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SWITCHING AND INTEROPERABILITY BETWEEN DATA PROCESSING SERVICES IN THE PROPOSED DATA ACT

REPORT

December 2022

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The author would like to thank the whole academic team of this project, including Jan Krämer, Alexandre de Streel, Giuseppe Colangelo, and Sally Broughton Micova for the valuable input to this report.

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1. INTRODUCTION

The proposed Data Act (COM(2022) 68 final), henceforth DA, is a key part of the Commission's European strategy for data that complements the recent legislative efforts to facilitate more free flow of data (including, e.g., the Data Governance Act, the Open Data Directive, the Digital Markets Act and several sector-specific regulations on data sharing[1]). The Data Act contains four main parts. The first part (Chapters II-IV) addresses business to consumers (B2C) and business to business (B2B) data sharing. The second part (Chapter V) is concerned with business to government (B2G) data sharing. The third part (Chapters VI & VIII) contains provisions to facilitate switching and interoperability between data processing services and data spaces. The fourth part (Chapter VII) relates to international access and data transfers.

This issue paper deals exclusively with the third part of the DA, which devises new rules on customer switching and interoperability for data processing services and data spaces. Moreover, the issue paper takes an economic and technological viewpoint and does not discuss the possible legal issues that may arise with respect to this new regulatory framework in further detail. As in the third part of the DA, **the focus of the issue paper will be on data processing services**, which are defined in Art. 2 (12) of the DA as any "digital service other than an online content service […], provided to a customer, which enables on-demand administration and broad remote access to a scalable and elastic pool of shareable computing resources of a centralised, distributed or highly distributed nature". Thus, data processing services in the DA are equated with cloud and edge services in all their variety which span from Infrastructure-as-a-service (IaaS) offerings over Platform-as-a-service (PaaS) offerings to Software-as-a-service (SaaS) offerings. In consequence, the scope of these rules is different from the scope of the first part of the DA on B2B and B2C access that refers to manufacturers, service providers, data holders, and data recipients in the context of connected products and related services (i.e. the "internet of things").[2]

The rules on data processing services in the DA are intended to "**unlock the EU cloud market**"[3] by facilitating customers' ability to switch between data-processing services and build directly on the earlier **Regulation on the free flow of non-personal data**.[4] In order to promote a competitive data economy, this regulation called for a cooperative approach among stakeholders to develop self-regulatory codes of conduct that should establish **principles of transparency** and **interoperability** (considering also open standards) for data processing services.[5] The Regulation further specified four criteria that should be covered by the envisioned codes of conduct, including **best practices for**

[1] See, for example, the European Commission's recent proposal on a European Health Data Space (COM(2022) 197 final) as well as the initiatives on mobility, open finance and energy. See on the latter: Ennis and Colangelo (2022). Energy Data Sharing and the Case of EV Smart Charging. CERRE Report. https://cerre.eu/publications/energy-data-sharing-and-the-case-of-ev-smart-charging/

[2] See Krämer (2022). Improving the Economic Effectiveness of the B2B and B2C Data Sharing Obligations in the Proposed Data Act. CERRE Report. https://cerre.eu/publications/improving-the-economic-effectiveness-of-the-b2b-and-b2c-data-sharing-obligations-in-the-proposed-data-act/

[3] European Commission. Data Act. https://digital-strategy.ec.europa.eu/en/policies/data-act

[4] Regulation (EU) 2018/1807 on a framework for the free flow of non-personal data in the European Union, [2018] OJ L 303/59.

[5] Ibid., Art. 6.

facilitating the switching of service providers and the porting of data as well as minimum information requirements for data processing contracts.

Four years after the adoption of the Regulation on the free flow of non-personal data the European Commission has deemed the self-regulatory efforts of the industry and the developed code of conducts[6] insufficient to satisfy the criteria established in the regulation.[7] In consequence, the DA imposes mandatory rules on switching and interoperability between data processing services in order to achieve its **overarching objective of "unlocking" customers' data and mitigating the supposed vendor lock-in of customers in data services processing markets**. To this end the DA pursues two main goals:

Firstly, the **DA aims to facilitate the switching between data processing services** by removing commercial, technical, contractual, and organisational obstacles that may hinder customers to switch between providers of data processing services.[8]

Secondly, the **DA envisions establishing a seamless multi-vendor cloud environment**, which is viewed to be "a key requirement for open innovation in the European data economy".[9] To this end, the DA devises new interoperability regulation and standardisation regimes for data processing services.

The DA is a horizontal law and devised as a symmetric regulation. Thus, in principle, its rules apply equally to any provider of data processing services irrespective of firm size, market position or industry background. In general, this is consistent with the two primary goals of the DA to facilitate customer switching and to promote a seamless multi-vendor cloud environment. Also with respect to the overarching goal of mitigating vendor lock-in a symmetric regulation approach can be justified, as vendor lock-in can generally arise in the context of any data processing service if customers face significant barriers to switching.[10] However**, the symmetric regime also implies that the overall economic costs and the regulatory burden will generally be higher than for a more targeted asymmetric regulatory approach**, as all service providers must comply with the new rules. Moreover, the resulting compliance costs as well as limitations on the freedom to conduct a business **may affect smaller providers disproportionately more than larger providers**.[11] This is important to consider as **the DA is often also viewed as an instrument to address potential competition issues in the market for data processing services**.[12]

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[6] SWIPO – The Association on Switching and Porting (2022). Switching and Porting, https://swipo.eu

[7] Data Act, Explanatory Memorandum, p. 4.; Data Act, Recital 70

[8] Data Act, Explanatory Memorandum, p. 3;

[9] Data Act, Explanatory Memorandum, p. 3; Recital 76

[10] Especially data-induced switching costs can arise for any data processing service provider if the data created during the use of the services cannot easily be transferred to a new service. See Wohlfarth (2019). Data portability on the internet. *Business & Information Systems Engineering*, *61*(5), 551-574.

[11] Cf.: There is now increasing empirical evidence that the European General Data Protection Regulation has hurt smaller firms relative to larger firms and has led to increased market concentration in markets such as advertising and analytics. See Peukert, Bechtold, Batikas & Kretschmer (2022). Regulatory spillovers and data governance: Evidence from the GDPR. *Marketing Science 41*(4), 746-768. Johnson, Shriver & Goldberg (2022). Privacy & market concentration: Intended & unintended consequences of the GDPR. Available at https://ssrn.com/abstract=3477686

[12] Cf. Data Act, Recital 69; SWD(2022) 34 final. Commission Staff Working Document Impact Assessment Report, p. 50; ACM (2022), ACM (2022). Amendments to Data Act necessary for promoting competition among cloud providers. https://www.acm.nl/en/publications/acm-amendments-data-act-necessary-promoting-competition-among-cloud-providers

2. ECONOMIC AND TECHNOLOGICAL CHARACTERISTICS OF DATA PROCESSING SERVICES MARKETS

To assess the implications of the DA proposal, it is important to consider the specific economic and technological characteristics of the markets for data processing services.

