interpreted by the EU courts<sup>30</sup>).

### 3.2 Providers of hosting services

As indicated in Section 2, the definition of an “intermediary service provider” based on the Platform to Business Regulation is not suitable to identify a provider of hosting services. This is because, despite sounding like synonyms, the term “intermediary service” of the ECD seems to differ from “online intermediation service” in the Platform to Business Regulation. The terminology becomes murkier in the literature. In many instances, a variety of terms is used as a synonym for intermediary service providers, including online intermediaries, internet intermediaries, online intermediation services providers, cyber intermediaries, platforms, and gatekeeper intermediaries. It begs a question whether all these terms have the same meaning and whether they can and should be used in the context of Article 14 ECD.

Without clear legal definitions, interpretations by scholars gain importance. Based on academic and other literature, online intermediaries, internet intermediaries, online intermediation services providers, and cyber intermediaries are all synonyms for intermediary service providers. “Cyber”, “online” or “internet” simply indicate the environment where these service providers are active (i.e. which is different from the offline world). “Intermediaries” is common to all these terms, but the meaning of the word is difficult to capture. While the CJEU and the European Commission are still describing an intermediary as a middleman, a facilitator, and an enabler of interactions between other parties that do not produce content, scholars point out that this characterisation may no longer reflect reality. While there are intermediaries that do not deal with content in a traditional sense (e.g. Airbnb facilitates real-world transactions), other intermediaries produce content (original content creators), generate content (algorithmically create content using user-generated content), aggregate content (license content to make it available to users), or organise and curate content (recommendations, tags, etc).<sup>31</sup>

The frequently used term “platform” is also not synonymous with “intermediary service provider”. Rather, it denotes an organisational form or business model of certain (online/digital) undertakings.<sup>32</sup> The European Commission shares this view, stating: “Online platform’ refers to an undertaking operating in two (or multi)-sided markets, which uses the Internet to enable interactions between two or more distinct but interdependent groups of users so as to generate value for at least one of the groups. Certain platforms also qualify as Intermediary service providers”.<sup>33</sup> While researchers note that information (or digital) economy is prone to “platformisation” and platform is its core organisational form,<sup>34</sup> not all online undertakings are platforms.

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<sup>29</sup> Skype v Institut belge des services postaux et des télécommunications (C--142/18).

<sup>30</sup> Asociación Profesional Elite Taxi (C-434/15) and Uber France (C-320/16) as well as AirBNB (C-390/18)

<sup>31</sup> Laidlaw, Emily (2019). Mapping Current and Emerging Models of Intermediary Liability, p. 6.

<sup>32</sup> For those willing to learn more about platforms, including their long history in the world before the Internet, we recommend the seminal work by Jean-Charles Rochet and Jean Tirole (2003). Platform competition in two-sided markets. *Journal of the European Economic Association* 1: 4, pp. 990–1029, <https://doi.org/10.1162/154247603322493212>, as well as any of the research by David Evans and Richard Schmalensee. <https://doi.org/10.1162/154247603322493212>

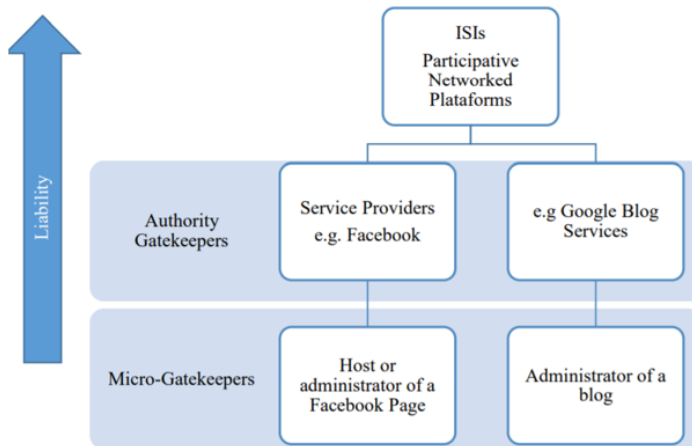
<sup>33</sup> This definition was used by the European Commission for the open public consultation: [https://ec.europa.eu/information\\_society/newsroom/image/document/2016-7/imro\\_irish\\_music\\_rights\\_organisation\\_13986.pdf](https://ec.europa.eu/information_society/newsroom/image/document/2016-7/imro_irish_music_rights_organisation_13986.pdf)[https://ec.europa.eu/information\\_society/newsroom/image/document/2016-7/imro\\_irish\\_music\\_rights\\_organisation\\_13986.pdf](https://ec.europa.eu/information_society/newsroom/image/document/2016-7/imro_irish_music_rights_organisation_13986.pdf).

<sup>34</sup> Cohen, Julie E. (2017). Law for the Platform Economy. *UC Davis Law Review* 51:1, pp. 133 and 135: [https://lawreview.law.ucdavis.edu/issues/51/1/symposium/51-1\\_Cohen.pdf](https://lawreview.law.ucdavis.edu/issues/51/1/symposium/51-1_Cohen.pdf) [https://lawreview.law.ucdavis.edu/issues/51/1/symposium/51-1\\_Cohen.pdf](https://lawreview.law.ucdavis.edu/issues/51/1/symposium/51-1_Cohen.pdf).



Recently, the term “gatekeeper” has been used almost synonymously with “platform”; however, the context of this use always relates to the regulation of the most powerful platforms or to curbing the market dominance of platforms. This led some researchers to suggest that not all platforms are gatekeepers or, at the very least, not all platforms are gatekeepers to the same extent. Based on the seminal work by Barzilai-Nahon,<sup>35</sup> a distinction has been made between micro-gatekeepers (e.g. content moderators on forums), authority gatekeepers (e.g. Facebook, Wikipedia, portals) and macro-gatekeepers (Internet Service Providers).<sup>36</sup>

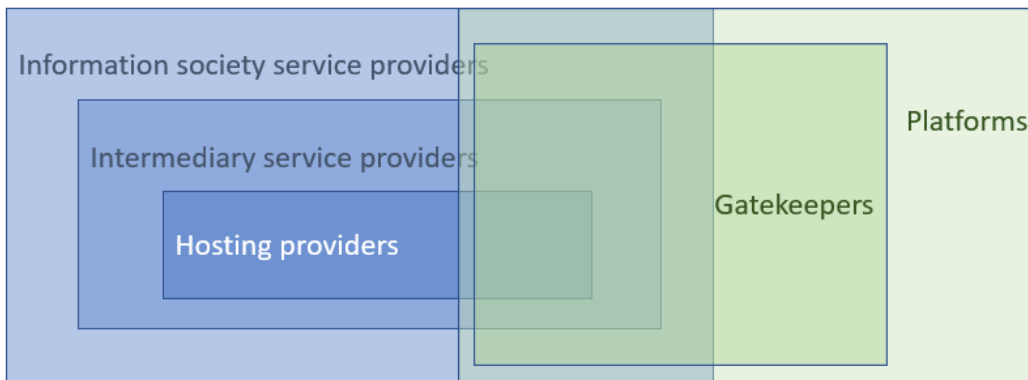
**Figure 2 Layers of gatekeepers**



Source: Rodriguez Rengifo, Laura (2016). Internet intermediaries liability: Participative networking platforms and harmful content, p.13.

To sum up, some hosting providers are platforms or gatekeepers, but likely not all. Figure 3 below presents the relationship between the different terms.

**Figure 3 Relationship between various notions of providers**



### 3.3 Understanding hosting

The current legal definition of hosting encompasses only the storage of content, disregarding the element of also providing or displaying the content to an audience, which some consider inherent to

<sup>35</sup> Barzilai-Nahon, Karine (2008). Toward a theory of network gatekeeping: A framework for exploring information control. Journal of the American Society for Information Science and Technology 59:9, pp. 1493-1512.

<sup>36</sup> Lassen, Eva Maria (ed.), Mayrhofer, Monika, Vedel Kessing, Peter, Sano, Hans-Otto, Garcia San Jose, Daniel and Jorgensen, Rikke Frank (2017). Factors which enable or hinder the protection of human rights. Frame Fostering human rights among European (external and internal) policies: [https://www.humanrights.dk/sites/humanrights.dk/files/media/migrated/frame\\_-\\_factors\\_which\\_enable\\_or\\_hinder\\_the\\_protection\\_of\\_human\\_rights.pdf](https://www.humanrights.dk/sites/humanrights.dk/files/media/migrated/frame_-_factors_which_enable_or_hinder_the_protection_of_human_rights.pdf), p. 154; Rodriguez Rengifo, Laura (2016). Internet intermediaries liability: Participative networking platforms and harmful content, p. 12.

storage. This narrow (or, rather, antiquated) legal definition seems to be at odds with the application of law by courts that strive to keep up with technological and market developments and frequently use “hosting” as a catch-all category for services that do not fall under mere conduit or caching.

The next chapters consider the different aspects (or elements) that modern hosting services entail as they are relevant for a new classification. This study understands hosting as *storage of content by third parties (organisations and individuals) who are not the host and provide such content on behalf of said third parties to audiences selected by these third parties.*

The exploration of hosting service providers speaks more to the market developments and business models used than about the services provided. The various market issues that arise from the platform economy, including the potential of dangerous gatekeeping, are important to analyse and consider from the point of view of market development and regulation. However, they are not helpful to classify hosting services. Rather, these issues are subject to competition policy and law. Many interviewees also indicated that they do not think the distinction between platforms and gatekeepers or other references to market structure is a relevant characteristic to use for the classification in this context.

