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# Exploring Mandatory Interoperability across Social Media Platforms in the EU

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# LIST OF ABBREVIATIONS

AI – Artificial Intelligence
ANT – Actor-Network Theory
API – Application Program Interface
CMA – UK Competition Markets Authority
DMA – Digital Markets Act
E2EE – End-to-End Encryption
ECB – European Central Bank
ECJ – European Court of Justice
ECPD – European Computer Programs Directive
ETSI – European Telecommunications Standards Institute
EU – European Union
GDPR – General Data Protection Regulation
GSM – Global System for Mobile Communications
IoT – Internet of Things
IP – Internet Protocol
HTTPS – Hypertext Transfer Protocol Secure
M&A – Mergers and Acquisitions
OECD – Organization for Economic Cooperation and Development
PSD2 – Payment Service Directive
R&D – Research and Development
TCP – Transmission Control Protocol
TFEU – Treaty on the Functioning of the European Union
TLS – Transport Layer Security
US – United States of America
W3C – World Wide Web Consortium
XMPP – Extensible Messaging and Presence Protocol
XS2A – Third-Party Access to Account Rule

## Abstract

Strong network effects, high switching costs, and economies of scale contribute to a **concentration of market power** in the social media market. In turn, this contributes to considerable negative economic and socio-political consequences: (i) reduced competition and innovation, (ii) limited consumer choice, and (iii) increasingly worrying consequences for liberal democracies yielding from an increasing epistemic inequality. We argue that mandated **horizontal interoperability** for dominant social media platforms is a powerful and appropriate instrument to tackle this problem.

Unlike other approaches, such as breaking up big tech, our interoperability proposal addresses the **underlying economic mechanisms** of the platform economy. Making services interoperable in the social media market has the potential to enhance the **competitiveness** of smaller social networks, encourage **innovation** and **diversity** in the market, as well as to reduce market concentration and anti-competitive behaviour among incumbent market players.

More specifically, we propose to require dominant social media platforms to provide, upon request, smaller social media platforms with interoperable access to **seven core functionalities** of social media networks that are directly helpful in overcoming network effects: (i) a user's profile, (ii) connections, and (iii) followers; (iv) text, (v) image, and (vi) video sharing; as well as (vii) content engagement. To ensure the effective implementation of our proposal, we recommend following a **three-step approach** to making these functions incrementally interoperable.

On a technical level, such an interoperability mandate is feasible, and we discuss two possible technical solutions – **open standards** or open **APIs** – which could be technically realized by the dominant platforms.

Finally, presenting existing **EU-level legislation on interoperability** – namely Article 102 TFEU, the Digital Markets Act, the General Data Protection Regulation, the Computer Programs Directive, and the Payment Service Directive 2 – we argue that a mandate for horizontal interoperability would be seamlessly integrable within the larger European legal landscape.

# Introduction

The last three decades have seen the internet sector growing at an exponential rate. Between the 1990s and today, the number of websites jumped from a few thousand to almost two billion (Armstrong, 2021). The growth in the variety and mere magnitude was, however, unevenly spread across the online ecosystem. Some websites gained relevance and centrality. Others were condemned to the dark corners of the web. In 2001, “the top 10 websites accounted for 31 percent of all page views in America, by 2010 the top 10 accounted for 75 percent” (Reich, 2015). The advent of the interactive Web 2.0 was accompanied by the rise of platforms whose strong network effects implied an increasing concentration of the online environment. The decentralised, anonymous, open web of the pioneers (see e.g., Barlow, 1996) has now been replaced by a semi-closed, platform-based, and data-driven internet. The internet is governing itself, just not in a collective manner.

At the center of our policy brief are social networking platforms – which in recent years have been widely discussed because of their “emperor-like” status in the online world. They surveil us in order to gather data which they use for targeting us with the perfect ad at the perfect moment. We are now aware of these practices, but we cannot seem to stop using social networks. In this policy brief, we argue that interoperability is one crucial missing piece of the puzzle. Breaking them up, fining them, or even granting them more legal responsibility under the label of “gatekeepers” is not enough: none of these approaches address the dynamics which brought these giants into being face-on. There is a need to ensure that network effects are no more exploited by big tech to hold on market position and keep users locked-in, but rather shared with smaller, competing, and innovative platforms.

With interoperable services, users can leave a platform if they feel their rights are not respected and their values not represented. Competition will no longer be played on the advertisers’ side of the market (e.g., by innovating on AI behavioural prediction) but the focus will shift to keeping users on the platform (for instance by increasing privacy or security). Big tech will no longer be shielded from social responsibility following huge

scandals thanks to the high switching costs its users face, but rather will need to keep users happy in order to retain their market share.

Section one lays the basis for the analysis, explaining the dynamics which brought market concentration into being in the first place, as well as briefly exploring some of its economic and socio-political implications. Section two conceptualises interoperability, discussing benefits and drawbacks as well as giving historical examples of where it has been mandated in the past. Section three turns to look at the regulatory framework, what has already been done and what is missing. Finally, section four outlines our policy proposal for mandatory interoperability based on seven key functions, discussing its technical and legal feasibility.

This policy brief aims to appeal to the European Commission in light of the revision of the Digital Markets Act by May 2026 (DMA, Art. 53).

# SECTION 1 – BACKGROUND

Market concentration is not a regulatory problem *per se*. Rather, it becomes such when companies exploit it to compete on unfair terms yielding undesirable outcomes for the social good. It is in this case that market authorities and legislators need to step in (Beauvallet, 2023). In this section, we show the economic and socio-political implications of the social media market's concentration as well as why the commonly proposed solution of breaking up big tech, while attractive in the short-term, would have limited effects in the long-term. This is due to the economic dynamics of the market for social networking platforms. Last, we argue for interoperability as a better suited solution.

## 1.1 Implications of High Market Concentration

Over the years, the market for digital platforms in general, and for social networks more specifically, has been characterised by a shift from a competition ***in*** the market to competition ***for*** the market (Stigler Report, 2019). This is what is known as the market's prone to ***tipping***, i.e., a tendency of the first mover to "pull away from its rivals" after it has "gained an 'initial edge' driven by strong network effects" (Katz & Shapiro, 1994, p. 106) – see Section 1.3.1. In turn, this results in high levels of market concentration (Nadler & Ciciline, 2020).

Nowadays, the market of digital platforms is long-past its tipping point and market shares are no longer equally distributed. In fact, “Facebook (1.8 billion users) and its family of products—WhatsApp (2.0 billion users) and Instagram (1.4 billion users) — have significantly more users and time spent on its platform than its closest competitors, Snapchat (443 million users) or Twitter (582 million users)” (Nadler & Ciciline, 2020, p. 75). This has been even more exacerbated by mergers and acquisitions (M&A) in the social media market, such as Facebook’s acquisitions of Instagram and WhatsApp (Ghaffary, 2022; Olson, 2014). Let us now take a glance at what this implies.

### *1.1.1 Economic impacts*

The concentration of market power in the social media market has important implications for desirable economic outcomes. First, it leads to reduced and unfair competition in the social media market – a situation which has already resulted in antitrust fines from EU institutions, most notably in the case of Facebook’s (now Meta) acquisition of Instagram and WhatsApp (see e.g., European Commission, 2017; Tyler, 2021). Not only does such high market concentration limit consumer choice, but it also hampers innovation by concentrating human, physical, and economic capital and employing it to serve the profit-seeking logics of surveillance capitalism (see Section 1.1.2). How human capital concentrates in the private sector, and here specifically big tech, is shown by the fact that “[b]y 2016, 57% of American computer science PhD graduates took jobs in industry, while only 11% became tenure-track faculty” (Zuboff, 2022, p. 29). At the same time, these companies dominate financial markets, further exacerbating their position, strengthening their investment possibilities, and reiterating their dominance.

Looking at the wider picture, one might also question the efficiency of the allocation of capital to the digital advertising sector – which makes up the lifestream of the market. In fact, empowered by AI predictions, advertisement has grown into the backbone of the platform economy – especially for social media. At Facebook, advertising makes up 97% of the company’s 113 billion revenue (Meta, 2023). The question here is whether the capital going to research and development of better ways to increase that revenue – namely, keeping people on the platform to mine their data and improving behavioural models – is functional to increasing the public good. In fact, currently, social

media companies keep capital (both human and economic) hostage to serve their economic interests.

The importance of data in the current market structure changes the priorities of the incumbent companies, from the pursuit of profit through innovation aimed at the public good, to the pursuit of profit through predictions of human behaviour (see Section 1.1.2). This means that investments shift from more traditional R&D to the perfection of prediction models which do not equate to any significant improvements in the efficiency and productivity for the real economy. It is a problem of misallocation of physical and human capital towards the control of people for profit. By further detaching the real economy from the digital one, this in turn slows economic growth and concentrates gains.