2.1 Economic Characteristics

Foremost, data processing services markets[13] are characterised by **significant economies of scale**. Thus, a larger firm can operate at lower average costs when providing the same service as smaller firms. Firstly, this is due to the need for large investments into physical infrastructures that entail significant fixed costs. This applies especially to data centres, which house servers and network equipment that are crucial to providing data processing services of all types. Secondly, operating costs in these markets also decrease considerably with a larger scale.[14] In particular, data centres of larger size can operate at significantly lower average energy costs, which account for a large share of the total costs of a data centre.[15] Thirdly, quality-of-service features such as security and reliability are characterised by economies of scale. These features are usually developed or purchased by fixed investments, which can then be spread over the entire output, thus yielding decreasing average costs per unit of output. Fourthly, the provision and utilisation of shared resources, a core characteristic of data processing services,[16] implies scale advantages. A larger firm can utilise its shared infrastructure more efficiently, as the demand for this infrastructure balances across customers. The larger the number of customers, the less idle capacity needs to be reserved in relative terms of the entire shared infrastructure, thus leading to lower average costs per unit of output.

At the same time, data processing services entail **significant economies of scope**.[17] This is illustrated by the fact that today's largest cloud providers have developed their data processing services offerings by utilising and expanding the IT infrastructure originally established for the operations of their core business units.[18] Utilising an existing IT infrastructure can save large fixed costs and lump-sum investments, allowing instead for incremental upgrading of the necessary IT assets. Moreover, skilled human resources and technical expertise represent important inputs for developing data processing services. These skills and expertise are subject to significant learning effects. Hence, experienced providers with a broad developer base will have significant advantages over single-purpose providers when developing a new data processing service. In turn, many customers today ask for a wide variety

[13] Note that we use the term "data processing services markets" to refer to the various data processing services industries and services segments and do not intend to delineate any relevant market for competition law purposes. Therefore, when we refer to "data processing markets" in this report, we do not refer to a market as in the meaning of a relevant market in competition law.

[14] See Netherlands Authority for Consumers and Markets (2022). Market study into cloud services. https://www.acm.nl/system/files/documents/public-market-study-cloud-services.pdf

[15] Ibid; Banet, Pollitt, Covatariu & Duma (2021). Data Centres and the Grid – Greening ICT in Europe. CERRE Report. https://cerre.eu/publications/data-centres-and-the-energy-grid/

[16] Data Act, Recital 71

[17] See Krämer, Schnurr & Broughton Micova (2020). The role of data for digital markets contestability: Case studies and data access remedies. CERRE Report, p. 67f., https://cerre.eu/publications/data-digital-markets-contestability-case-studies-and-data-access-remedies/

[18] See, for example, Miller (2016). How AWS came to be. https://techcrunch.com/2016/07/02/andy-jassys-brief-history-of-the-genesis-of-aws/

of data processing services, such that offering a broad range of different, complementary data processing services can provide a competitive advantage.

Related to economies of scope, **bundling strategies are widespread for data processing services**, especially at the IaaS and PaaS layers.[19] While wholesale marketplaces also exist where independent service providers can offer data processing services that run on platforms of different service providers, the largest providers of IaaS and PaaS services now all offer **integrated ecosystems** spanning across specialised data processing services of different types and purposes. Due to synergies on the supply side and customers' frequent demand for a one-stop shop of different types of services, it is often economically advantageous for providers to offer bundles of data processing services that can be assembled and configured freely by each customer on their own. Such product bundling is frequently complemented by providers' pricing schemes that, for example, regularly offer lower fees for data transfers among internal services than for external transfers to services of other providers.[20] Moreover, quantity discounts and discounts for longer-term subscriptions may encourage customers to purchase services from a single provider.[21]

Finally, data processing services may be subject to direct and indirect **network effects**.[22] In particular, several providers of data processing services offer marketplaces, where customers can combine services of the provider with additional third-party components and services.[23] The larger a provider's customer base, the higher the incentives for third parties to adopt such a marketplace and develop additional services, and vice versa. Additional network effects can especially emerge at the SaaS layer, although they will usually stem from the specific characteristics of a particular service type rather than from the service's characteristic as a data processing service. For example, the value of a cloud-based office suite for a customer increases in the size of the overall customer base, as this makes it more likely that messages and documents can be exchanged and shared with others outside of their own organisation if no universal standard exists for such messages or documents.

Altogether, these economic characteristics favour larger providers of data processing services and promote concentration of markets for data processing services. Especially at the IaaS and PaaS layers, economies of scale and scope can be expected to be particularly pronounced.[24] These economic characteristics are conducive to a *competition for the market* dynamic, where providers offer integrated services ecosystems and compete based on different technical standards. This has two main implications: First, additional regulatory safeguards may be necessary to maintain the

[19] In general, product and service bundling is typical for various digital markets, as illustrated by the ecosystems of digital platforms (see, e.g., Recital 3 of the Digital Markets Act) and the earlier debate on service bundling in the context of "digital convergence" in the telecommunications industry (see, e.g., Pereira and Vareda (2013). How will telecommunications bundles impact competition and regulatory analysis?. *Telecommunications Policy*, *37*(6-7), 530-539).

[20] ACM market study, supra note 12; Lower fees for internal data flows can stem from lower costs for the service provider to transfer data on its own infrastructure, whereas external flows can result in higher costs that are then passed on to customers.

[21] See, e.g., https://aws.amazon.com/pricing/?nc2=h_ql_pr and https://learn.microsoft.com/en-us/azure/cost-management-billing/savings-plan/discount-application; Longer-term subscriptions also offer providers greater certainty and predictability regarding demand and thus facilitate the planning of capacity investments.

[22] See also the ACM market study, supra note 12 for a more detailed discussion of network effects in the context data processing services.

[23] ACM market study, supra note 12.

[24] Service differentiation and specialisation may counteract concentration tendencies from scale and scope advantages as well as network effects as discussed in the next subsection. However, for more general-purpose, less specialised service offerings economic theory predicts more concentrated markets due to the described characteristics.

contestability of these markets in the long run and to protect customers of data processing services. Second, competitors in these markets will often try to establish their own standards in order to differentiate their services from other providers. In these cases, interoperability regulation can restore a common standard thus promoting *competition in the market.* However, such mandatory interoperability regulation would come at the cost of limiting technological flexibility and potential innovation (as discussed further below) and can be at odds with the inherent economic forces and incentives in these markets, which would entail significant implementation costs, especially for regulatory monitoring and enforcement.

2.2 Technological characteristics

From a technological perspective, it is important to acknowledge that **the current data processing services environment is highly dynamic and data processing services are constantly evolving**. This applies to individual data processing services that are updated frequently with added new functionalities, but also to the overall set and variety of available data processing services, which grow steadily and include more and more new specialised services.