## 4 Existing approaches to taxonomy of intermediaries

The literature on hosting services mainly focuses on liability issues that originate from the legal and technical classification of hosting services. Consequently, discussions on the actual definitions and classifications have usually been secondary to the consequences in terms of liability that (new or updated) definitions and classifications might have. Nevertheless, there have been several attempts to establish taxonomies, which we will present in this chapter. We have reviewed existing taxonomies to see if one fits the present context or if several can be integrated in a better fitting taxonomy. We also looked at the criteria used in the classification and the approaches applied by scholars.

The subsequent sections present our overview of the existing taxonomies found through desk research. We considered both taxonomies of services and taxonomies of providers in the context of Article 14 ECD. The latter had to be brought in the scope because the taxonomies are not always able to keep a clear distinction between services and providers and providers seem to be treated as representative for the service(s), as will be shown.

### 4.1 OSI model-based taxonomy

One of the most complete and comprehensive taxonomies<sup>37</sup> is based on a network layer model (a slightly simplified version of the Open Systems Interconnection [OSI] model<sup>38</sup>). The subjects of this taxonomy are service providers, not services, because the underlying research focuses on online intermediaries and their liability. We, nevertheless, consider this taxonomy relevant and helpful because it describes the providers in terms of the services that they offer.

The taxonomy classifies intermediaries based on their technical role within the architecture of the internet described with the OSI model. The providers and their services are described in relation to the layer on which a provider (primarily) operates, while the same provider can be present in multiple layers. The taxonomy that results from the application of this criterion is visually presented in Figure 4 below.

The author of the taxonomy argues that this approach is also functional: it goes beyond “simply classifying an intermediary’s activities”, like the ECD does, by identifying the technical contributions of the intermediary to harm and linking them to the functions within the internet architecture.<sup>39</sup>

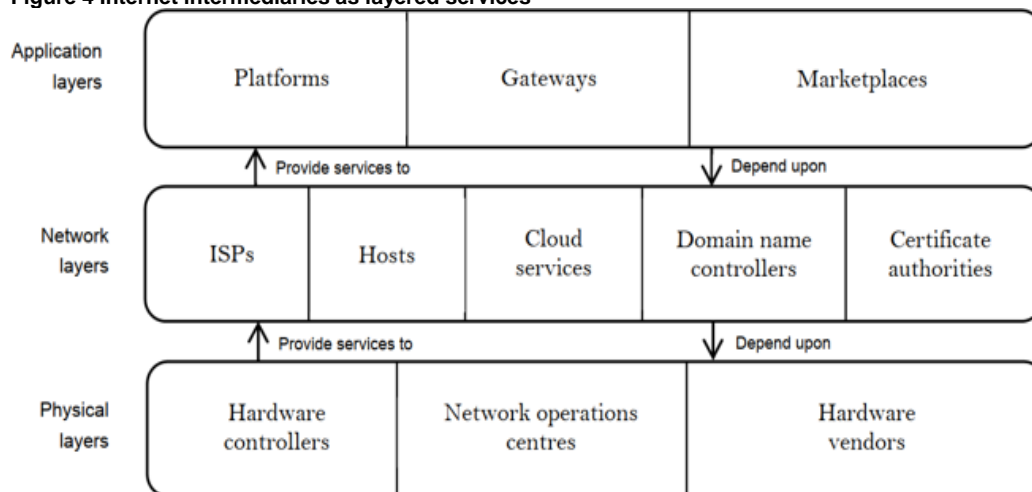
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<sup>37</sup> Riordan, Jaani (2013). The liability of internet intermediaries. Doctoral thesis, pp. 53-64. Riordan developed this taxonomy in his PhD thesis in 2013, which was published in a slightly edited version as a book in 2016.

<sup>38</sup> For a full OSI model, see the ISO standard: [ISO - 35.100 - Open systems interconnection \(OSI\)](#) | [ISO - 35.100 - Open systems interconnection \(OSI\)](#).

<sup>39</sup> Riordan, Jaani (2013). The liability of internet intermediaries. Doctoral thesis, p. 53.

**Figure 4 Internet intermediaries as layered services**



Source: Riordan, Jaani (2013). The liability of internet intermediaries. Doctoral thesis, p. 53.

The service of **the providers on the physical layer** can be described as providing basic connectivity necessary for communication; these providers do not exercise control over content. Their more specific activities include owning, operating, or building various elements of physical infrastructure (network, servers, cables, etc.) necessary for connectivity. They may also supply secondary resources (e.g. electricity) and/or support services (e.g. configuration).

**Network layer providers** supply services to connect and transfer data packets between different devices and networks of the internet. The variety of services and providers on this layer is larger, and different actors use different technologies to monitor the content of transmitted data (to the extent necessary to fulfil their role). However, technically, even more involvement is possible. Basically, the content is encoded, sent, transmitted, received and decoded at this layer. Five main types of intermediaries operate on this layer:

1. Internet Service Providers (ISPs) provide the service of connection to the internet. Of these, mobile carriers commonly exercise higher restrictions and control (using session border controller) over the flow of content across their networks for technical reasons.
2. Web hosts provide storage and transmission services that allow access to application-layer services by other internet users.
3. Cloud providers offer remote computational and storage services for on-demand access at strategic locations that ensure the best possible quality of experience and service for customers.
4. Domain name controllers administer the domain name system (DNS).
5. Certificate authorities issue digital certificates containing public keys for use in asymmetric cryptography.

**Services and providers on the application layer** are the most diverse. The services on this layer relate to different transactions with the content. The providers are divided into three main types:

1. Platforms are websites whose main service display various content placed on the website by their users (user-generated content [UGC]). These include social media (e.g. Facebook, LinkedIn), file repositories (e.g. Dropbox, RapidShare), media sharing platforms (e.g. YouTube, Instagram, Flickr, Soundcloud, Pinterest), publishing platforms like blogs (e.g. WordPress), discussion forums (e.g. LiveJournal), document repositories (e.g. Scribd) and comment and reputation tools (e.g. Disqus); location services like local directories and review websites (e.g. Yelp, Google Maps), planning and itinerary services (e.g. WorldMate), and social location services (e.g. Foursquare); and gaming platforms (e.g. Steam, GOG Galaxy).

2. Gateways are in the business of collating, indexing, and distributing hyperlinks to the content of third parties. The specific examples are search engines, directories, data aggregators, and RSS syndication.
3. Marketplaces refer to various e-commerce activities that allow users to buy and sell goods and services from third parties. They include online auction, ticketing portals, online retailers, app stores, classified listings, business-to-business labour marketplaces, social commerce (e.g. Groupon), and payment providers.

The main advantage of this taxonomy is that it is very broad and likely to embrace any new service that will appear. It also seems to be objective as it is based on solid technical distinctions of the internet architecture. It is useful for the purposes of liability regulation as it can clearly assign different responsibilities to providers based on what OSI layer they are active. This taxonomy illustrates the diversity of intermediary services helping to understand the concept of an online intermediary and its technical foundations.

From the perspective of taxonomy of *hosting services*, however, this taxonomy is less suitable than others. First, it encompasses a large number of services that are electronic communications services in the sense of the EEC and are not necessarily subject to the ECD (and the future DSA). Second, this taxonomy may lack the necessary nuance to differentiate services. Many existing services that employ hosting are provided on the application layer but are still diverse enough to merit their own place within a taxonomy. Instead, the division into sub-categories within individual layers seem arbitrary and overlapping. For instance, the distinction into platforms and marketplaces is contestable because many providers that fall under marketplaces can also be called multisided platforms. Also, the author does not comment on criteria that could be used to divide categories into sub-categories. By contrast, when talking about the sub-categories of the application layer, the author admits that many variations are possible. But the services are evolving rapidly shaped by “user behaviours rather than intrinsic properties of networks” so that a classification is futile.<sup>40</sup>

## 4.2 Activities-based taxonomy

Several scholars suggest classifications based on activities or functions inherent to services. The approaches on how to classify can be divided into those that are more focused on the control over (the flow of) content and those that are more focused on the (societal) function performed by the services themselves.

### 4.2.1 Taxonomy based on control over the content

Several scholars<sup>41</sup> suggest a taxonomy based on activities related to control over the content and specifically the flow of information and data that is exercised by the service providers. Three large groups can be distinguished based on the activity of the service provider listed below in the order of the increasing control:

1. The provider is a **mere facilitator** (tool or device) of communication at the most elementary level by providing the connectivity and access to the content. This provider is remote from the content and is completely passive in relation to the content or does not conduct any substantive activity. The examples of services falling under such activity are the provision of internet connectivity by ISPs and cloud service, but also “navigation services” that help navigate the internet (hosting of hyperlinks, search services that provide natural search results).

<sup>40</sup> Riordan, Jaani (2013). The liability of internet intermediaries. Doctoral thesis, p. 57 and 63.

<sup>41</sup> For example, Laidlaw, Emily (2019). Mapping Current and Emerging Models of Intermediary Liability pp. 6-13; Kohl, Uta (2016). Intermediaries within online regulation: in Diane Rowland, Uta Kohl & Andrew Charlesworth, Information Technology Law, 5th ed, Routledge, pp. 72-125.