### *1.1.2 Socio-political impacts*

Market concentration has also important socio-political implications – which spark discussion that often dominate our news networks. Firstly, big tech regulates onlife (see Floridi, 2015) by having a monopoly over the code. Following Lessig (2000)'s arguments, code makes up the underlying infrastructure of the internet and thus equates to law in the online environment (for a detailed discussion see Lessig, 2000). Considering that the basic set of protocols and physical infrastructure which make up the internet determine how data is exchanged, how we access information and communicate, or even how easy it is to protect privacy, in today's semi-closed, platform-based, centralised internet, big tech determines which choices are available to us.

Although Lessig's argument is part of a wider debate about the possibility of regulating the internet given its decentralised nature, we are here to connect it with the ANT idea that "technical things have political qualities" (Winner, 1980, p. 121). Over the years, the values governing the early years of the internet, i.e., liberal values of freedom and democracy (see e.g., Barlow, 1996; Russell, 2006), have been replaced by the logics of profits. These are embedded in the code that dominates the now semi-closed, centralised, and platform-based internet. Sitting on a panel at Stanford University, Lessig recently refined his famous quote claiming that "business models eat law" referring to the fact that, regardless of what a company's policies and its employees' genuine concerns are, their ultimate actions will be dictated by the business model (Lessig & Schrepel, 2022; Schulte, 2022).

This has important socio-political implications. First, dominant digital market players are in a position to impose potential unfair terms onto consumers, who find themselves in a weaker position. During his opening statements at the big tech antitrust hearings of 2020, US Representative David Cicilline famously argued that "[big tech's] ability to dictate terms, call the shots, upend entire sectors, and inspire fear, represent the powers of a private government" (Cicilline, 2020). Additionally, as "emperors of the online economy" and "powers of private government" (Cicilline, 2020), big tech companies have acquired an increasing power vis-à-vis governments. Just like an emperor or a state authority govern by holding a monopoly control over the use of a strategic asset – such as the state's "monopoly of the *legitimate* use of physical force [emphasis added]" (Weber, 1946, p. 77) –, big tech govern the onlife world with their monopoly over the code. The internet is a combination of code, data, and physical infrastructure and market concentration in this sector means that big tech now controls a big share of all three.

A second implication here results from the highly concentrated and data-driven nature of the market for digital platforms. What these companies understood after the dotcom crash in the 2000s was that, by getting the metadata they had so far disregarded to work through Artificial Intelligence, they could actually develop behavioural predictions which they could then sell at a profit. They "would no longer be passive recipients of accidental data" but would succeed in using it as "raw materials for the construction of a dynamic online advertising marketplace" (Zuboff, 2019, p. 81). This is what Zuboff (2019) termed 'surveillance capitalism', i.e., the idea that individual human experiences could become a resource ready for extraction, commodification, and sale in this novel 21st century manufacturing industry. The development of "surveillance dividends" (Zuboff, 2019, p. 93) created an unprecedented growth in the sector with Google, its pioneer, seeing its revenue increase from around 4 million in 2002 to 6.1 billion in 2005 (Statista, 2022). As a result, competition *for* the market shifted from being played on the quality of the service to the quality of the behavioural predictions (Zuboff, 2019, pp. 82-83).

Not only does this lead to increased user surveillance, but it also poses risks to opinion formation in democracies due to the importance of news sources and independent information in democratic systems (Dahl, 2000). This is because a situation of

established concentration of data, knowledge, capital, and power in the hands of a few tech companies enables them "to leverage absolute control of critical digital infrastructure to bend democratic governments to their will" (Zuboff, 2022, pp. 44-51), by shaping the infosphere on which democratic life is built. Following the conception of power in terms of preference-shaping (see e.g., Lukes, 1974; Foucault, 2020), today's dominant digital actors' instrumentarian power (Zuboff, 2019) allows them to manipulate individuals' preferences and behaviour. Thinking of democracy as a system of government legitimation which relies on collective choice, the moment in which that choice becomes bound by external active forces whose influence is non-ignorable, then the very basis of the democratic system trembles.

## 1.2 Breaking up Big Tech

When discussing the high market concentration in the digital market and its economic as well as socio-political implications, one of the main proposals to remedy these issues is to "break up big tech" (Aral, 2020). It is commonly argued that this will lead to more competition between smaller companies – and thus to the automatic decrease in the power that companies have. big tech would subsequently no longer be able to exploit their market position to the detriment of consumers, would no longer have a monopoly on innovation, and would no longer be able to control how information circulates on the public sphere – thus reducing their political power (Aral, 2020). So far so good.
However, this will likely only be the case in the short-term. Looking in the medium to long-term, this approach does not touch on the underlying dynamics which have brought these monopolies or near-monopolies into being in the first place (Aral, 2020). To understand why "breaking up big tech" would therefore not be successful in sustaining fair competition between social media platforms in the long-term, the following section discusses the economic mechanisms at play in the platform economy in greater detail.

## 1.3 Root Causes for High Market Concentration

Social media companies are digital multi-sided platforms, namely intermediaries which facilitate interactions between two or more distinct groups, decreasing transaction costs in their working (Beauvallet, 2023). In the case of social media, we can identify different

functions of the platform: (i) connecting people, (ii) connecting content creators with their public, and (iii) connecting users and advertisers. These three were already present before the digital economy, but today's platforms have simplified them and decreased their cost. They made them more economically efficient. Problematic in this regard is the fact that the strong network effects, use of data, and economies of scale, make platforms prone to tipping. In fact, "once a firm gains enough users in a given market, it establishes itself as a powerful incumbent – one that is difficult to displace" (Creser, 2021, p. 295). Following the market tipping point, potential competitors can overcome the dominant and advantageous position of the winner and re-establish competition only through significant innovation (Stigler Report, 2019: 12). Otherwise, they are helpless in facing tech giants.

### *1.3.1 Network effects*

Network effects are present in a market when a product's value increases with the number of users (Santesteban & Longpre, 2020). In the case of online platforms, the "individuals' desire to be on a platform as more people they know join the network, linking the value of the social network to its size" (Creser, 2021, p. 295). These are known as intra-group network effects, meaning that they increase value for individuals belonging to the same side of the platform. Moreover, we also find inter-group network effects – the more users a platform has, the more advertisers and content creators aiming to reach that audience will be attracted (Beauvallet, 2023). In theory, it is economically desirable to have one large platform because it minimises costs and maximises benefits for all parties. However, network effects also "dramatically increase the benefits of size" (Drivas, 2019, p. 1911) and create a situation in which first-mover advantages create barriers to entry and concentrate market power (Khan, 2017). In the case of online platforms, network effects are not only present, but they are strong enough to drive their business models (Beauvallet, 2023), creating the very basis on which the market operates. Breaking up big tech does nothing to address this (Aral, 2020).

### *1.3.2 Switching costs*

Switching costs refer to monetary and non-monetary expenses that consumers face when switching from one product or service to another. The higher the switching costs,

the less likely an individual will switch platforms – regardless of the quality or price of competing services. In the context of social media platforms, switching costs are quite high, including financial (e.g., cancellation fees), time (search for alternatives, actually making the shift, and learn how a new platform works), and psychological costs (e.g., emotional attachment to a platform), and create a situation in which users are likely to stick to the original platform. Other factors contributing to switching costs "include anti competitive contracting terms, default settings, and product design that favour dominant platforms" (Constine, 2019).

Most interesting in our case are switching costs which derive from missing out on what an individual has so far built on the platform (Nadler & Ciciline, 2020, pp. 31-2). Specifically, an individual might have spent years building up a social network on Facebook, and all those ties will be lost when he switches to a competing service. During the congressional hearings in the US a Facebook employee said that "investors like this quality about Facebook [that you are locked in] and 'the idea is that after you have invested hours and hours in your friend graph or interest graph or follower graph, you are less likely to leave for a new or different service that offers similar functionality'" (Nadler & Ciciline, 2020, p. 121). In the absence of interoperability, switching to a smaller platform decreases how much a person benefits from a platform's network effects. This is a lock-in effect for the user (Stucke & Grunes, 2016).

### *1.3.3 Economies of scale*

In digital markets, "fixed costs play such an important role [yielding] especially large returns to scale" (Stigler Report, 2019, p. 12). Accordingly, the more activity a platform has, the lower the average cost, especially due to the relatively high up-front investments for the development of the platforms' digital infrastructure – such as data centres and servers (Nadler & Ciciline, 2020). Moreover, "[b]ecause machine learning yields better insights when it is trained on larger datasets" (Stigler Report, 2019, p. 14), firms which have access to high volumes of data find it less expensive to raise their services quality (e.g., content-selection and behavioural predictions) than small ones – a sort of dynamic economies of scale.