With respect to the software architecture of data processing services, there has been an increasing trend toward the **decoupling of software functionalities** and **modularisation of software into micro-services**. In the extreme, this has led to the paradigm of Functions-as-a-Service (FaaS), as most prominently exemplified by the concept of serverless computing.[25] Here, all computing resources are allocated on-demand and provided once a specific function in the software is called on runtime. In consequence, there is no need for reserving computing capacity, and developers, as well as users, do not need to be concerned with resource planning or configuration and management of the underlying software and hardware infrastructure. From a technical perspective, this requires that individual software functions are outsourced and provided as single-purpose micro-services that can be called externally through an interface. Upon request, these micro-services will then return an output according to a pre-defined specification such that the output can be processed by the software that has called the service.

Two main insights can be gained from these observations on the current state of technology of data processing services: On the one hand, the increasing modularisation of functionalities introduces the possibility that various data processing services can be mixed and matched into larger software ensembles and value networks. In principle, this would also allow for **ensembles of services that span across the ecosystem boundaries of a single data processing service provider** and thus could support the vision of a "seamless multi-vendor cloud environment". From an economic perspective, more granular software modules may also allow for more specialisation and promote service differentiation, which could counteract concentration tendencies from scale and scope advantages as well as network effects. On the other hand, however, increasing modularisation increases the need for **cross-cutting coordination, integration, and management of individual services** such that interoperability, performance, and high quality of service ensembles can be maintained. Such coordination and

[25] Roberts (2018). Serverless Architectures. https://martinfowler.com/articles/serverless.html

integration can often be achieved at lower transaction costs within the boundaries of a single organisation, whereas coordination and integration between organisations and across heterogeneous stacks of data processing services introduce additional complexity and costs.[26] Technically this can be solved by the **standardisation of interfaces** and respective input/output relations. However, such standards firstly hinge on an agreement between the involved organisations on the **precise requirements for each standardised type of service** and secondly they **codify the status quo of the current input/output requirements into the standard**. Standardisation thus renders changes and further developments on the cross-cutting level subject to more complex coordination, as actors need to agree on synchronous updates of the respective standard. From a technical and institutional view, this can be facilitated by regular updating mechanisms and corresponding procedural arrangements. In general, such inter-organisational coordination is easier to achieve if involved stakeholders participate voluntarily and share an aligned interest in establishing the standard.

[26] The manifold dependencies between micro-services and the need for intimate knowledge about the services' relations and properties also make it unlikely that such coordination and integration could be achieved by an emerging market of specialized third parties.

3. DATA PORTABILITY AND INTEROPERABILITY AS TWO DISTINCT CONCEPTS

The DA includes rules referring to both data portability and interoperability in the context of data processing services. Yet, the DA does not clearly distinguish between the two concepts, nor is it sufficiently clear as to which rules are intended to achieve each of them. This could lead to confusion in the interpretation of the rules. Therefore, here we elaborate on data portability and interoperability as two distinct concepts in detail (see also the illustration in Figure 1) and consider how the two concepts are related to the different goals of the DA.

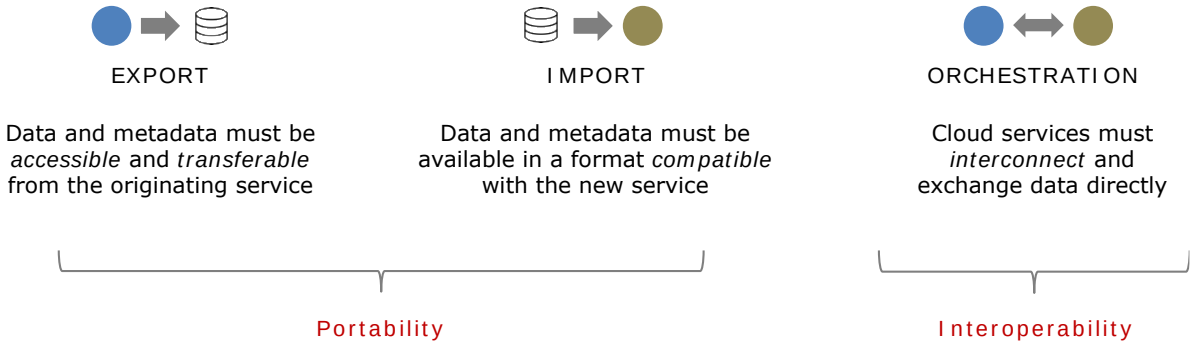

Figure 1: Data portability and interoperability as two distinct concepts.

3.1 Data Portability

Data portability in the context of data processing services requires that **data** that was created during the use of a service by a customer can be **exported from the original service provider and imported to the destination service provider**. In addition, data portability for data processing services should also include **metadata** (such as configuration parameters) that have been entered by customers to set up and configure their services, which would otherwise need to be re-entered manually at the new service provider.[27] In this context, it is important to distinguish between one-off data portability at a specified point in time and continuous data portability. In general, **one-off data portability is sufficient for the purpose of switching between data processing services**.[28] Thus, there is also no general need for application programming interfaces (APIs) to support the data export and import for the purpose of switching, as simple downloading and uploading of the data is generally sufficient to support the switching process.[29] What matters more is that the exportable data is available in a **structured, commonly used, and machine-readable format** such that the data can be transformed into a compatible format and imported and interpreted by the destination service.

[27] The portability of metadata is more intricate than that of data at the service level, as, e.g., some configurations or parameters may not be directly usable or interpretable by the new service. However, if metadata is provided in a structured, commonly used and machine-readable format, this should enable the destination service provider to access information that can facilitate configuration of services at the destination provider, especially in cases where the customer sets up the same services as at the original service provider.

[28] It may sometimes be the case that a switching customer needs to port its data more than once from the original service to the destination service, e.g., if the destination service needs to be tested with data from the original service before serving as the production system. However, this still does not require continuous data portability, as one-off data portability supports the repeated porting of updated data batches.

[29] APIs could nevertheless facilitate direct data transfers and thus could contribute to easier switching between providers.

3.2 Interoperability

In general, the concept of interoperability refers to **the ability of systems to exchange data and information**. In this vein, interoperability is a **prerequisite for the interconnection** of different systems.[30] In the context of data processing services, interoperability therefore makes it possible to combine different data processing services into **larger and more complex service ensembles**. Today, this is usually feasible within the environment of a specific provider of data processing services but is more limited to interconnecting services across the boundaries of different service providers. However, this may also depend on the service type, as several data processing services, especially at the IaaS and PaaS layers, contain open interfaces that allow for such interconnection on the service level (see, e.g., web servers or operating systems). In general, **interconnection between decoupled data processing services requires APIs that allow for the continuous and structured flow of data across services**. Interoperability of data processing services is viewed by the European Commission as a necessary requirement to reach the goal of a multi-vendor cloud environment.[31]

3.3 Lack of clarity due to mixing of terminology

In its most general form, the concept of interoperability allows for the interconnection of data processing services of different providers that are not of the same service type. A key feature of such **vertical interoperability** is that it allows to mix and match different services into service ensembles.[32] For example, a service ensemble may include the database service of one provider, the web server of another provider, and the payment service of yet another provider. In addition, vertical interoperability can be viewed as a prerequisite for **service portability**, i.e., the ability of a customer to move an entire data processing service from one provider to the other. Service portability goes beyond data portability, as the customer could port an entire data processing service and run this service on the provider's platform and infrastructure. However, this necessitates vertical interoperability between services and the underlying platform and infrastructure.