2. The provider has **very limited editing control**, lacking full knowledge and control over the content. The provider supplies a platform for different types of UGC and is a classical intermediary. Examples include networking websites and online marketplaces.
3. The provider is a **co-creator of content** because it knows of the existence of the content, controls and manipulates the content (e.g. through algorithmic choice or curation). The example includes hosting providers that encourage distribution of particular content or can edit content.

This taxonomy clearly follows the case law of the EU courts that introduced the distinction between active and passive hosting. It develops the active-passive juxtaposition into different levels of control that providers of hosting services can – based on technology, business models, or other grounds – exercise over the hosted content. Being inspired by case law, the taxonomy is clearly developed for liability regulation. However, it can also be used to regulate responsibilities (e.g. due diligence, duty of care) of different service providers regarding the content they host: with the increasing degree of control over content, the obligations of content management change. The taxonomy is not locked into technology, which makes it more durable.

At the same time, the strong connection with liability-case law may limit the usefulness of this taxonomy for other regulatory purposes. The authors of the approach acknowledge the difficulty in distinguishing the levels of control over the content by providers: where the lines are blurry, decisions may be more influenced by political or policy judgments.<sup>42</sup> This may, however, be attractive from a policy point-of-view because different policy objectives can be pursued depending on the type of content or risks involved. A further difficulty lies in the use of the taxonomy. While the opposite poles (categories 1 and 3) can be clearly defined, the middle category seems blurry and will be the one subject to difficult judgments.

#### 4.2.2 Taxonomy based on (societal) functions of the services

Many authors<sup>43</sup> simply classify intermediary (hosting) services based on the function and activities they fulfil in the internet ecosystem and/or economic environment. As most authors are very concise about such classifications, we decided to illustrate these types of taxonomies with the recent work by IViR,<sup>44</sup> which is quite comprehensive.

Similar to other taxonomies under review, the taxonomy by IViR classifies intermediaries (i.e. providers) rather than services. However, the intermediaries are frequently described by activities or the services they provide. By contrast to other taxonomies, the authors make clear the criteria by which their classification is made. These criteria are:

1. Reflection of the actual market offerings (i.e. accuracy),
2. Clarity (i.e. easily understood),
3. Coverage of the market activities falling under the safe harbour of Article 14 ECD,
4. Simplification (i.e. concise, but precise), and
5. Potential to overlap, as some services may fall into several categories.

Based on these criteria, a taxonomy of three broad categories was developed clustering different functions and activities, which were then subdivided into more types:

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<sup>42</sup> Kohl, Uta (2016). Intermediaries within online regulation: in Diane Rowland, Uta Kohl & Andrew Charlesworth, *Information Technology Law*, 5th ed, Routledge, p. 105.

<sup>43</sup> Barnes, David and Hinton, Matthew (2007). Developing a framework to analyse the roles and relationships of online intermediaries. *International Journal of Information Management* 27, pp. 63-74; Sartor, Giovanni (2017). Providers liability: From the eCommerce Directive to the future. In-Depth analysis for the IMCO Committee, pp. 6-7.

<sup>44</sup> IViR (2018). Hosting intermediary services and illegal content online: An analysis of the scope of Article 14 ECD in light of developments in the online service landscape – SMART 2018/0033, pp. 9-16.



1. **Online storage and distribution** are described as a “classic hosting service category”. It covers a set of services allowing their users to store content online, which include some degree of distribution. The sub-categories include:
  - Web hosting providing the possibility to “host a website or other internet-based offering”.
  - Cloud version of web hosting (i.e. Infrastructure as a Service and Platform as a Service).
  - Online media sharing is a service that provides an open platform for online publications (images, video, music, text and other media) and for their consumption.
  - File storage and sharing services offer users the ability to store and share different forms of electronic files.
2. **Networking, collaborative production, and matchmaking services** “connect producers and users around more complex sets of networked interactions”. Storage and distribution of content is a part of this bigger function. The sub-categories are organised around different interaction types:
  - Social networking and discussion forums (as provided by Facebook, LinkedIn, and Twitter) allow people to connect and communicate publicly or semi-publicly.
  - Collaborative production services allow users to work jointly on content and make it available to a broader audience (e.g. Wikipedia, Google Docs, or Microsoft 365).
  - Online marketplaces offer advertising space and facilitate sales of goods and services.
  - Collaborative economy services match supply and demand relating to various goods and services, like mobility (Lyft, BlaBlaCar), labour (Werkspot, TaskRabbit), travel and real estate (Airbnb, Homestay), and funding (Kickstarter).
  - Online games offer online multi-user gaming with communication features (e.g. Fortnite, Minecraft).
3. **Selection and referencing services** provide further value, organisation and structure to available online offerings:
  - Search services help navigate and explore the online environment.
  - Rating and review services allow to rate and review third-party offerings of various kinds.

The taxonomy is clearly focused on information society services and does not include any electronic communications services. This taxonomy was conceived in a broader context that, except for liability, included tackling illegal and harmful online content and protection of the legal interests of the users<sup>45</sup>, which allows it to be used for many regulatory purposes. The main categories are clearly organised around what was perceived to be the main function of the service and are broad enough to include many existing and, potentially, future services.

The one disadvantage to this taxonomy is that determining the primary function of a service is a difficult exercise, especially as services evolves and converges. This affects the clustering of different activities or functions in categories.

### 4.3 Taxonomy based on public policy objectives

Some taxonomies<sup>46</sup> classify internet service providers based on the public policy objectives that can be linked to them. The resulting broad categories are then subdivided based on the technical features of the providers. While the criterion of public policy objectives is clear (i.e. type of protected speech), there is no information on how the sub-categories were defined.

<sup>45</sup> IViR (2018). Hosting intermediary services and illegal content online: An analysis of the scope of Article 14 ECD in light of developments in the online service landscape – SMART 2018/0033, p. 9.

<sup>46</sup> Rodriguez Rengifo, Laura (2016). Internet intermediaries liability: Participative networking platforms and harmful content, pp. 7-8; OECD (2011). The role of internet intermediaries in advancing public policy objectives. <https://www.oecd.org/sti/ieconomy/theroleofinternetintermediariesinadvancingpublicpolicyobjectives.htm><https://www.oecd.org/sti/ieconomy/theroleofinternetintermediariesinadvancingpublicpolicyobjectives.htm> .

Based on this, all intermediaries hosting UGC can be divided into two groups:

1. Those hosting commercial speech (e.g. e-commerce intermediaries, payment systems); and
2. Those hosting political and other forms of speech, including internet search engines, web hosting, data processing, and content delivery as well as participative networked platforms.

The last sub-category – participative networked platforms – is especially large and covers the following providers and services: blogs; wikis and other text-based collaboration formats; instant messaging; social networks; sites allowing feedback on written works (including Amazon); group-based aggregation (i.e. sites where users contribute links and rate them, like Reddit, and sites where users post tagged bookmarks); sites for images, video and file sharing; podcasts; social networks; virtual worlds (e.g. Second Life); and online computer games.

The distinct advantage of this taxonomy is that the approach could be adjusted to cover various public-policy objectives, including fundamental rights. It makes it suitable for regulatory purposes other than just a definition of liability.

The practical application of the taxonomy will be difficult as, due to market developments, the same service may carry different types of content associated with different protected values. To remain with the example of freedom of expression, a new category of users – influencers – use services of the same social networks to foster both their commercial interests and political opinions. While services that are used exclusively for commercial speech can be identified, it will be impossible to identify those that are used only for political speech. Therefore, in this context, a more logical regulation subject should be the type of speech, not the service.

#### 4.4 Insights from the existing taxonomies

The taxonomies discussed above share several common issues critical to the context of this study. First, none of them applies strictly to hosting *services*. Instead, they classify service *providers*. This is a restrictive approach because providers may deliver different services or change their service proposition. In addition, often, within the taxonomy, providers' designations have become representative for a service. For example, Google is constantly used in place of search services, even though the company Google (a part of Alphabet) provides a huge number of information society services, including web mail, advertising, cloud services, e-commerce services and many more.<sup>47</sup> Also, the terminology in the taxonomies is not very precise: the terms platforms, gatekeepers and intermediary service providers are sometimes used interchangeably.

Because of focusing on providers, all taxonomies seem a bit static: they capture the services that were delivered by categories of providers at the moment when the taxonomies were created. Taxonomies that are rooted in technology or market characteristics do not age well because the technology and the market are rapidly evolving. To be future-proof, a taxonomy likely needs to be technology-neutral and broad enough to be able to incorporate services that currently do not exist.

We note that larger or main categories of all taxonomies seem to be more useful in practice and are more future-proof than more detailed sub-categories within them. This view was also shared by the interviewees. These main categories are delineated more clearly from each other and the criteria

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<sup>47</sup> For a running list of Google products and services see a Wikipedia article: [List of Google products - Wikipedia](#) and Mohan, Manesh (2018). Over 251 Google Products & Services You Probably Don't Know: <https://www.matrics360.com/google-products-services-you-probably-dont-know/> .

for them are easier to formulate. They are also able to capture more services, including new services.