### *1.3.4 (Data-driven) barriers to entry*

Building on and deriving from the dynamics explained above, the digital platform market is characterised by dynamic and significant (data-driven) barriers to entry. Although these "technological, legal, and behavioural [barriers] can exist in parallel and reinforce one another" (Rubinfeld & Gal, 2016, p. 350), the main problem is that potential competitors and small companies entering the market face a substantial data-deficit with respect to those first-movers which have won the market. "[T]he more people actively or passively contribute data, the more the company can improve the quality of its product, the more attractive the product is to other users, the more data the company has to further improve its product, which becomes more attractive to prospective users" (Stucke & Grunes, 2016, p. 170) – a dynamic of concern for, among others, both Commissioner Margret Vestager (Crofts & McLeod, 2015, p. 5), and the European Commission (see e.g., *COMP./M.4854 - TomTom/TeleAtlas*). Consequently, "[b]y denying rivals access to data, they can quash competitive products and cement their dominance" (Drivas, 2019, p. 1912). Not only do they have more data, the dominant players in the market also have access to higher quality data which in turn enables them to make better predictions (Santesteban & Longpre, 2020), a dynamic which is turbocharged by the strategic importance of data in this industry.

## 1.4 Interoperability as a Solution

Having demonstrated that "breaking up big tech" does not sufficiently account for the underlying economic mechanisms of high market concentration in the social media market – i.e., strong network effects, switching costs, economies of scale and high (data-driven) barriers to entry – the rest of this paper will argue that mandating interoperability for social media networks is a better suited strategy to tackle the issues outlined above. As it will be elaborated in more details below, interoperability has the potential to offset high levels of market concentration and to ensure a more equal distribution of power between market players. Most importantly, this is because social media apps are subject to strong network effects (Nadler & Ciciline, 2020), which are by definition distributed in the presence of interoperability. If social media networks were interoperable, these network effects would benefit not one but ***all*** players in the game, leading to considerable declines of barriers of entry as well as nullifying switching costs for consumers. Greater competition would further promote positive economic and socio-political outcomes, including greater consumer choice, higher levels and different

focus for innovation, and less concentrated socio-political power in the hands of a few private vis-à-vis public actors.

## SECTION 2 – UNDERSTANDING INTEROPERABILITY

Interoperability mandates have a history of being applied across a range of industries, including telecommunications, banking and railways (Bailey & Misra, 2022). The ability to call people from different telephone networks, for example, first became possible when the US imposed interoperability obligations on telecommunications providers (Zingales, 2022). There are different reasons for introducing interoperability mandates. These include when a single entity controls a crucial infrastructure or facility, to address network effects, to facilitate a more decentralised system architecture, or to protect the interests of consumers or the public (Bailey & Misra, 2022), all aspects highly relevant given the context presented in section 1. Still, even though interoperability for social media platforms has gained attention in policy circles only recently, the technical community has long discussed this issue since the emergence of closed online platforms in the mid-1990s (Bailey & Misra, 2022).

As Lancieri and Sakowski (2021) point out, by now a number of reports have discussed the role of interoperability obligations as an antitrust remedy to foster competition within digital markets. In a report directed to EU Commissioner Vestager, Crémer et al. (2019) emphasise that interoperability may level the playing field for small firms vis-à-vis the dominant incumbents. Zingales (2022) argues that mandating interoperability through the use of open Application Program Interfaces (APIs) is critical to mitigating the market dynamics that facilitate the emergence of monopolies. Accordingly, interoperability through open APIs had already proved successful as demonstrated by the second Payment Services Directive (PSD2), which enabled interoperable banking services across Europe – see section 3.5. The same approach could be applicable to social media (Zingales, 2022), and, as Soriano (2019) points out, API-enabled interoperability – see also section 4.2.2 – is the most effective way of managing network effects – preventing concentration of power and distributing it among competitors and users.

By contrast, Bourreau et al. (2022) are critical of mandatory interoperability for social media platforms. They point to the unintended consequences that such a measure might have – specifically, reinforcing incumbents' market power, reducing incentives

for multi-homing and restricting firms' ability to innovate and differentiate their services. The reasoning is that (symmetric) interoperability would entrench the incumbents' market power and reduce multi-homing, as users could stay with the dominant platforms while benefiting from the emerging platforms' networks. Moreover, innovation and differentiation would be at risk, as interoperability would bring about some level of commonality between platforms. Besides, they raise concerns about privacy and security risks. Open APIs, for example, could be vulnerable to cyber threats. Nevertheless, although evidence on the effectiveness of interoperability is currently limited, its potential should not be neglected (OECD, 2021). Done right, it could effectively address market entry barriers related to network effects and promote innovation. Considering this, mandatory interoperability should only apply to a limited set of dominant firms.

Crucially, Alexiadis and de Streel (2020) point out that any interoperability obligation would need to strike a balance between avoiding lock-in effects for users and ensuring sufficient flexibility for platforms to differentiate and innovate. In addition, interoperability standards should be developed by industry participants, along with independent oversight, so that the standards translate into meaningful interoperability in practice. Moreover, since dominant platforms have financial incentives to bias an interoperability regime in their favour, strong regulatory oversight will be necessary to ensure an actual level playing field (Scott-Morton, 2021). Beyond that, Brown (2020) notes that while the discourse around interoperability is viewed primarily through an economic lens, social factors such as media pluralism and privacy must also be taken into account.

## 2.1 Conceptualisation of Interoperability

Interoperability generally refers to the ability of different systems to communicate with each other seamlessly. Specifically, "interoperability is a technical mechanism for computing systems to work together – even if they are from competing firms" (Brown, 2020, p. 1). According to Diallo et al. (2011), interoperability features two central characteristics. First, interoperable systems require the capacity of exchanging information (*information exchange*). Second, the shared information must be usable, i.e., capable of being processed, for the receiving system (*usability of information*). Importantly, while interoperability and data portability are conceptually related, they are not synonymous. Data portability concerns the ability of users to transfer their data from

one platform to another. Although this may be achieved through interoperability, the latter is not necessarily required for data portability. In fact, interoperability requires a higher level of interconnectedness between systems than data portability (Bailey & Misra, 2022).

Platform interoperability focuses on "the ability of platforms to exchange data and different forms of functionality across their services" (Dhawan et al., 2022, p. 4). In essence, the objective is to facilitate communication and content sharing between platforms by requiring dominant platforms to allow for cross-platform interaction between their user base and that of smaller competitors (Tapiador & Hassan, 2018). Practically speaking, platform interoperability would focus on a defined set of core functions that may differ in terms of branding but essentially provide the same functionality (Dhawan et al., 2022). For example, such a core function might be the sharing of information. In the case of Twitter, this is commonly done through Tweets. If this functionality were interoperable, people from other microblogging platforms such as Mastodon could view and interact with this information directly without being required to use the platform of origin.

## 2.2 Typologies of Interoperability

Having explained the concept of interoperability in more detail, we will now consider the different typologies. To date, interoperability in the context of digital markets has been mainly defined either by the level of technical integration or by the level of the value chain (see Bourreau et al., 2022; Brown, 2020; Crémer et al., 2019; OECD, 2021; Riley, 2020).

In an expert report for the European Commission, Crémer et al. (2019) formulated three types of interoperability in digital markets – *protocol interoperability*, *data interoperability* and *full protocol interoperability*. The first type, protocol interoperability, refers to the capability of complementary products or services to interconnect to platforms on a technical level. It may also involve interoperability between complementary services. It has the procompetitive effect of enabling the development of and competition for complementary services. Although anti-competitive effects on innovation due to minimal standards cannot be ruled out, the risk is rather low. Second, data interoperability is comparable to data portability, but also provides for continuous

access to user and machine-generated data. In contrast to protocol interoperability, data interoperability enables deeper technical integration of complementary services into platforms. As such, it can encourage multihoming by simplifying data sharing between platforms or services for users. Still, while it can encourage competition, data interoperability bears the risk of reducing incentives for novel data collection methods.
Third, full protocol interoperability refers to interoperability between substitute products and services, facilitated by predefined and common standards. On the one hand, full protocol interoperability would distribute the benefits of positive network effects to direct competitors and decrease lock-in effects, therefore boosting competition. On the other hand, a high degree of standardisation comes at the risk of significantly restricting the ability of market participants to innovate and differentiate their services and products (Crémer et al., 2019).