More specifically, **horizontal interoperability** refers to the interoperability of data processing services of the same service type. Such horizontal interoperability is imposed by several rules of the DA (see, e.g. Art. 29 (1)) and defined by Art. 2(19). However, it is not obvious what would be the general purpose of interconnecting two services of the same service type at runtime. While it could enable multi-homing of customers that want to use the same service type at two distinct providers and interconnect these two services, such a use case seems rather exceptional. Thus, in the context of these rules, the **definition of interoperability in the DA in Art. 2 (19)** refers to "the ability of two or more data spaces or communication networks, systems, products, applications or components to exchange and use data in order to perform their functions" could be viewed rather **as a requirement**

[30] See Bourreau, Krämer & Buiten (2022). Interoperability in Digital Markets. CERRE Report. https://cerre.eu/publications/interoperability-in-digital-markets/ for more details on interoperability in digital markets and a further distinction between the concept s of horizontal and vertical interoperability.
[31] Data Act, Explanatory Memorandum, p. 16.; Data Act, Recital 76
[32] CERRE report on Interoperability in Digital Markets, supra note 29.

on the portable data and its compatibility with the destination services. The literature has sometimes referred to such requirements as **data interoperability.**[33]

However, mixing the terminology risks confusing inherently different concepts of portability and interoperability. Therefore, we reiterate earlier calls from stakeholders[34] that the **DA should be clear about the two distinct concepts of data portability and interoperability** and clarify how these two concepts are related to the intended policy goals as well as the individual provisions in the DA.

[33] See, e.g., Drexl, Banda, Gonzalez Otero, Hoffmann, Kim, Kulhari, Moscon, Richter & Wiedemann (2022). Position Statement of the Max Planck Institute for Innovation and Competition of 25 May 2022 on the Commission's Proposal of 23 February 2022 for a Regulation on harmonised rules on fair access to and use of data (Data Act). https://ssrn.com/abstract=4136484; Hoffmann and Gonzalez Otero (2020). Demystifying the Role of Data Interoperability in the Access and Sharing Debate. *JIPITEC 11*, 252.

[34] Netherlands Authority for Consumers and Markets (2022). Proposal to enhance the draft Data Act. Based on a national market study into Cloud services. https://www.acm.nl/system/files/documents/proposal-to-enhance-the-draft-data-act.pdf

4. ASSESSMENT OF THE SWITCHING AND INTEROPERABILITY PROVISIONS IN THE DATA ACT

4.1 Provisions on Facilitating Switching Between Data Processing Services

4.1.1 Maximum notice period to terminate contract and maximum transition period

Article 23 is aimed at removing obstacles to effective switching between providers of data processing services. To this end, Art. 23 (a) specifies that **providers must allow customers to terminate their contractual agreement of a service within a maximum notice period of 30 days**. In consequence, customers may be able to change services flexibly and on a short-term notice. At the same time, however, such an obligation would severely limit the parties' freedom to conduct a business and interfere with the freedom of contract, even though the involved parties will regularly be businesses and not consumers. Moreover, in many other markets (including consumer markets), minimum contract durations are present and accepted as commercial instruments. **It is difficult to see what would justify such an exception to the norm for markets of data processing services.**

In addition, the obligation is not specifically targeted to the switching process itself and therefore runs the risk of unintended and adverse side effects. Long-term contracts can also be beneficial for customers of data processing services, especially if they receive rebates or price certainty in return. For providers of data processing services, longer and pre-specified contract durations allow for more certainty regarding demand and thus facilitate the planning of capacity investments. Most importantly, longer-term contracts may represent a valuable commercial instrument for smaller providers and market entrants to entice customers and retain those customers for a pre-specified period of time, which can foster the growth of these businesses.

In contrast, a **maximum transition period for the switching process itself** (after a service contract was terminated), as specified in Article 24 (1) (a), is more targeted to the switching process and can also reduce the uncertainty for customers who consider switching providers. A maximum transition period presents customers with a safeguard against undue delays during the switching process which could otherwise pose a business risk for customers. Delays and risks involved in switching processes have also been prominent issues in telecommunications markets. In response, sector-specific regulation has introduced additional safeguards and respective obligations on providers to protect customers against delays and uncertainties when switching providers.[35] Also based on this regulatory experience, we consider a maximum transition period **a suitable safeguard to facilitate switching** between data processing services.

[35] See, for example, the Directive (EU) 2018/1972 on establishing the European Electronic Communications Code, [2018] OJ L321/36, which imposes obligations on number portability and requires that "porting of numbers and their subsequent activation shall be carried out within the shortest possible time on the date explicitly agreed with the end-user. In any case, end-users who have concluded an agreement to port a number to a new provider shall have that number activated within one working day from the date agreed with the end-user."

In contrast to telecommunications markets, however, **switching data processing services between providers can be much more complex** depending on the type of service, the size of the customer and whether entire services ensembles are involved, among other factors. In addition, successful switching of data processing services does not depend exclusively on the original service provider but requires input and actions from the destination service provider as well as the customer. Therefore, the original service provider should only be subject to the maximum transition period if the customer and the destination service provider have completed their respective actions that are necessary for switching. In cases where these parties fail to do so, the original service provider should be exempted from the maximum transition period.

In cases where technical obstacles or exceptional circumstances make it unfeasible to comply with the maximum transition period, the burden of proof should be on the original service provider as specified by Art. 24 (2). This presumes that the customer provides the original service provider with all necessary information about the service to be switched. On the other hand, the customer and the destination service provider should bear the burden of proof that they have taken all of their necessary actions to complete the switching process within the maximum transition period.

4.1.2 Gradual withdrawal of switching charges

Art. 25 imposes the **gradual withdrawal of switching charges over three years after the publication of the DA**. The obligation targets potential financial barriers to switching that have been discussed by several analysts and regulators.[36] In general, the elimination of switching charges ensures that the customer's switching decision is based on an unbiased comparison of the benefits and costs of different competing data processing services. Therefore, customers should face **no extra charges tied to the switching process**. However, this does not imply that customers will not have to bear costs for regular performances of the original service provider as agreed upon in their service contract, e.g., with respect to costs for outbound data traffic.

It should be acknowledged, however, that to the extent that providers of data processing services incur additional costs for the switching of a departing customer, the symmetric regulation regime **may place a relatively higher burden on smaller providers** of data processing services.[37] This is because larger providers may be able to recoup or absorb foregone revenues from the withdrawal of switching charges more easily by adjusting general prices, spreading costs across a larger number of customers, or generally having access to greater financial capabilities.

4.1.3 Transparency requirements and minimum scope of portable data

Article 24 imposes conditions on the **contractual terms between the provider and the customer of a data processing service**. Article 24 (1) (b) stipulates **transparency requirements** according to which

[36] ACM market study, supra note 12; European Commission (2018). *Switching of cloud services providers*, prepared by International Data Corporation (IDC) and Arthur's Legal. http://publications.europa.eu/resource/cellar/799e50ff-6480-11e8-ab9c-01aa75ed71a1.0001.01/DOC_1; SWD(2022) 34 final. Commission Staff Working Document Impact Assessment Report.