All taxonomies were created with a specific regulatory purpose in mind, while liability regulation was the most frequent purpose. This means bias: each taxonomy reflects a certain perspective and may be limited in its use to this specific perspective or purpose. At the same time, it signifies that a general comprehensive taxonomy is probably not possible or at least difficult to create. A criterion selected for the classification will be characteristic of the purpose of classification, which often is the purpose of regulation.

The variety of the criteria used for taxonomies supports this conclusion and also indicates that an ideal general taxonomy would need to take all of them (and probably more) into account. As it may be difficult to capture a large number of criteria in just one taxonomy, an alternative could be to use several taxonomies for different regulatory purposes – and the examples listed above offer such options.

## 5 Suggested classification

### 5.1 Criteria for taxonomy

Based on the insights outlined in the previous chapters, a new taxonomy should have the following characteristics:

- Following the objective of this study, a taxonomy needs to apply to *hosting* services.
- A taxonomy should focus on a *service* and not on a provider. By employing more verbs and describing activities or function of the services, a taxonomy could be less static and more adaptable in line with changing services.
- A taxonomy needs to be robust against the passage of time, while also acknowledging that it is probably impossible to create a completely future-proof classification scheme. The following two sub-criteria will support the robustness of a taxonomy, but additional mechanisms could be built in to make a taxonomy less rigid in practice (e.g. regular reviews).
  - A taxonomy should capture as comprehensively as is practical the different existing services, but also be open for any future ones. This means that the taxonomy needs to be inclusive and able to include different actors, business models, and types of content. This can be achieved by making the main taxonomy broad but allow for nuance (for instance, in the form of sub-categories).
  - A taxonomy should be as technologically neutral as possible. In describing services, a taxonomy should not be temporally limited to technologies or approaches of today, e.g. by explicit elimination of or reference to current hardware or software. This will also support the completeness of the taxonomy.

We use these characteristics as criteria for our taxonomy of hosting services below.

### 5.2 Taxonomy of hosting services

Our thinking about a taxonomy of hosting services begins with a consideration of the definition of hosting (see our suggested definition in Section 3.3). According to technical, legal and stakeholder understanding, the core, defining activity of hosting is storage of a content by a party that is not a host. As rightly pointed out by IViR, in the online environment, some degree of distribution is inherent to storage. However, distribution implies several recipients, whereas this is not always the case. We suggest using the term “provision” instead, in the sense of displaying or communicating this content to someone (the originator of content themselves or another person).

As our taxonomy is focused on *services*, we consider the functions of these hosting services and the activities that these functions require. An observation of today’s hosting services suggests that, while many of them store and provide content, this is not the primary function for all of them. Therefore, two main categories of hosting services can be distinguished based on the primary function they serve:

1. **Category 1 services (hosting).** Services whose primary and often sole function is to store and provide content of third parties, and
2. **Category 2 services (hosting plus).** Services that store and provide content of third parties in support of or as a necessary step in execution of their primary function.

Category 1 services are what can be considered classical or seemingly straightforward hosting services. They would include web hosting and cloud hosting as well as services provided by the so-

called “cyber lockers”, i.e. content/ data storage services like those offered by Dropbox, OneDrive, Google Drive, RapidShare and similar. The content/ data storage services are actually a subset of cloud services, but we distinguish them as a separate sub-category to illustrate for the purposes of this study a larger content control knowledge and power that they may exhibit.

In addition to having the primary function of storing and providing content, Category 1 services are typically characterised by limited access to – and therefore control over – the content stored. The host has limited knowledge of the content, such as who is storing content, where it is stored, how large it is, what types of files are stored, and some other metadata. The level of control is determined by technological and, in data storage services, business model choices. The technological reasons are pertinent to web and cloud hosting: the content is encrypted and often several layers removed from the host due to another service running on top. The business model choices can be exemplified by Google Drive and iCloud (by Apple). Google algorithms “read” and analyse the documents stored and may use the information gained for targeting advertising.<sup>48</sup> Apple is concerned with the storage of illegal or harmful content in its iCloud and reserves the right to “screen, move, refuse, modify and/or remove Content at any time, without prior notice and in its sole discretion”.<sup>49</sup> Other providers of this service (e.g. Freenet, Tresorit) do not do this.

Lastly, Category 1 services are the necessary basis for the existence of Category 2 services, although sometimes it is not immediately obvious. For example, the Amazon store (Category 2 service) is hosted on the Amazon cloud and servers (Category 1 services). At the same time, Amazon provides its cloud hosting services to other users.

Category 1 services (classical hosting) could be defined as *intermediation services that have as their primary function storage of content by third parties that are different from the host, and the provision of this content on behalf of the third parties to the audiences selected by these third parties.*

Although Category 2 services are hosted by and therefore dependent on Category 1 services, they are much more sophisticated. Their primary function can be almost anything, but a distinguishing feature is that storing and providing content is necessary to fulfil their primary function but do not constitute their actual primary function. The services by the company Reddit provide an example. We argue that the primary function of Reddit’s forum is publishing (news, interesting facts, opinions, images, etc.). Only after content is published can ranking, recommending and discussing start (secondary functions). Storage of content is a nothing more than a necessary step so that it is available to the audience for an extended period of time.

Another defining characteristic of Category 2 services is that they have to process the third-party content in some way to fulfil their primary function. By processing content, we mean content curation, filtering, tagging and other types of content management as well as the extraction and analysis of metadata related to this content.

In addition to processing content, Category 2 services rely increasingly on processing the (meta)data of users. This can be illustrated by search services. The traditional search consists of web crawling and indexing web pages and then matching the search query by the user with indexed words. This part relates to content processing. Individualised search services use users’

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<sup>48</sup> See the privacy policy that covers all Google services including Google Drive:  
<https://policies.google.com/privacy#whycollect>

<sup>49</sup> On what is considered an illegal or harmful content see Section V B of the iCloud terms and conditions. The removal of content is addressed in Section V C of the iCloud terms and conditions: <https://www.apple.com/legal/internet-services/icloud/en/terms.html> .

metadata on past searches and selections to make the services more relevant to the particular user.

The definition of Category 2 services (hosting plus) leans on the definition of Category 1 services and can be defined as *intermediation services that use classical hosting as a necessary or supporting activity to fulfil their primary function, which is different from storage and provision of a third-party content*. To make the definition of Category 2 services more precise, the definition of information society services needs more clarity.<sup>50</sup>

Category 2 services can be divided into sub-categories based on their primary function to enable a more granular approach necessary for regulation, for example, for (re)defining responsibilities of services providers or (limitation of) their liability. We suggest a fairly high-level sub-division to capture the variety of existing services.

First, there are services that index and reference the online environment: they help navigate the internet. These include services like search engines, internet directories, RSS syndication and other similar services.

Second, there are services that aggregate content.<sup>51</sup> These services consolidate (or pull) a specific type of content, based on the criteria defined by the user but without any further interference by the service provider. These services rely on indexing services and use metadata about the content to pull it for the user.

Third, the largest sub-category of services connects different people around networked interactions. The services are as different as the interactions are and span from networking (e.g. social networks and professional networks) to collaboration (e.g. for joint creation of content) to gaming (e.g. online gaming portals) to different types of commerce (e.g. platforms to sell and buy goods and services and to place advertising). These services are engaged in different types and to a different extent in processing of content and user data. They are often aware or can gain detailed knowledge of the content and they are well familiar with their users.

Fourth, the most content-aware sub-category is publishing services (i.e. publishing in the sense of making a work available to the public). These services are used to publish copyrighted content, such as news items (e.g. Facebook News Feed), blog entries (e.g. WordPress, Medium), books (e.g. Wattpad), articles and other types of content (e.g. Spotify for music and podcasts, Netflix for movies, Patreon for different types of content), as well as links to such works published elsewhere online and web pages. Typically, publishing services know more about their content and can manage it better because the providers cater to a certain audience and the content needs to be curated accordingly. The providers choose carefully the sources and authors of content as well as how this content is presented and recommended to the end-users.

The sub-categories within the main categories can also be ranked according to the degree of content knowledge and data processing that is employed. Figure 5 below provides an overview of all discussed categories and sub-categories presented in the order from the least content knowledge on the top to the higher content knowledge at the bottom. However, we note that content knowledge and data processing depend strongly – and therefore may change fast – both

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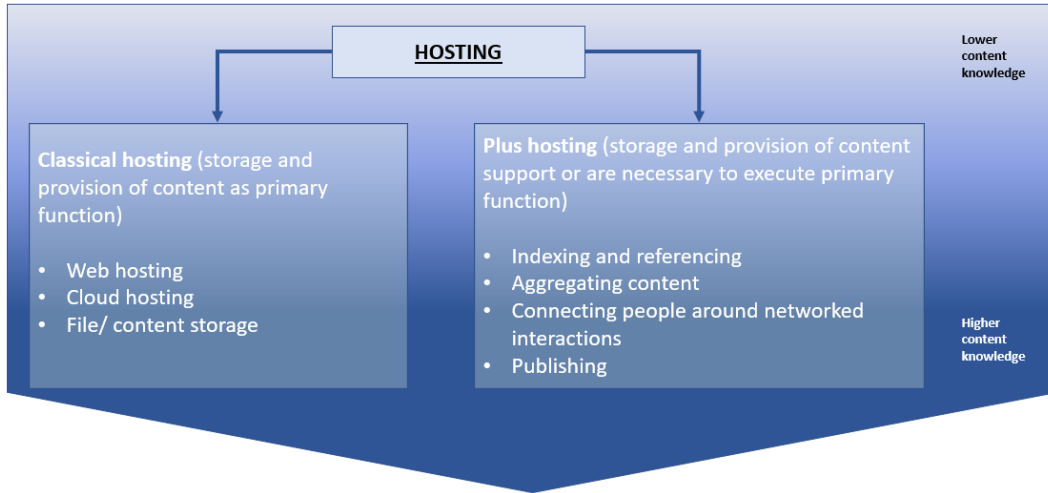
<sup>50</sup> Madiega, Tambiama (2020). Reform of the EU liability regime for online intermediaries: Background on the forthcoming digital services act. In-depth analysis by the European Parliamentary Research Service, pp. 4-5.