In contrast to Crémer et al.'s (2019) typologies according to the level of technical integration, Riley (2020) has introduced the differentiation of interoperability based on the level of the value chain. According to Bourreau et al. (2022), *horizontal interoperability* refers to the ability of comparable products or services, which operate at the same level of the value chain, to work together. Hence, it has the procompetitive effect of expanding positive network effects beyond a single company, enabling the emergence of competition. Then again, it may carry the risk of consolidating the market power of already dominant players and limiting companies' opportunities for innovation and differentiation. In contrast, *vertical interoperability* describes interconnection between products or services that operate at different levels of the value chain. It holds procompetitive effects as economic efficiencies can be generated through competition between and innovation by complementary service providers. On the downside, by allowing for vertical interoperability, platforms may have to share the yields from innovation with complementors, which could lower the incentives for platforms to invest in innovation (Bourreau et al., 2022). Moreover, interoperability can be *symmetrical* or *asymmetrical* (Kerber & Schweitzer, 2017). For example, platform A may be interoperable towards Platform B, but not vice versa. We now turn to considering how interoperability has been considered and incorporated in different EU legislations.

# SECTION 3 – REGULATORY FRAMEWORK

As early as 2010, the European Commission identified lack of interoperability as one of the most significant obstacles to harnessing the power of information and communication technologies for the prosperity of the European economy (European Commission, 2010). To this end, provisions on interoperability have increasingly found their way into the EU's policy framework. Still, despite the previously illustrated issues resulting from high market concentration of digital platforms, interoperability of social media platforms has not yet been addressed by any European-level legislation. Considering this, the following section will review existing legal instruments to mandate interoperability in digital markets more generally – specifically looking at (i) traditional competition law; (ii) GDPR; (iii) DMA; (iv) Computer Program Directive; and (v) PSD-2 Directive. This lays the legal basis for our interoperability proposal pertaining to social media – see section 4.1.

## 3.1 Traditional Competition Law

### *3.1.1 Article 102 TFEU, 'Essential Facilities Doctrine' and 'Illegal Tying'*

In light of the dominant position of a few single actors in the market for digital platforms and their impact on competition – see Section 1 – it stands to reason that EU competition law, and, specifically, Article 102 Treaty on the Functioning of the European Union (TFEU), serves as a potential tool to tackle the issue at hand. According to said Article, "any abuse by one or more undertakings of a dominant position within the internal market or in a substantial part of it shall be prohibited [...] in so far as it may affect trade between Member States". Under Article 102 TFEU, examples of such abuse include limiting production, markets or technical development to the prejudice of consumers (Art. 102(b)), as well as applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive advantage (Art. 102(c)).

In this context, the so-called "essential facilities doctrine" has found its way into EU competition law jurisprudence (Graef, 2019). The doctrine prohibits "a[ny] form of exclusionary conduct by which a dominant undertaking refuses to give access to a type of infrastructure or other form of asset that forms a 'bottleneck' for rivals to be able to

compete" (Graef, 2019, p. 39). Originating in US antitrust law, the essential facilities doctrine has been an integral part of EU competition law, primarily in cases concerning physical infrastructure (Graef, 2019). Notably, it deals with an undertaking's refusal to "deal with a consumer or competitor in the downstream market" (Diker Vanberg & Ünver, 2017), i.e., denying vertical interoperability, which has been interpreted as constituting an abuse of dominant position under Article 102 TFEU. Although the doctrine has not played any role in EU competition law enforcement in recent years, it has re-appeared in the debate on how to best tackle the issue of 'tech giants' acting as entry barriers to the digital market (see e.g., Autorité de la Concurrence & Bundeskartellamt, 2016; Graef, 2019; Hurwitz, 2020).

Additionally, Article 102(d) TFEU prohibits the practice of 'illegal tying', which occurs if a single company sells two products but makes the sale of product A subject to the condition that it will be combined with product B, i.e., the 'tied product' (Maziarz, 2013, p. 1). This anticompetitive practice has been increasingly prevalent in the digital economy, particularly regarding the "integration of software into an operating system [or] to prioriti[se the] display of one's own services in a search engine ranking" (Holzweber, 2018, p. 343). Doing so severely limits interoperability of digital products, as will be exemplified in the case below.

#### *3.1.2 Commission v. Microsoft (T-201/04)*

A legal milestone in recognising interoperability as a means to remedy anticompetitive practices of digital market players within the scope of traditional European competition law was the 2007 *Microsoft v. Commission* (T-201/04) case. More specifically, the European Commission sued Microsoft for abuse of dominant position under Article 102 TFEU on the grounds that Microsoft had refused to share information on their interfaces with other software developers, precluding other market actors to interact with Windows. Moreover, Microsoft tied the sale of Windows to its Windows Media Player, disallowing functional competitors from offering complementary services. Following the 'essential facilities doctrine' and 'illegal tying', it was ultimately established that refusing interoperability to competitors may amount to an abuse of dominance under Article 102 TFEU (Bourreau et al., 2022). Building upon Microsoft's dominant position which gave rise to a "specific responsibility" (Portuese, 2021, p. 24), the General Court rejected Microsoft's argument that sharing interoperability information would negatively impact

its incentives for innovation. Instead, it adopted the view of the Commission which had argued that negative competitive effects outweighed the impact on innovation incentives. The case notably illustrates that EU competition law may indeed be used as an instrument to oblige dominant companies to implement interoperability requirements, allowing competitors to access their technical infrastructure or data on an equal footing (Bourreau et al., 2022).

#### *3.1.3 Competition law as a sufficient tool to address negative consequences resulting from high market concentration in the digital platform market?*

As illustrated above, traditional competition law may be a means to oblige dominant companies to make some of their technical interfaces or data available to functional competitors (Bourreau et al., 2022). In this respect, the flexible nature of competition law proves to be an important advantage for policymakers, given that broadly phrased provisions such as Article 102 TFEU may be employed to target practices of a specific firm, in a particular market for a given period of time (OECD, 2021). However, in light of fast-paced developments in the online platform market, the long-lasting nature of competition law proceedings almost certainly curtails its effectiveness (Krämer et al., 2020). This is evidenced by the entrenched and dominant positions of a few players in the digital market - which is why competition law has commonly been regarded as an insufficient means to remedy their strong economic power (Budzinski & Mendelsohn, 2022). Moreover, while applying the 'essential facilities doctrine' in the context of Article 102 TFEU may indeed enable courts to oblige companies to ensure vertical interoperability, this excludes requirements of horizontal interoperability. Moreover, there is only a limited number of circumstances in which competition law obliges companies to grant access to their intellectual property rights, which, however, play a crucial role in the disclosure of technical interfaces due to interoperability requirements (Bourreau et al., 2022). Considering this, competition law does not seem to be a sufficiently suitable tool to address market concentration through interoperability.

## 3.2 General Data Protection Regulation

The General Data Protection Regulation (GDPR) was not only a milestone for data protection, it also introduced the first European regulation on data portability. Article 20

GDPR (hereafter Article 20) grants data subjects three different rights that go beyond the mere access to data: (i) the right to receive, (ii) the right to transmit, and (iii) the right to transfer data from one controller to another (De Hert et al., 2018). Given that data portability is a precondition for interoperability – see Section 2.2 – a closer look at Article 20 is important to understand the legislative status quo.

Under Article 20, users have the right to obtain their data "in a structured, commonly used and machine-readable format" (Art. 20(1) GDPR). The GDPR itself does not define what this means in practice, but the Article 29 Working Party intended it to be about "a set of minimal requirements that should facilitate the interoperability of the data format provided by the data controller" (Article 29 Data Protection Working Party, 2017) and Recital 68 of the GDPR explicitly "encourages" data controllers to develop interoperable formats for data portability.

Users only have the right to obtain data under Article 20 that belongs to themselves, i.e., that directly or indirectly identifies them. Furthermore, the data in question needs to be provided by the requesting user. In practice, this excludes information that the service provider has created on top of user data. For example, a credit score that is calculated based on income data provided by the user is not subject to Article 20 requests, while the income data itself is. The requested data needs to be processed in an automated fashion and is based on consent or a contract – thus excluding data that is processed in an analog fashion on paper. The right to transfer data from one controller to another does only apply "where technically feasible" (Art. 20(2)) – a restriction that does not apply to the right to receive or the right to transmit. Importantly, the right under Article 20 does not apply to businesses since it is only available to living and identifiable individuals.

De Hert et al. (2018) identify two different options for the application of Article 20: an "*adieu*" and a "*fusing*" scenario. The former describes situations in which data subjects decide to leave a service and request data that they gave to the controller. This does not correspond to interoperability since it does not consider anything that happens with the data after the withdrawal by the user: the user might do nothing at all with it or just use it for themself, and even after the transmittal of data to another data controller (e.g., moving custom playlists from Spotify to Apple Music), they have no right for the new

data controller to actually make use of the data. Clearly, this is far from horizontal interoperability.