[37] In telecommunications markets, charges for preselection and number portability services were initially addressed under competition policy and an asymmetric sector-specific regulatory framework. See, e.g., European Commission (1998). Commission terminates procedure against Deutsche Telekom's fees for preselection and number portability and transfers the case to national authorities. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1113

the contract must include "an exhaustive specification of all data and application categories exportable during the switching process". The text further defines a **minimum scope of portable data** according to which, the exportable data must comprise the data imported by the customer at the inception of the service agreement as well as all data and metadata created by the customer and by the use of the service (Art. 24 (1) (b)).

This mandatory minimum scope ensures that a customer can **export all of their data that has accumulated over the use of the service** and thus guarantees that the customer should not lose any data as a consequence of switching providers. In addition, the conditions **require that metadata (such as configuration parameters) that was created during the use of the service must be exportable**. This should facilitate switching by mitigating the need for customers to manually reconfigure all of their services at a new provider. Ideally, the exported data can be used to automatically configure services at the new provider and to replicate the quality-of-service functionalities within and across services (such as security and access control) in the environment of the new service provider. Although such automatic configuration may often be not straightforward from a technical perspective, as the metadata depends on the underlying infrastructure and services of the respective service provider, **making the data exportable in a structured, commonly used and machine-readable format** can provide a basis for destination service providers to facilitate data import and the switching process. In cases where the mandatory minimum scope of metadata could reveal **IP-protected information or trade secrets** to the detriment of the original service provider, the service provider should be able to exclude such selected information on an exceptional basis while bearing the burden of proof for demonstrating this.

These conditions on the minimum scope of portable data can be expected to **reduce opportunity costs and transaction costs for customers that want to switch providers** in a meaningful way. In particular, the portability of configurations of data processing services is important to reduce manual effort, which could otherwise be particularly high for customers that want to move larger and more complex ensembles of data processing services to a new provider. At the same time, the necessary **data export functionalities** and accompanying **transparency information** can be provided relatively easily from a technical perspective and can thus be considered proportionate even if they apply to all service providers symmetrically.

4.1.4 The functional equivalence criterion

The obligations on contractual terms and a minimum scope of data portability are complemented by **requirements on technical aspects of switching**.

Art. 23 (1) (d) requires providers of data processing services to ensure **functional equivalence** of a service when a customer switches to another data processing service, which covers the same service type, in accordance with Art. 26. Whereas the legal text of Art. 23 (1) (d) could be interpreted as functional equivalence being a general requirement for all data processing services, Art. 26 is more specific and states that only IaaS services are subject to functional equivalence. However, Article 29 then again discusses functional equivalence in the context of interoperability of data processing

services, which also includes PaaS and SaaS services.[38] Therefore, the **applicable scope of the functional equivalence criterion in the DA should be clarified**, especially with respect to Articles 23, 26, and 29.

Article 26 makes a **distinction between data processing services from the IaaS layer and data processing services from the PaaS and SaaS layers**. Article 26 (1) specifically requires providers of IaaS services to "ensure that the customer, after switching to a service covering the same service type offered by a different provider of data processing services, enjoys functional equivalence in the use of the new service." In contrast, according to Art. 26, providers of PaaS and SaaS services are not subject to such functional equivalence but are subject to obligations on open interfaces and interoperability as specified in Art. 26 (2) to (4), which will be discussed further below.

Functional equivalence itself is defined in Art. 2 (14) as "the maintenance of a minimum level of functionality in the environment of a new data processing service after the switching process, to such an extent that, in response to an input action by the user on core elements of the service, the destination service **will deliver the same output** at the **same performance** and with the **same level of security, operational resilience and quality of service** as the originating service at the time of termination of the contract" (emphasis added).

Thus, while Art. 24 (1) (b) defines the minimum scope of exportable data and metadata, functional equivalence addresses the **use of the ported data at the new service provider**. To eliminate any losses and opportunity costs from switching for customers, the functional equivalence test in the DA proposal aims to ensure that **the portable data and metadata are of sufficient quality and completeness such that, ideally, an identical service as the original service can be replicated at the destination provider**.[39] Although we agree with this intention behind the functional equivalence test and believe that it is important to include safeguards for the quality and completeness of portable data, we fear that the functional equivalence criterion as currently devised in the DA proposal is **difficult to operationalise** in practice.

In particular, the functional equivalence test seems to hold the original service provider responsible for the output, performance, and quality of the new service (see Art. 2 (14)). However, it is impossible for the original service provider to *ensure* functional equivalence (as stated by Art. 26 (2)), when such equivalence will depend crucially on the actions and the conduct of the provider of the destination service. Instead, the functional equivalence criterion should be clear that **the original service can only be held responsible for its own best effort in providing the exportable data in sufficient quality and completeness such that a destination service provider with the same capabilities as the original provider could replicate the original service.** This principle suggests that the functional equivalence test should be based on a hypothetical "sufficiently capable" service provider (which could also be the

[38] Also, Recital 72 of the DA states, seemingly in contrast to Art. 26, that "Functional equivalence means the maintenance of a minimum level of functionality of a service after switching, and should be deemed technically feasible whenever both the originating and the destination data processing services cover (in part or in whole) the same service type."
[39] See also Recital 72 of the Data Act.

original service provider itself) instead of the actual provider of the destination service.[40] We elaborate on this in our proposal for a revised functional equivalence test in Section 5.

4.1.5 Services of the same service type

The DA states that most of the rules on switching between data processing services (see Art. 23) as well as the functional equivalence test for IaaS services should only apply in the context of a customer **switching to a service of the same service type.** The concept of a service type is defined by Art. (2) (13) of the DA as "a set of data processing services that share the same primary objective and basic data processing service model". Although, on a broad level, it is to some extent intuitive what services belong to different service types (e.g., "data storage service" vs. "computing service" at the IaaS layer or "office suite" vs "enterprise resource planning software" at the SaaS layer), **such a distinction becomes much more intricate on a granular level**. For example, is a SaaS-based office suite that includes a video conferencing tool of the same service type as a stand-alone messaging and video conferencing service? Does a data analytics service belong to a different service type if it uses a different statistical approach than another analytics service? Here, the service type definition of the DA, which refers to the "primary objective" and the "basic data processing service model" of a service is not very helpful to resolve these questions and addressing the **need for establishing a wider classification of service types for all data processing services**. Given the large variety of data processing services that can also be highly differentiated between service providers, this introduces **significant uncertainty about whether and when a data processing service will fall within the scope of the respective obligations of the DA**.