<sup>51</sup> There are many different types of aggregator services for different types of content, for example, news like provided by News 360 or for social networks like Curator. These services can also be focused on very specific or niche content, for example, reviews for movies are aggregated by the provider Rotten Tomatoes. It is even possible to aggregate the aggregators: for example, the provider Panda aggregates tech aggregators like GitHub, Dribbble, Hacker News etc.



on the technical and market developments and on the business model of a provider. Specifically, providers whose business model depends on keeping users using their service to show them more advertising or to grab more user data tend to have more tools of content knowledge and data processing. Such providers are more likely to have knowledge of the content they are hosting in whatever sense.

**Figure 5 Taxonomy of hosting services**



We considered and discarded a number of other characteristics of services and providers as impractical or restrictive for classification. First, the business model of providers was not considered suitable because it will tie the classification too much to the existing economy and will not account for innovation. Many providers and services use different business models, sometimes at once. Also, linking a classification to business models may provide opportunities to game the system, i.e. subvert regulation or shop for more beneficial rules. Second, the size of providers was also dropped as difficult to define (e.g. by turnover, user base, impact, something else or combination of several factors) and restrictive (i.e. it may become an artificial cap on the growth and development of companies). For regulatory purposes, we maintain that clear and equal rules for all disregarding the size and business model are important for legal certainty, and corrupt business practices and behaviour should be treated in the same way. Third, linking classification to types of content seemed unreasonable as a clear distinction between services due to their convergence.

We note that the above characteristics (i.e. business model, size of providers, type of content provided) can be used to classify hosting services, but from our analysis they do not seem the most important ones and do not guarantee a future-proof outcome. Also, they are very changeable features and therefore do not suit a robust classification into main categories. As will be discussed in chapter 6, we consider them relevant factors that could provide a framework for a case-by-case analysis within larger service categories or to determine the level or intensity of regulation.

### 5.3 Robustness of the taxonomy

The robustness of the taxonomy against change has been a recurring theme in the analysis of the existing taxonomies and interviews. In concluding the outline of our suggested taxonomy, we check its robustness against the present and the future.

The taxonomy was developed following the study of other existing attempts and taking into account current legislation and its interpretation. In this way, it takes into account past experience. It also took on board views of a variety of stakeholders who were consulted during this study.

The suggested taxonomy is based on functions of services and stays away from more fleeting characteristics like business models or technology. With two large categories, we consider the taxonomy sufficiently broad to be able to embrace different services. Sub-categories can be created by policymakers based on the regulatory needs, taking into account factors relevant for this purpose (e.g. size of provider in competition law).

Following the advice of the interviewees and best practices at the EU level, we recommend that the taxonomy be regularly reviewed to see if it is still fit for purpose based on the developments of the market, society and technology, as well as regulatory needs.

## 6 Possible policy implications of the suggested taxonomy

We envisage different possibilities of how this taxonomy can be considered in legislation or policy debate. Before laying them out, we emphasise an important finding from the literature review and from the interviews: the purpose of taxonomy is of critical significance, and the ultimate definition of individual services included in it depends on this purpose.

We see three main policy options based on the taxonomy suggested in Section 5.2.

First, a fourth category of intermediary services providers could be added to the three categories currently existing in the ECD: in addition to mere conduit, caching and hosting, a “hosting plus” category could be introduced that would correspond to the Category 2 services as described in Section 5.2. It is up to the policymakers whether the liability standard (i.e. safe harbour) should be maintained for this new category. It is also possible that different responsibilities or duties of care are introduced for these two categories.

Second, the division into mere conduit, caching and hosting – as currently exists in the ECD – is kept, but *within* the hosting services, a division into “classical hosting” and “hosting plus” is introduced. This means that the liability standard can be maintained but still allows to introduce different duties of care or due diligence or other types of responsibilities and regulations that deem necessary by policymakers.

Third, the taxonomy could be used to completely re-think or only update the knowledge and action standard that is currently used in the ECD. To do this, policymakers should additionally consider the characteristics of modern services of mere conduit and caching to see whether a different knowledge standard could apply to them as well. This could lead to the new classification of intermediary services into two large main groups of services:

1. Services that have limited knowledge of the stored content (as described above in Category 1); such services may include mere conduit and caching together with “classical hosting” and
2. Services whose functions mean that the activities of the provider make it much more likely to obtain meaningful knowledge about the content stored.

Whichever policy option is pursued, the main categories of hosting services can be further broken down into sub-categories for specific regulatory purposes. Also, services can even be assessed on a case-by-case basis by using an additional analytical framework that is tailored for the regulatory purpose.

In chapter 5, we exemplified what sub-categories can be created based on functions of services following our main approach. Such function-based breakdown is, admittedly, abstract at this stage. However, it could be an element of the framework for policymakers pursuing certain objectives and used on top of the taxonomy and in combination with other relevant factors and elements. Such relevant factors may include size, business model, types of content, types of users, or other categories. For example, while size or business model should not be an excuse for hosting illegal content, they may be a reason for different standards of due diligence. Business models based on promotion of certain content (e.g. disinformation, sexual child abuse) could be linked to denying the ability to rely on the safe harbour exemption.

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# Annex II Interview report

To collect data for this study, we conducted interviews with stakeholder organisations and knowledgeable experts in the field. The stakeholders were selected as representatives of premier (tech) organisations offering a variety of services to represent a range of services and hosting arrangements.

Out of 13 interviews conducted between 21 October and 9 November 2020, 11 interviews were done via video conference and two interviews were conducted in written form. One interview was conducted with two stakeholders at the same time. The table below lists all interviewees we consulted.

Company/ Organisation
Bol.com
Booking.com
ETNO – European Telecommunications Network Operators' Association
European Tech Alliance
EuroISPA – European Internet Service Providers Association
Facebook
Google
IViR – University of Amsterdam Institute for Information Law
Marktplaats
Microsoft
News Media Europe
NDP Nieuwsmedia
Startmail/ Startpage
EDRi – European Digital Rights

The interviews were semi-structured and followed the questionnaire presented in the text box below. The interview questions were designed to gather the views of stakeholders and experts on the meaning of “hosting services” that reflect technological, economic and social realities and trends. They also aimed at understanding what types of intermediary hosting services exist, how they are supplied, how they differ from each other, and what their similarities are. The questions also served to create a comprehensive, future-proof classification of services and inform the political process.

## Questionnaire for companies

1. What services does your company provide?
2. What services of other companies do you perceive as similar or identical to your services?
  - a. How are these services different or similar to your services?
3. In general words, please describe your business model (e.g. subscription).
4. How important is user-generated content for your services and how do you handle it? By users, we mean all those who use your services, e.g. both consumers and business users.
  - a. How many new units of user-generated content do you receive every day? (e.g. how many new user posts or comments do you have on average) Please give an average, estimate or approximation.
  - b. How do you manage, if at all, the content generated by users? Could you indicate an approximate cost of this monitoring (e.g. per year, suggest a bracket or in FTE)?



5. How important is non-user-generated content and how do you manage it?
6. How do you understand hosting?
  - a. Please give examples of services/ activities that you think fall under the notion of hosting and which do not fall under hosting.
  - b. Do you think that the services you provide qualify as hosting and why?
7. Do you think it is useful to distinguish between different types of services that are currently covered by the hosting provision in the e-commerce directive? Why?
  - a. If yes, which classifications do you find most relevant? For example:
    - i. Physical | network | application layer
    - ii. online storage and distribution | networking, collaborative production and matchmaking | selection and referencing
    - iii. suggest your own types
  - b. Where would you place yourself in this classification?
8. Regarding services that are currently covered by the hosting provision in the e-commerce directive: should there be different categories of services based on the size of providers (e.g. their turnover or user base), business models of providers (e.g. for-profit versus non-profit), any other grounds? Why?
  - a. In your view, how could the legislator best achieve a future-proof definition of hosting services and other services that are currently covered by the hosting provision in the e-commerce directive?