The "fusing" scenario theoretically corresponds to horizontal interoperability as companies seem to comply with Article 20 in a rather narrow way by only focusing on portability. In a research project conducted by University College London in 2021, out of four Internet of Things (IoT) devices (a Google Home and an Amazon Echo smart speaker and a Garmin and a Fitbit fitness tracker), none offered the option to move data from one device to another. Only "certain amounts of personal data" could be obtained with a request made under Article 20 GDPR. A review of 160 privacy policies of IoT devices showed that only 39% even mentioned data portability and "not a single privacy policy made any mention of importing personal data into their service" (Lis et al., 2019). And even the narrowly defined right to portability seems to be empirically rather weak. In an investigation that included 230 real-world data portability requests, Wong and Henderson (2020) found that only 75% of requests were successfully completed. Syrmoudis et al. (2021) also find that 74% of requests are successful in the legally valid time frame. There also seems to be a lack of knowledge around data portability under Article 20. Multiple experiments that tested to exercise the right to data portability describe that data controllers frequently misunderstood the Right to Data Portability request as a Right of Access request under Article 15 GDPR (Wong and Handerson, 2019; Brown et al., 2021; Syrmoudis et al., 2021).

This shows a major weakness of Article 20 and why it is not sufficient to create actual interoperability between services that go beyond data export. As provisions for data receivers are missing, users need to rely on the goodwill of the service they might want to import their data to in order to actually "accept" and use the data.

## 3.3 Digital Markets Act

In light of the *sui generis* nature and the increasingly central role of online platforms as well as their power to control entire digital ecosystems, the EU adopted the Digital Markets Act (DMA) which entered into force in November 2022 and will apply as of May 2023 (European Commission, 2022). Essentially, the DMA advances traditional competition law in that it represents a shift from *ex-post* to *ex-ante* regulation to address "the systemic risks for competition resulting from the characteristics of platform markets

where gatekeepers are present" (Bourreau et al., 2022, p. 44). Under the DMA, the notion of 'gatekeeper' refers to any company whose strong economic position has (i) a considerable impact on the EU internal market ('*size criterion*'), (ii) which provides a core platform service that links a large number of end users to a large number of businesses users ('*gateway criterion*'), and (iii) which showcases an entrenched and durable position in the market - either presently or in the near future ('*duralibility criterion*'; Art. 3 DMA). The designation as 'gatekeeper' triggers a set of rights and obligations (Bailey & Misra, 2022), of which this section discusses the most relevant provisions with regard to interoperability in the present context.

#### *3.3.1 Article 2(2): Core platform services*

Before examining the interoperability requirements as such, it is relevant to note that the DMA's designation of a company as a gatekeeper rests upon the company's provision of 'core platform services' which is defined under Article 2(2) DMA. Importantly, the DMA classifies online social networking services among these core platform services (Art. 2(2)(c) DMA).

#### *3.3.2 Article 6(7): Interoperability regarding software and hardware features*

Article 6(7) DMA requires gatekeepers that provide services or hardware which have access to hardware or software features of an operating system or virtual assistant, e.g., wearable devices, to ensure interoperability of their hardware or software features to competing services or hardware providers upon request, considering that this is necessary for the latter to provide competitive offerings to users (Recitals 55; 57 DMA). In this context, Article 6(7) DMA nevertheless grants gatekeepers the right to implement measures to safeguard the integrity of their system, provided that these are 'strictly necessary and proportionate'.

#### *3.3.3 Article 6(9): Ensuring data portability for end users*

Under Article 6(9) DMA, end users are granted the right to data portability, relating to any data that has been provided by users themselves or generated through their activities. Upon request, gatekeepers need to ensure the effective exercise of such data portability as well as real-time access to the data concerned.

### *3.3.4 Article 7: Interoperability of number-independent interpersonal communication services*

Article 7 DMA obliges gatekeepers that offer number-independent interpersonal communication services, i.e., chat or Voice over Internet Protocol call services (Brown, 2022), to provide interoperability of their basic functionalities if requested by any other provider of number-independent interpersonal communications services, for example by making technical interfaces available (Art. 7(1) DMA). The scope of these services is broadened gradually over time: within the first two years of application of the DMA, these interoperability provisions cover solely the communication between two *individual* end users, including (i) text messaging and (ii) the sharing of images, voice messages, videos and other attached files (Art. 7(2)(a)). After two years of designation, these obligations are expanded to encompass not only communication between individuals, but also within *groups* (Art. 7(2)(b)). Lastly, within four years of the act's entry into force, gatekeepers are obliged to additionally ensure interoperability of the basic functionalities concerning voice and video calls between both individuals and within group chats (Art. 7(2)(c)). Following the Preamble of the DMA, Article 7 seeks to address the high entry barriers to the market of interpersonal communication services, resulting from strong network effects and high switching costs due to gatekeepers' control of entire digital ecosystems, of which - oftentimes - chat or call services form an integral part (Recital 64 DMA).

### *3.3.5 Interpersonal communication services vs. social media networks*

Although the DMA addresses some important (economic) issues pertaining to the digital market – see Section 1 –, including interoperability-precluding practices such as upholding functional incompatibilities or exclusivity arrangements, the scope of many clauses under the DMA is rather narrow (Budzinski & Mendelsohn, 2022). For example, it grants data portability only to end users as opposed to business users, a provision which had been envisioned by the Commission in its first proposal (Budzinski & Mendelsohn, 2022). Most importantly in this context, is the fact that the DMA does not extend its interoperability requirements to social networks. This has been a central point of discussion in the trilogue negotiations, wherein the European Parliament advocated for an inclusion of social media networks under the DMA's interoperability obligations, while the Council did not (Brown, 2022). This issue will be re-evaluated as part of the

next review of the DMA to which this policy brief is appeals (European Parliament, 2023).

## 3.4 European Computer Programs Directive

Another relevant provision for the issue of mandating interoperability for social media is the European Computer Programs Directive (ECPD). More specifically, Article 6 ECPD provides for exemptions from copyright protection of code (e.g., APIs), if a number of conditions are met. Most importantly, these conditions demand that granting access to parts of a program's code may only be required in so far as this is strictly necessary to reach an envisioned interoperability mandate (Art. 6(1)(c) ECPD). This provision will be important concerning the legal implementation of our proposal to make social media interoperable – see section 4.

## 3.5 Revised Payment Services Directive

The Revised Payment Services Directive (PSD2) is particularly interesting regarding interoperability. In fact, it addressed an issue that is similar to today's social media market. Just as new social media platforms today, new fintech companies needed access to the data that was tightly controlled by the incumbent gatekeepers (Vezzoso, 2018). The PSD2 had the objective to support innovation and competition in the payment and banking sector and better protect user data (European Central Bank, 2018).

Before the PSD2, the European Court of Justice (ECJ) found competition to be too weak in the payment market and deemed some banking institutions guilty of anticompetitive practices (Stiefmueller, 2020). The Commission further identified that new market entrants were discouraged by high barriers to entry, partially resulting from lacking standardisation and interoperability (European Commission, 2015). This resulted in high costs, limited choice, and the creation of lock-in effects for both customers and merchants (European Commission 2015; Vezzoso, 2018). This is quite similar to the situation described in section 1.

To address these issues, the Commission developed an approach that was anchored in competition law but also included consumer protection law (Stiefmueller, 2020). With the so-called third-party access to account (XS2A) rule, the PSD2 obliged banks and

account servicing providers to give access to a customer's account and the associated data to a third party upon the user's request. The XS2A rule was intended to offer "new, differentiated services based on the use of [the user's] data" (Stiefmueller, 2020, p. 299). This 'unbundled' traditional payment services from third party services which offer applications built on top of the raw payment data. The regulation thus gave room to new third-party service providers that do not have to invest "in duplicating the incumbent's vertically integrated payment network" anymore (Stiefmueller, 2020, p. 301).

# SECTION 4 – THE CASE FOR MANDATORY INTEROPERABILITY

## 4.1 Interoperability Regime based on Core Functionalities

In a few years time, the impact of the DMA will be reviewed and will likely involve a discussion on extending interoperability obligations to social networks. Against this background as well as considering the significant market power of dominant social media platforms (see Section 1.3), the different interoperability options at hand, and the current regulatory landscape, we advise the European Commission to consider implementing a horizontal interoperability mandate for these platforms. This mandate should be asymmetrical in nature, i.e., that a predefined group of highly dominant social media platforms (gatekeepers) would be required to enable certain functionalities to be interoperable, without requiring the same of smaller platforms. By adopting this approach, the competitiveness of smaller social networks vis-à-vis the gatekeepers would be greatly enhanced. This would encourage innovation and diversity in the market, while also addressing concerns around market concentration and anti-competitive behaviour among the dominant players. As Bourreau et al. (2020) rightly point out, horizontal interoperability obligations would require a well-defined set of interoperable functionalities.