4.2 Provisions on Open Interfaces and Interoperability of Data Processing Services

4.2.1 Publicly available open interfaces

Art. 26 (2) requires providers of PaaS and SaaS services to "make open interfaces publicly available and free of charge", presumably to facilitate switching between providers. However, if the primary goal of the DA is to facilitate the export and import of data and metadata for switching providers, **the benefits of publicly available open interfaces as described in Art. 26 (2) are not immediately evident** (see also Section 3). Instead, the requirements in Art. 26 (4) that the service provider "shall, at the request of the customer, export all data generated or co-generated, including the relevant data formats and data structures, in a structured, commonly used and machine-readable format" appear more targeted **to facilitate the one-off data import and export for the purpose of switching providers of data processing services.**

In the context of these technical aspects of switching, the Netherlands Authority for Consumers and Markets (ACM) has recently proposed to amend Art. 26 (2) to additionally state that open interfaces should be made available by providers of data processing services *for the purposes of portability and*

[40] For the operationalisation of the functional equivalence principle, it is informative to draw on experience in the implementation of the "Equivalence of Input" and "Equivalence of Output" concepts in telecommunications markets regulation, which were designed to ensure non-discriminatory "equivalence of access" for all competitors in downstream telecommunications services markets. See Commission Recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (2013/466/EU), [2013] OJ L 251/13.

interoperability.[41] If general interoperability of data processing services were indeed the primary goal of the DA, the need for publicly available open interfaces would be more plausibly justified from a technical perspective, as especially vertical interoperability would require the continuous and automated flow of data across service boundaries. Although Art. 26 (2) in the DA proposal does not explicitly refer to interoperability as a direct purpose, Art. 26 (3) and Art. 29 suggest that interoperability shall be achieved between data processing services at the PaaS and SaaS that cover the same service type.

However, as discussed in Section 3, the benefits of *horizontal interoperability obligations*, which would imply the interconnection of services of the same service type, are rather questionable. A switching customer is seldomly interested in interconnecting the old and the new service of the same service type, but is instead interested in switching from one to the other service provider. As highlighted before, we thus believe that with respect to horizontal relationships between services the focus of the DA should be on promoting data portability and making it feasible for the provider of the destination service to import and interpret the exported data in order to replicate the original service at low transaction costs. If such data portability proves ineffective in specific contexts, *vertical interoperability obligations* can present a possible but more involved approach to facilitate provider switching, e.g., by enabling service portability. However, this then requires an assessment of the technical feasibility as well as the costs associated with such interoperability obligations in the specific context of consideration.

In general, we are **sceptical that an unconditional interoperability regulation regime for data processing services would be desirable** given the economic and technical characteristics of data processing services markets outlined in Section 2. This scepticism is reinforced by the broad scope of Art. 26 (2) and (3) which would cover all data processing services at the PaaS and SaaS layer, which spans across numerous heterogeneous markets, industries, and service types. To avoid overregulation and adverse side effects (such as relatively higher burdens on smaller firms and less entrepreneurial freedom for new market entrants), mandatory interoperability regulation should in our view only be imposed if data portability proves ineffective in a specific market or if justified by the identification of market failures. In such cases, interoperability regulation should be tailored to the specific market of data processing services and their respective characteristics. Also, given the economic characteristics of data processing services markets, the simple lack of common market-driven standards would not suffice per se to justify broad interoperability regulation from an economic perspective.

This is not to say that interoperability should not and cannot play an important and valuable role in markets for data processing services. In particular, **voluntary standardisation initiatives** themselves can be feasible, especially if several competitors join such an initiative to compete with incumbent ecosystems of data processing services. By offering customers the option to easily combine services of different providers, by allowing them to move services across platforms and infrastructures of different providers and by removing technical risks of vendor lock-in, **interoperable systems of data**

[41] Netherlands Authority for Consumers and Markets (2022). Proposal to enhance the draft Data Act. Based on a national market study into Cloud services. https://www.acm.nl/system/files/documents/proposal-to-enhance-the-draft-data-act.pdf

processing services can promise customers additional business value over closed ecosystems of data processing services in such situations. Hence, there also exist market-driven incentives that can support the emergence of open standards for interoperable data processing services even when markets are characterised by a "competition for the market" dynamic. In addition, **voluntary standardisation among stakeholders is likely to involve much lower coordination and transaction costs** than in the case of mandatory standardisation. Hence, open interoperability standards may also emerge as a competitive response and alternative to proprietary offerings and closed ecosystems of data processing services.

4.2.2 Compatibility with open interoperability specifications or European standards for interoperability

Yet, Art. 26 (3) requires any provider of a data processing service at the PaaS and SaaS layer to ensure **compatibility with open interoperability specifications or European standards for interoperability**. The criteria and development of such interoperability standards are further detailed in Art. 29. In particular, Art. 29 (4) empowers the European Commission to adopt delegated acts to publish the "reference of open interoperability specifications and European standards for the interoperability of data processing services", such that these would become binding interoperability standards in accordance with Art. 26 (3). To this end, the Commission may also request "one or more European standardisation organisations to draft European standards applicable to specific service types of data processing services" based on Art. 29 (3).

Next to our concerns about the unconditional scope of the mandatory interoperability regulation rules in the DA, we are **sceptical about the effectiveness of the envisioned processes to establish mandatory standards** for a seamless multi-vendor cloud environment and **fear that mandatory interoperability regulation could inadvertently promote further market concentration to the detriment of smaller providers of data processing services and potential market entrants** if mandatory standards are not tied to an assessment of specific market characteristics or subject to additional conditions.

In our view, standardisation processes in practice can only work bottom-up and not top down, due to the technical expertise and industry knowledge required. In consequence, this implies that established service providers with large services ecosystems and strong market positions will have a strong influence on what the final (mandatory) standards will look like. Moreover, the potentially most innovative voices may not be participating in the standardisation process at all, as they may not yet have entered the market at all. In consequence, **such standardisation processes could run the risk of tailoring standards to the benefit of established providers, while reducing the potential for differentiation for competitors**. From a competition perspective, this is especially problematic as Art. 26 (3) of the DA would legally require all service providers to adopt such a standard if their service is deemed to be of the same service type as the specified standard. Whereas such risks can be mitigated by procedural arrangements that would require standardisation organisations to hear from smaller providers, such arrangements themselves can be prone to further complicating and slowing down the standardisation process.

In addition, **processes for mandatory standardisation would face significant technical challenges**, due to the technical status quo of the data processing services landscape as outlined in Section 2. On the one hand, there is a large variety of heterogeneous services, especially at the PaaS and the SaaS layers of the data processing services stack, which makes it **already difficult to classify services of the same service type that should be subject to a common mandatory standard** (see above). Even in cases where services provide common functionalities of the same service type, most services are likely to be differentiated with respect to other functionalities (think of different features in SaaS services such as Microsoft Teams and Slack). This raises **questions about the feasibility to specify a common standard for heterogeneous services and the value of partial standardisation in practice**. On the other hand, most data processing services are still evolving and are subject to rapid innovation cycles. In contrast, standardisation procedures between parties with diverging interests have proven to take a long time and are difficult to update once they are adopted.[42] Therefore, **mandatory standards run the risk of slowing down innovation and eliminating the emergence of new services** that do not comply with the existing standards. If, instead, a standard were only adopted under the DA if all service providers would voluntarily agree, the benefit of additional regulation seems limited, to begin with. Such a regulatory approach based on unanimous agreement also entails the risk that any service provider could "veto" a standard by non-cooperation, which is likely to render convergence to a final mandatory standard unfeasible.