#### **Questionnaire for associations**

1. What services are provided by members of your association?
  - a. Which of these services do you consider identical or similar and why?
  - b. What are key differences between different services?
2. How important is user-generated content for the services by your members? By users, we mean all those who use your services, e.g. both consumers and business users.
  - a. Please also describe how such content is managed if at all.
3. How do you understand hosting?
  - a. Please give examples of services/ activities that you think fall under the notion of hosting and which do not fall under hosting.
  - b. Do you think that the services provided by your members qualify as hosting and why?
4. Do you think it is useful to distinguish between different types of services that are currently covered by the hosting provision in the e-commerce directive? Why?
  - a. If yes, which classifications do you find most relevant? For example:
    - i. Physical | network | application layer
    - ii. online storage and distribution | networking, collaborative production and matchmaking | selection and referencing
    - iii. suggest your own types
5. Regarding services that are currently covered by the hosting provision in the e-commerce directive: should there be different categories of services based on the size of providers (e.g. their turnover or user base), business models of providers (e.g. for-profit versus non-profit), any other grounds? Why?
6. In your opinion, how will intermediary services and the market for them evolve in 3-5 years?
  - a. In your view, how could the legislator best achieve a future-proof definition of hosting services and other services that are currently covered by the hosting provision in the e-commerce directive?

This report summarises the insights from the interviews that are relevant for the present study. The insights are presented in thematic groups.

## Hosting services under the E-Commerce Directive

All interviewees greatly appreciated the E-Commerce Directive (ECD) and acknowledged its importance in allowing the development and growth of the modern digital economy. Specifically, the broad definition of hosting services in Article 14 ECD, the principle-based approach, and the establishment of the horizontal baseline regulation for different hosting services – as well as the limitation of provider's secondary liability – were considered beneficial and worth preserving in future regulation.

### Definition of hosting services

The definition of hosting services addressed by the interviewees was largely based on the current definition of Article 14 ECD. However, differences were present in how the interviewees characterised the service and what elements of the service they listed.

The service element that was present in definitions of hosting by all interviewees was *storage of content* (on the definition of content see Section 1.3) *on behalf of someone else*. All interviewees also emphasised that the stored content must be coming (or originating) from a party that is different from the host. It can be assumed that, from the perspective of the interviewees, storage of content on behalf of someone else is the least common denominator or baseline in the definition of hosting services.

Some of the interviewees added additional elements or activities to this core of hosting service. Some interviewees went further into the technical specifics of hosting and its distinction from other services. An association explains that hosting means *processing* and storing the actual content, while mere conduit works on a lower (infrastructure) level and means processing the data underlying the content. Another stakeholder explained that hosting services allow their clients to use their servers to provide internet connectivity from data centres.

Many stakeholders suggest that hosting also includes elements of *distribution, publication, display, sharing, facilitation or making available* of content on behalf of someone else. All these activities can be characterised as provision or communication of content, which can be directed towards a limited circle of users or to the general public. An association suggests that some hosting providers do provide these functions more than others that focus on storage. Other associations also underscored that, with these elements, a hosting service is an intermediary between content producers, on the one side, and businesses or individuals who are interested in such content, on the other side. Therefore, the actors on both sides do not communicate directly with each other, but with the intermediary. According to one association, due to this intermediary role, a hosting service may provide different outcomes for different messages (e.g. promote or suppress them).

One association noted that it may be inappropriate and productive to have just one definition of hosting services. Rather, depending on the purpose of regulation, different elements may be more important and highlighted. In the context of liability, the current broad definition is suitable and appropriate. While many interviewees supported the latter observation, some of them indicated that there might be a further need for differentiation of hosting services at more granular levels, also in the context of liability.

All interviewees emphasised that providers of hosting services do not control content, do not create or own it, and do not have (granular) knowledge of the content. The latter means that hosts know that content is there, but they do not know what this content may be. Because of this, primary

responsibility for the content lies with the originator of the content. Some companies admitted that they have responsibility for how the content is presented (e.g. structured; see Section 1.4 on the content handling).

Based on these characteristics, the interviewees identified certain services that they do not consider hosting, even though they are frequently characterised as such. According to one email provider, email services are not hosting. Search engines also are not hosting but rather caching because they index, transmit and only temporarily store information, according to search providers.

There is some disagreement about where cloud services and providing advertising space belong. Some interviewees do not think that cloud services (according to a cloud provider and to business cloud users) and providing advertising space (according to companies both advertising and providing advertising space) fall under hosting or any other category of services in the current ECD. On cloud services, the point of distinction seems to be that they are more akin to infrastructure provision as clouds are leased to businesses that put their own software, applications and platforms on top that allow them to engage with the users. Therefore, in many instances, cloud providers are more removed from the actual content in the cloud and are not in any contractual relations with the parties who store the content there. Other interviewees disagree with such categorisation, and explain that both cloud services (according to cloud and internet infrastructure providers and a provider of multiple intermediary services) and advertising services (according to a provider of multiple intermediary services) are storage services. Yet even those who agree that cloud services are storage, admit the technical restrictions that prevent cloud service providers from engaging in any meaningful content management activities.

Other services that were **considered to not be hosting services** by some interviewees (association and provider of multiple intermediary services) include:

1. Classic retailers who operate an online store;
2. Mobility, accommodation and similar services where hosting content is auxiliary to the main service, as interpreted by the Court of Justice of the EU;
3. Mobile gaming services, if users are not allowed to create own content (e.g. no in-game chat);
4. Services for entirely private communications, such as dating app or private chats and messaging that are subject to the European Electronic Communications Code.

## Understanding content

Most interviewees raised and discussed the question of how to define content, and more specifically, user-generated content and different types of content.

The understanding of what content is differs among the interviewees and can be described in terms of a narrow and broad definition. Most interviewees described content as any data, information, texts, images or videos hosted on the websites of intermediaries. Some of them pointed out that this is a narrow definition that follows the Directive on Copyright in the Digital Single Market. Others (mainly e-commerce companies), however, went much further and, in addition to the narrowly defined content, considered the whole offer of product or service as a content that they host. In this context, an association added that narrowly defined content is linked to freedom of expression, while broadly defined content is an exercise of freedom of commerce.

Furthermore, some interviewees discussed the notion of user-generated content. According to e-commerce companies, a distinction between user-generated content (UGC) and third-party content (TPC) is relevant for some providers of hosting services. Such providers seem to consider

consumers as users who produce UGC, but business users or advertisers as partners who produce TPC. Interviewees claimed that there are differences between UGC and TPC. TPC is more standardised, is changed infrequently, and may be used with minimal changes across several platforms (if a business or advertiser happen to be active on several platforms). TPC falls under the broad understanding of content, while UGC is the content that is narrowly defined and linked to the freedom of expression.

The distinction between UGC and TPC is also relevant for search services because the results for a search query show links to other websites (i.e. links to TPC). E-commerce companies point out that different types of content are more typical and commercially important for different types of providers of hosting services. For example, on social media, more UGC can be found, while e-commerce has more TPC. On e-commerce, UGC is limited to the purpose and subject, namely the review of the product or service.

The discussion about different types of content or definition of content is important in so far as it is linked by the interviewees to different problems or risks that different types or categories of content bring with it, allegedly making different service providers more prone to specific problem or risks. One of the examples given is that e-commerce providers may be more prone to violations of the rights of brand owners, while social media providers experience difficulties with hate speech.

## Managing content

Many interviewees differentiate between the ability to manage content and the actual management of a service. Providers of cloud and internet infrastructure and providers of multiple services explain that the technical characteristics of hosting services they provide do not allow them to closely control and manage content. For instance, they cannot remove or block a specific item of content (e.g. a comment, a post, an image, a video or thread of conversation) that is illegal; they can only take down or block the entire website or platform on which the violation took place. The content is too removed from them and encrypted such that it is invisible to service provider. These stakeholders submit that the technical tools they possess are not suitable for granular or high precision work of content management.

This is different for some other stakeholders who have more “insight” in the content by third parties, which does not necessarily mean that they can fully analyse the content and its background, according to an association. Intermediary services providers (e-commerce companies, social media, content providers and others) have many ways to curate or manage content. All of them have policies on what content is permitted on their platforms. Often slightly different requirements apply to business or professional content (e.g. from journalists, publishers, sellers) and to users (e.g. consumers, private persons). Business and professional content is subject to stricter requirements (e.g. reliability, correctness), but at the same time there are exemptions for journalistic content and news reporting on otherwise challenging topics (e.g. child abuse, terrorist activities, divisive racial and cultural topics). Advertisers seem to be subject to the strictest rules.

First, all these stakeholders guide the presentation of the content in different ways. There may be recommendations or requirements to how certain information can be structured by the content originator. There is automated structured presentation of the content when it is retrieved by the user (e.g. presentation of search results, information feeds etc). Second, all these stakeholders use a mix of automated solutions as well as human oversight and decision-making to manage content. Automated tools are used to check the content, mainly after the upload (e.g. filtering for certain words or brands). Automated solutions are indispensable due to enormous amounts of content on

platforms and repetitive tasks that need to be performed on it. At the same time, quite a few e-commerce companies acknowledge limitations of automated tools, both in the context of content complexity and gravity of decisions that sometimes must be taken. Therefore, all these stakeholders also have large and diverse human teams that deal with different aspects of content management. To sum up, content management is a task that is resource-intensive and challenging for technology.

In the context of different possibilities of content management, the distinction between active and passive hosting that was introduced by the EU courts was discussed in some interviews. Some associations argue that this distinction should be rendered more precise to explain that passive hosting services are those that do not present a technical possibility of detailed content knowledge and management, while active hosting services are those that do. An important sign of active hosting is content curation, which can be described as promotion, tagging, categorising, targeting, personalising and other forms of content management that indicate knowledge of content. Other interviewees (e-commerce and content providers) point out the problem with the current case law, which seems to punish those service providers who attempt to take a more proactive, responsible approach to content management. Yet other interviewees (e-commerce company and multiple services provider) find the distinction not suitable as many services have both active and passive elements.