In defining these functionalities, we follow the recommendations of the UK Competition and Markets Authority (CMA). According to the CMA, the "case for interoperability is greater in respect of functionality which is: directly helpful in overcoming identified network effects; not highly innovative; and in respect of which privacy concerns can

effectively be managed" (CMA, 2020, p. 374). Following this guidance, we have selected seven core functionalities that are prevalent across most major social media platforms (see also CMA, 2020, p. 117). These functionalities are displayed and defined in **Table 1** below.

**Table 1: Overview of Core Functionalities on Social Media**

| Functionality | Definition |
|---|---|
| **Profile** | Profile refers to a digital representation and personalised space of a user. A profile can serve as an online identity for users, enabling them to connect and share information with others. Typically, it includes personal information such as a profile picture, biography, and interests. |
| **Connections** | Connections refers to a two-sided relationship between users on social media where both users have mutually agreed to connect with each other. This connection can be established by sending or accepting a connection request. Connections enable users to engage in private messaging, and view and interact with each other's content. |
| **Followers** | Followers refers to a one-sided relationship between users, where one user has chosen to follow another user's content. Followers enable users to view and interact with the content of the followed user. |
| **Text Sharing** | Text sharing refers to the act of posting text-based content. This includes sharing text-based content of other users. |
| **Image Sharing** | Image sharing refers to the act of posting images. This includes sharing image-based content or a combination of text and image-based content. |
| **Video Sharing** | Video sharing refers to the act of posting videos. This includes sharing video-based content or a combination of text and video-based content. |
| **Content Engagement** | Content engagement refers to actions through which users can interact with content posted by other users. This includes symbol-based (e.g., emojis) or text-based (e.g., commenting) actions. |

First, these functionalities are directly helpful in overcoming network effects. In fact, interoperability of content – i.e., enabling users to share, view and engage with content across different platforms without having to switch between services – has the greatest potential for overcoming network effects (CMA, 2020). Given that direct network effects occur when the value of a platform increases with its number of users, requiring interoperability of core functionalities means that smaller players benefit from shared direct network effects. In turn, they can more easily enter and compete on the market, thus providing users with a wider range of platforms to choose from. By providing users with the ability to establish a personalised presence on a platform, connect with others, and share content, social media platforms can foster a sense of community and encourage users to stay engaged. Additionally, the ability to directly interact with content further strengthens the sense of community and encourages users to continue using the platform. Jointly, these seven functionalities form a basic set of features that directly mitigating the direct network effects that have been limiting competitors' growth and reach.

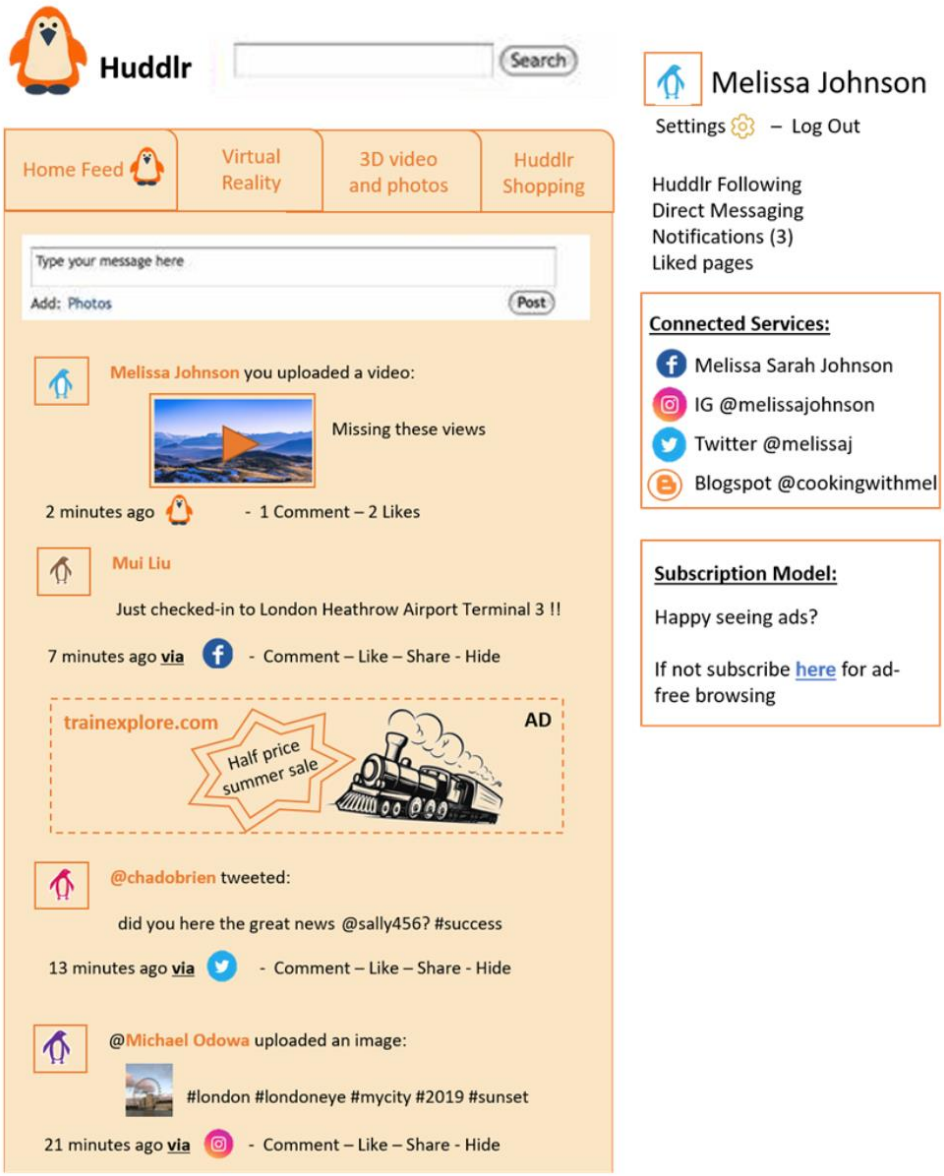
We do not consider the key functions we describe as being highly innovative for several reasons. Firstly, and most importantly, these functions have been part of social media platforms from the beginning and across the major social media platforms. While some of the functions were refined over time (such as the emoji-based reaction system on Facebook that allowed only a 'thumbs-up' in the beginning and now includes a wider range of emojis to choose from), their fundamental mechanism and purpose did not change. Secondly, today, none of the functions described above are a source of differentiation for social media platforms. Precisely because all platforms offer all functions, competition between platforms is based on other factors as for example (i) audience (e.g., business-oriented and serious users on LinkedIn vs. younger, joyous users on Snapchat), (ii) format (e.g., short-vertical video clips on TikTok vs. longer horizontal videos on YouTube) or (iii) user experience (e.g., competition on the quality of the recommendation algorithm).

Lastly, the key features in themselves are not detrimental to user's privacy or security. With all of the features, users have complete control over what information they share online or what content they interact with. Furthermore, users and platforms are subject to privacy regulations that of course continue to apply. However, close attention needs

to be paid that users continue to stay in control over the sharing of their content and data across networks. For example, users need to have the option to adjust the extent to which other (smaller) social media platforms can embed their data.

Following our assessment of the functionalities regarding their compatibility with the criteria suggested by the CMA, the question arises as to how this interoperability mandate should be introduced. As opposed to an all-at-once approach, we believe that the mandate should be rolled out incrementally to allow gatekeeper platforms to adapt to the new requirements. Thus, we recommend introducing the **mandate in three stages**. In the first stage, *Profile*, *Connections*, and *Followers* should be made interoperable. This would provide a solid foundation for the interoperability of social media platforms and allow users to seamlessly move between different platforms. In the second stage, gatekeeper platforms would be required to make *Text*, *Image*, and *Video Sharing* interoperable. This would significantly improve the user experience and enable greater competition among platforms. Finally, in the third stage, the obligation to make *Content Engagement* interoperable would be introduced. This would allow users to engage with content across platforms, regardless of the platform they are using. Overall, by introducing the mandate incrementally, we can ensure a smoother transition for gatekeeper platforms while still achieving our goal of greater interoperability and competition in social media markets. A rudimentary vision of how interoperable functionalities might look in practice has been provided by the CMA (2020), as illustrated by the user interface of the fictional social media platform “Huddlr” (Figure 1).