Despite these costs and challenges of mandatory interoperability regulation, **there could be cases where the benefits of interoperability regulation outweigh the costs**. To identify such cases a more in-depth assessment of the costs and benefits of mandatory interoperability standards in the specific context of the data processing services under consideration is required. Therefore, **while mandatory interoperability regulation can represent a suitable tool to promote the goals of the DA, the introduction of mandatory interoperability standards should be tied to additional conditions**. In particular, we suggest that mandatory interoperability regulation should be considered if data portability is found to be ineffective in facilitating customer switching in specific markets or if interoperability rules can mitigate identified market failures (see Recommendation 4 in Section 5).

[42] The standardisation of the "Rich Communications Standard", a communication protocol for a richer mobile text-messaging service intended to replace SMS can serve as an anecdotal example for the complexity of standardisation processes even when providers' interests are generally aligned and the focus is on a specific service. See, e.g., Shim, Y., Lee, H., & Fomin, V. (2019). What benefits couldn't 'Joyn' enjoy?: The changing role of standards in the competition in mobile instant messengers in Korea. *Technological Forecasting and Social Change*, *139*, 125-134.

5. POLICY RECOMMENDATIONS

With respect to rules for data processing services, the DA mixes data portability and interoperability goals. To facilitate switching between data processing services it is important that data portability ensures customers' ability to export and import necessary data and metadata at the time of switching. In contrast, a general interoperability regime aimed at establishing a seamless multi-vendor cloud environment requires standardised interfaces of a wide variety and number of services to support continuous data flows. With respect to individual obligations, the DA should be clearer about the goals and purposes that should be achieved by the respective rules.

In this context, our main recommendation is that **the focus of the DA should be on strengthening data portability** and facilitating the switching between providers of data processing services by reducing barriers to switching and by lowering the transaction costs of customers. In this vein, **we agree on the essence of those proposed rules in the DA that aim to promote and facilitate effective data portability**. We believe that simplicity and clarity of these rules are of utmost importance for the DA's effectiveness. Therefore, we make specific recommendations on how to revise the functional equivalence criterion. Moreover, as a symmetric, horizontal regulation the main objective of the DA should be on establishing **a general framework of basic rules** that also considers regulatory costs and potential side effects on service providers of different size and variety. We are therefore more sceptical about the unconditional and potentially wide scope of mandatory interoperability regulation envisioned by the DA and recommend that **interoperability regulation and mandatory standards in the context of the DA should be tied to further justifications based on an assessment of specific market conditions and the effectiveness of data portability in the respective market.**

Recommendation 1: Keep obligations that ensure effective data portability (Art. 24, Art. 25), but remove the general right of customers to terminate any contractual agreement (Art. 23 (1) (a))

To this end, the **gradual withdrawal of switching charges** in Art. 25, a **mandatory maximum transition period** as specified by Art. 24 (1) (a) and the **definition of a minimum scope of portable data** as stated in Art. 24 (1)(b) represent suitable and targeted instruments. Switching charges here should refer to any extra charges tied to the switching process. Thus, customers still need to bear costs for regular performances of the service provider as agreed upon in their service contract. Obligations on the maximum transition period and the minimum scope of portable data should be **complemented by safeguards against anti-competitive use**. With respect to a maximum transition period, the customer and the destination service provider should bear the burden of proof that they have completed their own necessary actions to allow for a timely switching. With respect to the minimum amount of portable data, the original service provider should be allowed to exclude selected data points on an exceptional basis if it can demonstrate that such data will reveal IP protected information or trade secrets.

In contrast, a general maximum notice period for the termination of any contractual agreement as introduced by Art. 23 (1) (a) could have significant unintended economic effects and could even be detrimental to the interest of smaller providers of data processing services. In consequence, such a general limit on the freedom to conduct a business runs the risk of impeding competition and innovation in these markets and could indirectly hurt even customers of data processing services.

Thus, **we suggest removing Art. 23 (1) (a) on customers' general ability to terminate a contractual agreement of the service within 30 days.** Instead, a special right of termination in case of price increases or non-fulfilment of the contract should be sufficient to safeguard customers against potential exploitation of vendor lock-in.

Recommendation 2: Make Art. 26 (4) and Art. 24 (1) (b) the default data portability requirement for all data processing services

To ensure effective data portability, the DA should be foremost concerned with the scope as well as the quality and completeness of the exportable data. Therefore, we suggest that the obligation in **Art. 26 (4) should be the default requirement for all portable data** specified by Art. 24 (1) (b), and accordingly, **all exportable data should be made available "in a structured, commonly used and machine-readable format"**. This should ensure that a customer is able to export all data and metadata required to replicate the service at the destination service and guarantee that the ported data is available in an accessible and readable format that can be imported by the provider of the destination service. Given that these mandatory obligations would apply symmetrically to all data processing services, this represents a significant step beyond the current self-regulatory regime.

Recommendation 3a: Replace the functional equivalence criterion with a hypothetical "service replication test" that refers to the original service provider instead of the specific destination service

Related to the previous recommendation, we propose to significantly **revise the definition of functional equivalence and reconsider its applicable scope**. The functional equivalence criterion as defined in the DA proposal can be viewed as an additional safeguard for ensuring that exportable data is of sufficient quality and completeness to allow for the replication of the original service at the same output, performance, and quality level at the destination service provider. While the intention behind this is laudable, we believe that **making the original service provider responsible for actions and outcomes of another service provider stretches beyond the due responsibilities of the original service provider, possibly creates adverse economic incentives and would be difficult to enforce coherently in practice**. Moreover, such an implementation is likely to raise frequent controversies between the involved service providers about who would be responsible for a lack of service quality or performance, which in the extreme case could lead to excessive litigation. In consequence, this would complicate rather than simplify switching between data processing providers.

In addition, the functional equivalence criterion would raise frequent questions about what would qualify as a service of the same service type and what services would fall outside of this scope. This creates additional uncertainty for both the original service provider and the destination service provider. Therefore, we suggest **replacing the current functional equivalence criterion with a (hypothetical) "service replication test" that refers to the original service provider instead of the destination service provider** to ensure the quality and completeness of the exportable data. According to this revised functional equivalence test, the original service provider shall ensure that the exportable data is sufficient to replicate the original service at the same output, quality and performance within the environment of the original service provider without the need for additional internal data. In other words, the test ensures that the data, which can be exported from the original service provider could, in principle, be imported again at the same service provider and the customer

would end up with a replication of the same service as before. **This approach has two major advantages over the current DA proposal: i) service providers are not held responsible for the actions and conduct of other service providers and ii) there is no need for a general classification of service types for all data processing services**.[43] Overall, this would significantly simplify the implementation of the functional equivalence test and remove the inherent problem of requiring the original service provider to guarantee performances or outcomes that are under the control of the destination service provider. Moreover, it would allow customers to port data in sufficient quality and completeness to services that are not of the same service type, which may be a frequent use case, depending on how narrow a service type would ultimately be defined.