One association explained that the way content is managed is determined by the business model of the service provider and the type of content. This view seems to be supported by some other interviewees (e-commerce company and multiple services provider) who discuss the importance of safety versus access to information as an essential feature of their various services. For example, when providing ecosystems for gaming or selling products, safety is emphasised, while access to information is more important in search services or social media.

Finally, a few e-commerce companies noted that user management is as important as content management or, probably, even more important. Also, user management seems to determine the (necessary) content management. For example, both buyers and sellers on any e-commerce platform need to provide a lot of identifying personal data before they can register and participate in transactions. Some e-commerce platforms may have even more rigorous screening due to their business model (e.g. mobility platforms require a valid driver's licence, accommodation platforms should require government permission for short-stay rentals). The familiarity with and due diligence conducted on platform users define leverage that a hosting provider has and tools it uses to manage content. In a way, it is easier to manage users than to manage content.

Due to different business models, this is not the type of relationship that, for example, social media providers have with their users. According to an association, user management is a limitation to access the hosting service and has implications on certain user rights (e.g. freedom of expression).

## Classification criteria for hosting services

When discussing classification of hosting services and possible criteria for it, many interviewees noted that the purpose of such a classification is key. For example, if the purpose is to fight hate speech and terrorist content, then differentiation should be made between hosting services supporting social media and hosting services in the context of e-commerce. Therefore, several classifications or variability within one definition may be necessary, according to one association.

The classification based on the network layer model did not seem to be very appealing to the interviewees. Although it is a factually correct classification, it does not render any relevant outcomes for the purpose of the taxonomy. Some e-commerce companies pointed out that on the application level, on which many of the recent hosting services can be placed, there is a great degree of diversity that may be described in a variety of ways.

Functionality- or activity-based classification seems to be more promising, but may also not be entirely suitable, according to a variety of stakeholders, because it may not catch all nuances or new developments of hosting services. It may also be too restrictive and not future-proof.

The interviewees listed a large variety of criteria and factors that need to be considered in making classifications.

Many interviewees (e-commerce companies, internet infrastructure providers, an expert) found that content and how a hosting service interacts with it should be taken into account. The type of content is important because this is linked to different types of risks and impacts (e.g. freedom of expression vs violation of intellectual property rights). In this context, a few e-commerce companies suggest to consider content's capacity to harm. Also, some content is illegal per se (e.g. child sexual abuse material), while other content is legal in private but illegal to distribute (e.g. hate speech). An association suggests that interaction of a hosting service with content can be described in a principled way that provides a basis for a high-level classification. Another association considers it important to consider where the content originates, namely from users, businesses, advertisers, business partners (for the latter, the examples would be services provided by Spotify or Netflix) or generated by algorithm.

An e-commerce company and a content provider seem to suggest a similar criterion but do not link it to content. They argue that classification should be risk-based. The risk is related to content, but also to type and size of audience (e.g. public or private, professional or anyone). Similarly, an association and an e-commerce company point out that lock-in effects and the like network externalities are relevant factors.

Another important criterion, according to cloud and internet infrastructure providers, is linked to availability, accessibility, or visibility of the content. Hosting service may cater to private or public communication. The public audience may be professional (B2B) or consumers. While the line between public and private is very blurry and difficult to define, some providers offer both public and private communication within the same service. Some interviewees (internet infrastructure providers and a content provider) found this division very important as it also links to a particular service provider's impact on society.

The technical capability of the hosting service to exercise control over content in an expedient and detailed way is an important criterion for some interviewees (internet infrastructure providers and multiple services provider). As explained earlier by the interviewees, some hosting services are not designed to have knowledge of the nature of content and cannot manage content in a targeted manner. This distinction can adopt the terminology of case law and be codified as passive versus active hosting services.

A variety of stakeholders felt that the business model of the service provider is a relevant criterion because it determines how a hosting service is deployed. For instance, a provider financed via advertising has different incentives for content management than a provider funded through subscription or transaction fee. Another factor linked to business model is what the service provider does with the content it handles (according to an e-commerce provider): is the content just stored;

is it sold to other parties; or is it analysed and the information passed on to users? At the same time, the variety of business models is great, and they are constantly growing and evolving, making it difficult and restrictive to classify, according to e-commerce companies. A multiple services provider believes that a distinction based on a business model is unhelpful because complex organisations employ several business models and because it may hamper innovation.

Providers of multiple services made concrete suggestions to add a fourth category of intermediary services (in addition to mere conduit, caching and hosting). One of them suggested that cloud services provided as SaaS or IaaS needed to be a separate category; another thought that content aggregate and search services should be a separate category.

Most interviewees did not think that size of the business (however it is defined) should be a valid criterion for classification of hosting services. If the classification is used for regulation, such a distinction would be restrictive and punish success: it may turn into a glass ceiling for growing companies who would try to stay below the threshold to avoid regulation. If the purpose of regulation is to fight illegal content, then distinction based on the size is inappropriate because smaller providers should also be free of illegal content. Regulation should prevent illegal content migrating from large to small providers.

A variety of stakeholders note that any classification is difficult due to the high level of complexity and convergence of some services that combine different elements. A way forward may be a broader, principle-based approach, an approach based on a combination of criteria or an approach that reflects the growing sophistication of services (e.g. starting from simple hosting to a more sophisticated hosting that incorporates more additional elements).

## Future of hosting services

The interviewees pointed out a number of developments that are going to impact hosting services and intermediary services in the coming years.

The development of artificial intelligence (AI) is expected to have a significant impact on the whole digital landscape and society. It is impossible to say what exactly will change for hosting and intermediary services and how it will change, but it is going to be considerable. For example, human-machine interacting in gaming and other industries, content creation by AI, algorithmic decision-making and other yet unknown developments need to be considered.

The development of 5G is also expected to change hosting. 5G will promote the development of edge processing and edge cloud computers, enabling more real time processing at the edge (close to or at the user location). This will reduce storage and processing in data centres and may blur the line between mere conduit, caching and hosting.

5G combined with new applications enabled by AI (like autonomous cars) and other developments (e.g. remote charging) is likely to change the market, bringing in new types of hosting providers (e.g. manufacturers of automated vehicles and actual end users) and new types of hosting services.

The growth and development of cloud services is likely to continue, but will be influenced by the technological developments mentioned above (e.g. 5G and edge computing). Wider and broader cloud infrastructures and federated clouds could emerge following in the footsteps of GAIA-X.



Convergence is another defining trend. On the one hand, services used to promote commercial activity (e.g. selling clothes) are converging with services used to exercise freedom of expression (e.g. blogging and public forums). For example, users of Instagram, YouTube and similar platforms increasingly use them to create new types of businesses and promote old ones. This has recently given rise to a completely new type of user – the social influencer. This convergence seems to happen in the B2C and C2C relationships.

On the other hand, there is also convergence between hosting services and other, non-digital services. In this case, hosting becomes integrated in and auxiliary to mobility services, banking services and others. Because of the specific requirements of the main service, hosting services are becoming more subject- or industry-based, incorporated in the innovations along a supply-chain (for example, software development, automotive, asset management). This convergence is focused on B2B relationships.

Platforms are there to stay. They are helped and influenced by the convergence and other technological developments. In line with the described convergence trends, we may expect the development of more specialised or niche platforms (e.g. for automotive) with a specific user base as well as all-rounder platforms that enable both hosting and many other services converging or developing.

### Recommendations to make the definition and classification of hosting services future-proof

Against this backdrop, to ensure that the definition and classification of hosting services is future-proof, interviewees advise to keep the following considerations in mind:

1. Stay away from too granular definitions and lists of functionalities as they may become too restrictive or outdated;
2. Adopt a principle-based and broad approach: it is more likely to catch new developments;
3. Be technologically neutral because the change in technology is hard to predict and it happens fast;
4. Learn from the durable examples of the past, of which the ECD is one. It may be more useful to update the older approaches than to create something completely new;
5. Introduce ways to constantly monitor, evaluate and update the definition and classification. This can be done by regular checks against technological, economic and social reality.

# Annex III Workshop report

On 1 December 2020, the study team of Ecorys hosted an online workshop about the preliminary findings of the study on the (re)definition of the term hosting as it is currently defined in article 14 of the e-Commerce Directive, in anticipation of the soon to be presented Digital Services Act. The session had a dual objective: not only did it offer the study team an opportunity to present its recommended concept typologies of hosting services to an audience of key stakeholders, it also provided an opportunity for these stakeholders to provide comments on the draft as input for the final report.

The event was moderated by study team leader Dr. David Regeczi from Ecorys, and was chaired by project leader Maarten van Waveren, senior policy officer at the Digital Economy Unit of the Dutch Ministry of Economic Affairs and Climate.