**Figure 1: Interoperable functionalities on the fictional platform “Huddlr”**




Source: CMA, 2020

## 4.2 Technical Feasibility

Technically, realising interoperability between social media platforms is anything but trivial. Already during the drafting of the DMA, intense debates about the technical feasibility were held with prominent voices arguing that having interoperability and end-to-end encryption (E2EE) at the same time are “somewhere between extraordinarily difficult and impossible” (Bellovin, 2022). Others argue that “interoperable end-to-end encrypted group chats are not just technically feasible; they already exist” (Brown,

2022). While some technical details would still need to be clarified, we have good reason to believe that our proposal is technically feasible.

Fundamentally, interoperability between any two systems can be achieved in two ways: (i) establishing common standards between the systems or (ii) using APIs to exchange data. Both options have their own advantages and pitfalls, and will be discussed by looking at messaging services. This is because in the messaging sector, interoperability regimes are already further developed compared to traditional social media applications. However, systems that can exchange messages for humans to read can also exchange messages intended for computers to read – and act on. We thus conclude that interoperability between social media platforms is technically possible – even more so since messaging is considered a "tough place to start" for introducing interoperability (Stoltz et al., 2022).

#### *4.2.1 Option 1: Open standards*

With open standards, different systems "speak the same language". This means that, in the case of messaging services, they have the same understanding of what a message is, how it is encrypted and how to handle the process of a message being sent from one user to another user.[1] When both systems speak the same language, a message that was encrypted in system A can be easily decrypted and read by system B. Considering solely privacy and security objectives, using a common standard would therefore be the preferred option.

Common standards are not new for regulating the internet. TCP/IP, HTTPS and TLS are the backbone of the internet, and they enable interoperable and encrypted network traffic between virtually every device.[2] However, implementing common standards across all services has some crucial drawbacks. First, the process of developing a new protocol is costly and lengthy. There already exist a handful of protocols that could support interoperable messenger services (e.g., Signal's Double Ratchet Algorithm, the XMPP OMEMO protocol, or Matrix's Megolm protocol). For interoperability between social media platforms, there will most likely be multiple standards that are complementary to each other because of the variety of different use cases (e.g., cross-

[1] For the sake of simplicity, we only describe one-to-one communication here. Since two-to-many communication is essentially the same since it only scales one-to-one communication (as done for example by the Signal Protocol and Matrix's Megolm protocol), this does not restrict the result of the analysis.

[2] Even though their development and adoption was at times slow (Björksten 2022).

posting, single sign-on across platforms, changing privacy settings etc.). The Fediverse, an ensemble of federated servers, currently uses at least four different communication protocols (ActivityPub, Diaspora Network, OStatus, and Zot & Zot/6).

Because standards play such a decisive role in the final product, developing them involves quite a lot of politics – even more so for industry-wide standards. A former official said about the European Telecommunications Standards Institute (ETSI), a standard-setting body responsible for the GSM and 3G mobile standards, that "if ETSI is the answer to [interoperability], then we need another question. It's slow, captured by commercial interest" (Brown, 2020, p. 13), adding that Facebook could "pack and delay" the standardisation process within ETSI for years (Brown, 2020). This implies that developing a new standard would take time and the result would probably favour existing gatekeepers as they have more resources to influence the process in their interest. Second, relying on common standards also increases the dependence on those standards. This is not only problematic in case of security flaws, but it also likely reduces innovation and flexibility for companies because every new functionality needs to be defined and standardised first. Third, even when there is an agreement on the standard to use, adapting the existing systems takes time. For example, Meta announced in 2019 that it would include E2EE into the Instagram and Facebook messaging systems and integrate their infrastructure with WhatsApp (Zuckerberg, 2019). Even though the company fully controls all the systems involved, the process only recently entered gradual roll-out. Finally, the very nature of the social media market makes common standards themselves "decreasingly useful for encouraging competition, as more and more user data are stored inside platforms' own system, with limited access for competitors" (Brown, 2020, p. 6). Strong and sound regulation would thus need to accompany a provision to use a single standard.

One example of an open standard that would enable an interoperable social media ecosystem is ActivityPub. The protocol makes social networks "interoperable, connecting everything to a single social graph and content-sharing system" (Pierce, 2023). The World Wide Web Consortium (W3C), the main international standards organisation for the Internet, published ActivityPub as a Recommendation in 2018 (Lemmer-Webber et al., 2018). The most prominent user of ActivityPub today is Mastodon, running on the standard since 2017 (Mastodon, 2017). However, more and

more applications are built on ActivityPub to create decentral and interoperable versions of, for example, YouTube and Instagram (Pierce, 2023). Furthermore, Facebook is said to build a text-based social network using ActivityPub and Tumblr plans to add support for the standard as well (Newton, 2023).

Because of the standard's decentralised nature, there is no single (or central) entity handling all of the activity on the platform. Instead, users are encouraged to set up their personal user-owned servers that communicate directly with each other without a central intermediary. In practice, not every user will maintain their own server of course, but they could in theory and with 12,375 instances currently running (Mastodon 2023), there does exist quite a large number of server-providers on Mastodon, for example.

Crucially, ActivityPub is interoperable, but at the same time decentralised (much like the email architecture). This is not necessarily in line with what we suggest in the proposal at hand, because the decentralisation aspect would be an un-proportionate provision considering that the gatekeeping platforms would have to rebuild their entire architecture from scratch even though demanding interoperability alone (the less extensive provision) does already address the relevant market forces, as described in Section 1.4.

#### *4.2.2 Option 2: Open APIs*

The alternative to teach everyone the same language is to "employ interpreters". Technically, this would involve open APIs that allow messages to be transported across systems and so-called bridges that do the actual translation. With this approach, every system can continue to use the standards and protocols that it is currently using.

While this requires less effort regarding standardisation, the bridging might reduce security because at the point where the message is translated, the plaintext message is exposed. Hence, close attention needs to be paid where the bridging is taking place: if it does happen at a central node in the network, a major security risk is created, and the conversation is no longer end-to-end encrypted. An alternative to centralised bridging would be to decentralise the bridging, i.e., implement it on the user's device. This avoids single points of failure (that are very attractive for attackers) and while there still is a place where the message is decrypted, this place is now where the message is shown in plaintext anyways. While technically, this approach is not end-to-end encrypted in the classical sense (encryption between applications), it still offers a high

level of security with encrypted communication between devices. An attacker would thus need to compromise a user's device and then exploit vulnerabilities - a tactic that requires a high level of expertise and resources and that would already now give access to a lot of information. E2EE between devices might thus be a solution to solve the trade-off between lock-in effects and security. Furthermore, it is important to note that the bridging would weaken security only when messages are sent between different platforms. Since companies can continue to use their own standards, the security of messages that are sent within a platform are not affected.

Next to solving the "language barrier", the API approach also needs to solve the identification problem. Platforms not only exchange messages, but they also include mechanisms to identify users and make them findable (via phone numbers in the case of Signal and WhatsApp, and via username in Instagram's messenger). There already exist a number of approaches to solve that problem, see for example Hodgson (2022). One drawback of APIs is that they are usually developed unilaterally by the provider. What makes the standard-setting process slow also makes it (to a certain degree) an equaliser between the parties by introducing a (more or less) open dialogue with an agreed-upon compromise at the end. In contrast, APIs are services that are provided by one party to another where the side that uses the API does not have a say in the API's development. The fate of large companies like Tweetbot after the massive changes to Twitter's API in early 2023 (Clark, 2023) are striking examples of the power asymmetry between API developers and their users. Thus, just like in the standardisation-option, accompanying regulation would have to ensure that APIs are offered in a fair manner that offers enough security for substitution services to build businesses upon. The crucial challenge for the API solution is thus to develop solutions that ideally not break E2EE – or break it in ways that de facto do not or only very minimally reduce security.

#### *4.2.3 Horizontal Interoperability facilitated by Open APIs*

Aside from technical debates, political actors disagree on the most politically favourable approach. While the DMA has decided to go down the API-road for messages interoperability, the French Conseil national du numérique argues that "the setting up of a common protocol for one or more functionalities is preferred compared to opening existing APIs for large platforms" (Conseil national du numérique, 2020, p. 44, *own*

*translation*). In light of the tedious development process of common standards, and to continue with the current DMA approach, we advise to use open APIs for social network interoperability. While common standards would be preferred from a technical point of view, it is politically and economically important to address the unsatisfying market situation in a timely manner. In order to create reliable APIs for social media companies to build sustainable business models, we suggest following the proposal of Article 48 DMA allowing the Commission to request European standardisation bodies to develop standards for interoperability. In our case, those bodies should be charged with developing and overseeing technical requirements for the APIs that facilitate the data transfer between gatekeepers and substitution services.