A potential drawback of this approach may be that if exported data was only available in a proprietary format, such data may be readable and processable by the original service provider but not by other service providers. In general, this should be prevented by making Art. 26 (4) a default requirement, which requires exportable data to be in a "commonly used and machine-readable format" format (see Recommendation 2). This could be further strengthened by **clarifying that exportable data must be in a non-proprietary format** that is readable and processable for service providers other than the original service provider.

The simpler "service replication test" could not only be applied to services at the IaaS layer, but could serve as **an approach that can universally be applied to all data processing services** (spanning across IaaS, PaaS, and SaaS layers) in order to ensure quality and completeness of the exportable data. In consequence, this would remove the need to distinguish IaaS services from PaaS services, which has been acknowledged to be very difficult if not unfeasible in practice.[44]

Recommendation 3b: In case the original functional equivalence criterion is maintained, clarify that the original service provider can only be held responsible for its own best effort

If, contrary to the previous proposal, the original concept of functional equivalence was maintained in the DA, Art. 2 (14) and Art. 26 (1) should be carefully **rephrased such that the original service provider shall only be subject to undertaking its best effort** in supporting the customer to replicate the service at the destination provider at the same output, quality, and importance. It should be clarified that the original service provider cannot *ensure* such outcomes at the destination service provider. In this case, the application of the functional equivalence criterion should remain limited to the IaaS layer, as the heterogeneity of PaaS and SaaS services make an assessment of functional equivalence and classification of the same service type even more difficult.

[43] In its spirit, the proposed test can be compared to the "equally efficient operator test" for a margin squeeze, which bases the test for a possible margin squeeze on a dominant firms' own retail operations rather than on the retail operations of the competing firm that would actually rely on the access input of the dominant firm. See Notice on the application of the competition rules to access agreements in the telecoms sector [1998] OJ C 265/2, para 117.

[44] ACM market study, supra note 12.

Recommendation 4: Mandatory interoperability standardisation and interventions based on delegated acts should be tied to the ineffectiveness of data portability in specific markets or the identification of market failures (Art. 26 (3), Art. 29)

Finally, we view **mandatory interoperability standardisation** as an approach that should be considered if either i) data portability and the obligations described above are found to be ineffective to facilitate customer switching in a specific data processing services market or ii) if other market failures are identified. Thus, Art. 26 (3) and Art. 29 should be amended accordingly to qualify that **mandatory compatibility with interoperability specifications and the publication of delegated acts should be subject to one of the two conditions** described above.

Such an amendment would clarify that effective data portability is the preferred general approach to address obstacles to customers' ability to switch between data processing services. Given the broad scope of the DA rules on switching between data processing services, which spans across a large variety of heterogeneous services, data portability rules are much more scalable than mandatory interoperability standardisation. Moreover, we fear that even for specific markets mandatory standardisation efforts could prove too slow to keep up with the highly dynamic and quickly evolving markets and technologies of data processing services. Therefore, universal obligations to comply with interoperability standards run the risk of endangering innovation in these fast-moving markets. These costs should be assessed and compared with the expected benefits of interoperability regulation. Moreover, as outlined in Section 4, we are sceptical that unconditional interoperability regulation can effectively address the underlying economic issues in the markets for data processing service. Finally, market forces could promote open interoperability standards based on voluntary approaches, which would have several advantages over mandatory interoperability regulation.

At the same time, our proposed amendments of Art. 26 (3) and Art. 29 would still allow the European Commission to revert to **mandatory interoperability standardisation** if data portability proved ineffective in specific markets or if other market failures were identified. Thus, the DA would retain mandatory interoperability standards as a "coercive" regulatory instrument and maintain the current "carrots and sticks" approach to push providers of data processing services to facilitate customer switching. However, it is important to note that the lack of market-driven convergence to a common standard should not be considered a market failure that would warrant mandatory interoperability standardisation per se. Given the economic characteristics of data processing services markets, it is likely that service providers will frequently compete for a specific market segment based on incompatible standards. Whether mandatory interoperability standards can indeed improve outcomes in such markets depends on **the actual competitiveness of these markets and the costs of interoperability regulation and mandatory standards,** which should therefore both be assessed ex-ante.

If, in fact, competition issues are considered a major problem in markets for data processing services[45], competition law and sector-specific regulation following an asymmetric approach are the more

[45] See e.g., the recent initiations of investigations into cloud services markets by national regulators: ACM market study, supra note 12; Ofcom (2022). Ofcom to probe cloud, messenger and smart-device markets. https://www.ofcom.org.uk/news-centre/2022/ofcom-to-

appropriate and more targeted approaches to address these issues. In this vein, one-off data portability should be established by the DA as the general rule for all providers of data processing services, whereas potential additional regulatory interventions, including mandatory compliance with standards, should be subject to an assessment of a markets' competitiveness and a provider's market power. Relying on the DA for such interventions without additional safeguards, would otherwise entail the risk that smaller firms would be disproportionately affected by regulatory obligations, which may even lead to heightened barriers for competition. In general, data portability has the potential to promote competition in data processing services markets, but its effectiveness hinges crucially on rule implementation and enforcement. This further calls for the symmetric regime of the DA to be as simple and clear as possible in order to avoid lengthy implementation procedures, regulatory uncertainty and ensuing litigation.

With respect to competition issues, it is important to note that the Digital Markets Act (DMA) designates cloud computing services as a core platform service and imposes data portability obligations on gatekeepers.[46] Hence, there are considerable **overlaps between the DA and the DMA with respect to data processing services, which also raises questions about the consistency of these rules.** Remarkably, several obligations in the DMA seem less demanding than corresponding rules in the DA, although the DMA specifically targets larger gatekeeper firms to address market contestability and competition issues.[47] In particular, data portability obligations for cloud computing services under the DMA do not explicitly refer to metadata, which is included in the default minimum scope stipulated by the DA.[48] Moreover, the DMA does not consider interoperability obligations with respect to cloud computing services. In contrast, the DMA may go beyond the DA in requiring gatekeeper providers of cloud computing services to provide business users with "high-quality, continuous and real-time access" to their data, as part of the DMA's obligation on data portability.[49] Ideally, **these overlaps and inconsistencies call for clarification and revision of the DMA rules on cloud computing services**. As a second best, the DA itself may clarify how its rules are supposed to interact with the DMA's provisions on cloud computing services from gatekeeper firms.

probe-cloud,-messenger-and-smart-device-markets; Autorité de la concurrence (2022). The Autorité de la concurrence starts proceedings ex officio to analyse competition conditions in the cloud computing sector. https://www.autoritedelaconcurrence.fr/en/communiques-de-presse/autorite-de-la-concurrence-starts-proceedings-ex-officio-analyse-competition

[46] Regulation (EU) on contestable and fair markets in the digital sector (Digital Markets Act) [2022] OJ L 265/1, Article 2 (2) (i).

[47] Ibid, Recital 7.

[48] Ibid, Article 6 (9) and (10).

[49] Ibid, Article 6 (10).

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