The online event was attended by 36 registered participants, including public stakeholders, private organisations and members of the study consortium. Various interests were represented in the workshop. Largely, participants could be classified in the following types of stakeholders:

Types of stakeholders
Associations of information service providers
Competent national authorities
Private entities involved in providing online intermediary services
External or independent experts
Study team

Moderator David Regeczi opened the session with a brief introduction on the program and procedures of the event, which was followed by opening remarks from Maarten van Waveren. After this opening of the event, the presentation of the study was split up into four parts:

- An introduction by Prof. Jesse Dinneen of the Humboldt University of Berlin on the technical and ethical context of the proposed changes to the definition of hosting services;
- A detailed account of the study process and outcomes, including the proposed typology, by Dr. Olga Batura of Ecorys;
- A reflection on legal added value of such a classification by Prof. Johan Wolswinkel of Tilburg University; and
- A Q&A between participating stakeholders and the study team.

## Introduction on ethical and technical context – Prof. Jesse Dinneen

Prof. Dinneen gave a presentation which outlined the ethical and technical context for changes to the definition and regulation of hosting services. He discussed the need for changes to the existing framework from an ethical perspective by pointing at the proliferation of illegal, unlawful, and harmful content, while at the same time warning that a solution should be balanced and EU-focused. It should create a safe and inclusive environment, while offering space for innovation and freedom to its users.

Furthermore, he argued that hosting services run on an ambiguous interplay of various technical layers and by a variety of providers. It is difficult to come to an accurate granular typology, given the variation of providers (nature of the organisation, business activity, services provided, etc.) and the variation of technical layers used by them (type of technological activity and technology used,

nature of the data, nature of the content, directness of the service and awareness of the content, etc.).

As such, Prof. Dinneen stressed the importance of a broad and consistent framework for analysis, which is simple, intuitive and independent of technology. The latter is important because the online economy innovates and transforms quickly. Using technologically neutral typologies is more future-proof and can extend the typology's lifespan.

#### **Detailed account of the study process and outcomes – Dr. Olga Batura**

In her presentation, Dr. Olga Batura continued explaining how a future-proof, sustainable definition and typology of hosting services is also supported by stakeholders. She explained how the methodology of the study and presented the outcomes – as can be found in the main body of the report. Please have a look at the executive summary of the main report for an overview of the key findings, arguments and recommendations presented by Dr. Olga Batura.

#### **Reflection on legal added value of a new taxonomy – Prof. Johan Wolswinkel**

In follow-up to the suggested typology presented by Dr. Olga Batura, Prof. Johan Wolswinkel gave a reflection on its potential legal added value. He stressed that the underlying purpose is of crucial importance for the taxonomy that one creates. In this exercise, there are two purposes: a non-legal and a legal one. In the former, the aim is to define services from a more societal (what is their function in society?) or technical (how do they function?) perspective. This could be used as a thought exercise about how to deal with several kind of services – which is what the presented study is because no regulatory purpose was formulated for it.

The next step revolves around translation of the taxonomy to regulation. In this the regulatory purpose is key. What is the underlying regulatory purpose of the classification of caching, mere conduit and hosting in the ECD? It is important to take a step back from the liability regime which is nowadays the main point of legal attention for the classifications, and really focus on the initial purpose. The primary purpose Prof. Wolswinkel sees is the removal of all obstacles to free movement. This also provides the foundation of the existing liability regime, which is not based on the desire to have a uniform liability regime itself, but rather on the need for creation of safe harbours stating when a service provider is not liable.

Another point that is clear from reading the ECD is that the notion of knowledge is of crucial importance for derived, secondary liability of intermediary service providers. How can we use this non-legal taxonomy (meant as a thought exercise) as a legal taxonomy as well? From a general regulatory perspective, there are two main choices: (i) create sub-categories, where each sub-category has its own legal regime, or (ii) apply general criterion (such as actual or constructive knowledge) which is then applied on a case-by-case basis to determine whether the knowledge standard is fulfilled. There are advantages and disadvantages to both options. The advantage of the sub-categories option is that it creates legal certainty for hosting service providers, while a disadvantage relates to how future-proof the sub-categories are. The latter directly provides the core benefit of a general criterion, which provides more flexibility to apply in a case-by-case manner and allows for future development. If there would be a presumption that for instance in the 'hosting plus' category an organisation has actual knowledge, while organisations in the 'classic hosting' categories do not have knowledge, this would have clear implications of the taxonomy, as it subsumes the general knowledge standard into the different categories. There is of course also a mixed approach option, where sub-categories are created but are still based on some kind of general criteria.

Prof. Wolswinkel thinks that the taxonomy can be used as input for the liability regime issue, but also for other purposes within the DSA and outside of that context. This could move the discussion away from the sole focus on the consequences for liability regimes, but also on its applicability in other contexts.

#### Core discussion points from Q&A session

- Distinction between “web hosting” and “publishing”. The expert team explains that they are often done together; however, they are clearly not the same thing. In classic hosting, the main function is to store the content and provide it to audience, while in publishing, the main function is to make a work available to the public, publicise, distribute as widely as possible. Online publishing has the same function as publishing books, news, works of art etc.
- Additional regulatory purposes of the DSA, for which the taxonomy could also be useful. The experts clarified that in the ECD the sole purpose for distinguishing hosting from other services is the liability regime, but in the redefinition under the upcoming DSA the classification of hosting services offers an opportunity to include other perspectives. For example, the legislator may decide to introduce differentiation in due diligence obligations or duties of care or other responsibilities for various hosting service providers.
- Sub-categories that could be created in a future definition. The study team explained that the sub-categories presented were considered during the analysis, but that the way one defines functions or activities relevant for future definition of sub-categories are manifold. Further sub-division(s) depends on the regulatory purpose of such sub-division. For instance, it could be argued that, for liability, the general broad definition of hosting would be most appropriate, while for specific duties of care, sector-specific considerations could be more suited. Important to note is that fine-grained classifications may not be robust over time.
- The relevance for the study of the categorisation of “systemic platform”, which might find its way into the Digital Markets Acts as a classification for very large online intermediaries (with tighter regulation for actors falling in this category). The study team explains that within the context of this study the term ‘platform’ is not helpful, as it singles out just a subset of online intermediaries (i.e. providers) and is not a feature of services.
- Distinction between social media and editorial media. The study team clarified that this distinction can be made, but on the basis of services offered. Social media providers offer numerous services (networking, messaging, collaborating, publishing, etc.), and each service could be subject to a different regulatory regime. Some of these services are definitely hosting plus services. Editorial media providers, like newspapers, Spotify and Netflix, publish copyrighted content, which clearly are publishing services (hosting plus category in the suggested taxonomy).
- Whether the nature of hosting plus change if hosting plus operators “publish” services that are already published by the media (that abide by editorial and ethical standards). In their response, the study team explained that this shows a clear intersect between the two studies that have been commissioned by the Dutch Ministry of Economic Affairs and Climate, i.e. how the definition of a taxonomy would influence the upcoming (re) definition of the liability regime for hosting services. This will be a crucial point of discussion in political debate, but is not something we can judge at this stage based on the study. For the purposes of the taxonomy, there will be no difference, however: both will still remain hosting plus services.

- Whether established broadcasters or publishers should be subject to content moderation policies when “publishing” on social media. The project team answered that this was not part of the study, which focused on how the hosts of the website could be classified, as well as a further discussion on whether these hosts could be held liable for content on their website – not on the liability of publications by users of the website.
- Discussion of cases where media content is removed based on platforms terms and conditions without proper info-notice (children apps etc.). The study team indicated that this might relate more to EU Regulation on platform-to-business relations, but this has no relevance for the presented study. However, such situations can be taken care of in the regulation of applicable obligations (like duties of care) if the policymakers decide to enact them.
- Foreseeable drawbacks to using a knowledge standard as suggested by the study. Experts explained that while the current regime is flexible in the application it might actually mainly create legal uncertainty – also illustrated by case law on the topic over the last two decades. Moreover, it might create an incentive for service providers not to have actual knowledge, because this would make them liable. The study team considered the suggested taxonomy as steering away from this legal uncertainty and unhelpful incentives.
- Whether the experts assume that all hosting services within hosting plus category automatically have actual knowledge of all content they host and whether it is helpful to use the term “constructive knowledge”. The study team explained that it is difficult to assess what actual knowledge is and what constructive knowledge is – also depending on the type of service. It is ultimately up to the legislator and the court to decide what it is. However, having considered many different services offered on the market currently, the study team has concluded that the provision of some of them requires the knowledge of content and includes processing of the content and user data. In short, the activities of service providers indicate that, in the course of these activities, they acquire knowledge of the content. The depth or detail of this knowledge depends on the service.

# About Ecorys

Ecorys is a leading international research and consultancy company, addressing society's key challenges. With world-class research-based consultancy, we help public and private clients make and implement informed decisions leading to positive impact on society. We support our clients with sound analysis and inspiring ideas, practical solutions and delivery of projects for complex market, policy and management issues.

In 1929, businessmen from what is now Erasmus University Rotterdam founded the Netherlands Economic Institute (NEI). Its goal was to bridge the opposing worlds of economic research and business – in 2000, this much respected Institute became Ecorys.

Throughout the years, Ecorys expanded across the globe, with offices in Europe, Africa, the Middle East and Asia. Our staff originates from many different cultural backgrounds and areas of expertise because we believe in the power that different perspectives bring to our organisation and our clients.

Ecorys excels in seven areas of expertise:

- Economic growth;
- Social policy;
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- Transport & Infrastructure;
- Public sector reform;
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