## 4.3 Legal Feasibility

The implementation of our proposal would similarly be legally feasible, i.e., smoothly integrable into the existing EU regulatory framework (see e.g., Brown, 2020). More specifically, building upon and going beyond the interoperability requirements for number-independent interpersonal communication services under Article 7 DMA, we advise the European Commission to add an explicit *ex ante* rule on interoperability for social media networks to the DMA. As was the case with the Revised Payment Services Directive which succeeded in addressing weak competition in the online banking market due to a lack of interoperability and resulting high market barriers for small fintech companies, we believe this will likewise help tackle similar issues in the social media market.

Article 12 DMA serves as the legal basis for our proposed amendment, considering that it grants the Commission the right to update obligations for gatekeepers to “address practices that limit the contestability of core platform services”, after having conducted a market investigation which has established the need to keep these obligations up to date (Art. 12(1) DMA). Article 12(5) DMA further specifies that the requirement of “limit[ing] the contestability of core platform services” is fulfilled if a practice is performed by gatekeepers and has the power to hinder innovation as well as limit choice for business and end users - either due to a strengthening of entry barriers (Art. 12(5)(a)(i) DMA) or a refusal to grant competitors the same access to a key input as the gatekeeper (Art. 12(5)(a)(ii) DMA).

Our proposed interoperability mandate for social media networks complies with these requirements: it aims to address the high market concentration of social media gatekeepers stemming from strong entry barriers as well as the limited access of competitors to access users' data - which arguably amounts to a 'key input' in the digital platform market. We have demonstrated that the current practice of dominant gatekeepers in the social media market is capable of impeding innovation and limiting choice for businesses and end users.

Moreover, Article 12(2) DMA provides various conditions regarding the scope of any amendment to the DMA with which our proposal is in line. Most notably, we propose asymmetrical interoperability obligations which would only apply to dominant social media platforms that qualify as gatekeepers under the DMA. This meets the requirement under Article 12(2)(a) DMA, obliging amendments to only apply to certain core platform services as defined under Article 2(2) DMA, to which online social networking services belong (Art. 2(2)(c) DMA). Next, we have shown that mandating interoperability to social media platforms is beneficial to other business users as well as end users (fulfilment of Art. 12(2)(b) DMA). Moreover, having identified core functionalities on social media which we propose to make interoperable, our proposal equally meets the condition under Article 12(2)(e) which requires that an amendment should only apply with regard to certain types of data.

#### *4.3.1 Remaining legal challenges*

Notwithstanding these promising prospects regarding the legal implementation of our proposal, a few legal challenges remain. One challenge relates to the implementation and enforcement of our proposed interoperability requirements. First, there might be a trade-off between speed and effectiveness, considering that it takes time to realise the comprehensive provisions proposed (see e.g., Bourreau et al., 2021; De Streel, Feasey, Kraemer & Monti, 2021). Second, the effective enforcement of our proposal likely requires high-level expertise and resources (see e.g., OECD, 2021). Based on Article 26 DMA, we therefore recommend the Commission to establish an oversight board with independent external experts and auditors in collaboration with the national competent authorities of the Member States to ensure compliance with the interoperability obligations. Third, an organisational challenge in this regard would be the considerable implementation and monitoring costs. However, according to the

OECD (2021), one option to offset these costs could be to require co-funding from dominant platforms, similar to what has been done in the case of the UK Open Banking initiative. Additionally, if the costs would turn out to be more substantial, they could be recuperated via a licensing fee charged to firms that benefit from the interoperability (Crèmer et al. 2017). Fourth, another difficulty stems from the fact that it might be challenging to identify *ex ante* which requirements are effective in attaining the goal of sufficient interoperability between social media networks (Riley & Vasile, 2021).

Next, a lack of privacy and security has been occasionally brought up to argue against a broadening of interoperability for digital platforms (Bourreau et al., 2022; see also Barczentewicz, 2021). However, it is important to note in this regard that Article 7 DMA on interoperability of number-independent interpersonal communication services includes a provision demanding that "the level of security, including the end-to-end encryption [...] that the gatekeeper provides to its own end users shall be preserved across the interoperable services (Art. 7(3) DMA). Following this, we propose to similarly include this requirement - where technically possible - when it comes to interoperability of social media networks, ensuring that a high level of security is guaranteed. Should absolute E2EE be technically impossible, for example because of bridging technologies, a high level of encryption between devices (instead of applications) should be mandated. In the same vein, Article 7(8) demands that gatekeepers only collect and exchange personal data of end users with competitors to the extent that "this is strictly necessary to provide effective interoperability" and in full compliance of the GDPR. In an analogous manner, we propose the appended article on interoperability for social media to encompass the same requirements concerning data protection.

Finally, comprehensive interoperability requirements have been argued to potentially interfere with the EU framework on intellectual property (Bourreau et al., 2021). As introduced in Section 3, competition law traditionally only rarely obliges dominant companies to "provide access to or licence its intellectual property rights" (Bourreau et al., 2021, p. 41), as restricted APIs are commonly considered to be trade secrets. Accordingly, legal issues pertaining to copyrights and patents may be involved within the scope of our proposal. However, as introduced in Section 3, Article 6 ECPD makes an exemption to copyright infringement if access to an API is essential to achieve

interoperability under certain conditions that are met by our proposal. Still, considering the issue of patent protection, the question remains as to whether API implementations are considered as “computer programs with a technical [or abstract] character” (Bourreau et al., 2021, p. 41). While a restricted API cannot be patented in the latter case, it may be patentable if it is “put to specific, technical use” (Bourreau et al., 2021, p. 41). Considering this controversial topic (see e.g., Hoffmann & Otero, 2020), further research into the compliance of an interoperability mandate for social media networks with EU-level patent protection would be needed. A potential solution could be to require gatekeepers to grant limited access to their (to date) restricted APIs, based on certain criteria that are in line with the technical provisions required to realise our proposal for interoperability for social media.

# CONCLUSION

The high market concentration of social media platforms has been subject to much debate in recent years, with concerns being raised over negative economic and socio-political impacts on consumers, businesses and society as a whole. Strong network effects, high switching costs, and (data-driven) barriers to entry contribute to a high concentration in the market which limits consumers' choices and stifles innovation. It is thus essential to find a solution that addresses these issues which are inherent to the digital economy - in order to enhance competition, innovation, and diversity in the market for social media networks and beyond.

To this end, we propose to implement an EU-wide mandate for horizontal interoperability directed at gatekeeping social media platforms. This approach differs from other solutions, such as breaking up large companies, by targeting the underlying economic mechanisms that contribute to the concentration in the market. Enabling smaller social networks to access data from seven core functions of social media platforms via horizontal interoperability helps them overcome competitive disadvantages due to strong network effects. These core functions are profile data, connections, followers, text sharing, image sharing, video sharing, and content engagement. We suggest mandating interoperability for those seven functions stepwise. Having such a provision levels the playing field and thus reduces harmful market concentration. Ultimately, this benefits consumers who will have greater

choices, more innovative platforms to choose from, and functions that cater to their specific needs and interests without being faced with high switching costs.

To support this proposal, we identified technical solutions to implement such an interoperability mandate, demonstrating its feasibility. Two approaches could achieve the goal of horizontal interoperability: common standards or open APIs. For a variety of reasons, we suggest adopting a regulation that mandates open APIs in order to give smaller social networks access to interoperable data. In this regard, close attention needs to be paid in order not to infringe on high standards of privacy and security, and to protect the rights of smaller social media platforms against larger incumbent platforms.

Moreover, we argue that mandated horizontal interoperability would fit within the larger European regulatory landscape, including Article 102 TFEU, the DMA, the GDPR, the Computer Programs Directive, and the Payment Service Directive 2. These regulations have been put in place to promote fair competition, protect consumers' rights, and promote innovation and diversity in the market and mandating horizontal interoperability would be consistent with these existing regulatory goals. Legal risks remain regarding intellectual property rights of technical programs. However, we are confident that they do not stand in the way of the larger goal of reviving a broken market.

Finally, in the future, it will be important to engage in a multi-stakeholder dialogue to discuss the implications of our interoperability regime for content moderation. This will allow for a comprehensive consideration of the potential challenges and opportunities ahead and enable stakeholders to identify effective strategies for addressing them. By fostering collaboration, we can work towards developing a shared understanding of the issues at hand and crafting solutions that will benefit all.

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