

# Cloud Computing in the EU Policy Sphere

## Interoperability, Vertical Integration and the Internal Market

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**Abstract:** Cloud computing is a new development that is based on the premise that data and applications are stored centrally and can be accessed through the Internet. This article sets up a broad analysis of how the emergence of clouds relates to European competition law, network regulation and electronic commerce regulation, which we relate to challenges for the further development of cloud services in Europe: interoperability and data portability between clouds; issues relating to vertical integration

between clouds and Internet Service Providers; and potential problems for clouds to operate on the European Internal Market. We find that these issues are not adequately addressed across the legal frameworks that we analyse, and argue for further research into how to better facilitate innovative convergent services such as cloud computing through European policy – especially in light of the ambitious digital agenda that the European Commission has set out.

**Keywords:** Cloud Computing; Economic Policy Concerns; European Law; Competition Law

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## A. Introduction

- 1 Cloud computing is currently viewed by many in the industry as the ‘next big idea’ that will see major information technology companies vying to compete.<sup>1</sup> It has also been described as providing computing resources as if it were a utility – accessible by anyone anywhere with an Internet connection, and always on tap.<sup>2</sup> Finally, it is regarded as an ‘extreme form of vertical integration, just carried out by other companies than the telecommunications service providers, and at higher levels of the protocol stack’.<sup>3</sup> Arguably, therefore, cloud computing stands to shake up the technology, telecommunications and media sectors for the next few years.
- 2 This change and innovation give rise to the question whether and how cloud computing policy should be approached on a European level. Cloud computing is a global phenomenon with impact on the in-

ternal market in terms of innovation and regulatory harmonization. European law has settled for a regulatory approach to the digital sphere in which competition law, regulation of networks and electronic commerce regulation are treated as separate legal regimes.<sup>4</sup> The main regulatory issue to address, therefore, is how to approach a cloud computing provider in regulatory terms – through competition law, network regulation, electronic commerce or across those fields.

- 3 The European Commission has circulated an ambitious digital agenda as part of the 2020 Lisbon strategy, highlighting the importance of innovative and convergent online services – such as cloud computing providers – for the European internal market.<sup>5</sup> Can available European laws accommodate the broad adoption of cloud computing facilities, while addressing possible concerns that arise along the way? How does European policy deal with the challenges raised

by the further emergence of cloud computing? Is the EU regulatory regime ready to meet this trend? The literature on cloud computing in relation to European law shows a strong emphasis on data protection, privacy and security issues.<sup>6</sup> We wish to introduce a different approach, focusing on the relationship of cloud computing to domains of EU law that have hitherto had less attention. This research sets up a broad framework to assess a number of European legal fields and their relationship to cloud computing. After a thorough analysis of the phenomenon of cloud computing on a technical and policy level, we will single out challenges that cloud computing services face as they develop to maturity as a market: data portability and interoperability constraints; the complexity involved in vertical integration between clouds and Internet Service Providers (ISPs); and potential problems for clouds to operate on the European Internal Market. We will then analyse how competition law, network regulation and electronic commerce regulation can address these potential challenges.

- 4 We will conclude that the challenges for cloud computing that we highlight cannot be addressed adequately by the existing European regulatory regime. We find that competition law addresses interoperability and data portability constraints for clouds only in an indirect way, through the abuse of dominance regime. At the same time, we find that the competition law framework for vertical integration is not very well tailored towards advanced online services such as clouds, mainly due to problems involved with market definition of the cloud sector. Moreover, competition law does little to streamline clouds' operation on the European internal market. European electronic communications (network) regulation only indirectly affects cloud computing services, as this regulatory framework mainly applies to the ISPs that carry cloud data. Here we see that network regulation is of little use to mitigate interoperability and data portability for clouds, and might not prevent the leveraging of market power by dominant ISPs into cloud computing markets. Finally, EU electronic commerce regulation is most applicable to cloud computing in terms of definitions, but it does little for clouds that is beneficial. The guidelines on jurisdictional issues of the Electronic Commerce Directive will most likely not streamline operating on the internal market for cloud service providers, and the Directive's provisions on secondary liability are increasingly coming under pressure by courts and governments.
- 5 In all these fields that we analyse, cloud computing seems to exceed the scope of the provided legal mechanisms. The disconnect in legal scope between clouds and the laws that concern clouds demonstrates that the fields of competition law, network regulation and electronic commerce regulation remain more distinct than would be desirable in the

light of convergent practice. Cloud computing forms a new, hybrid technology that is affected by all of the above legal instruments, yet we find that clouds are over-regulated on matters of minor importance, while aspects that could seriously stifle the further emergence of cloud computing remain legally unaddressed.

- 6 As Iansiti has argued, we need to investigate how the principles behind cloud computing relate to existing policy rationales.<sup>7</sup> This article aims to function as a first attempt at providing a guide to cloud computing on a European policy level with a focus on competition law, network regulation and electronic commerce regulation. As such, we argue that these legal domains are not prepared to accommodate the further advent of cloud computing. Our article offers a critical roadmap to the status of clouds under these specific and interrelated fields of European law, and provides suggestions for a more elaborate research agenda on cloud computing in the EU policy sphere.

## B. On cloud computing: Definitions, market, policy

- 7 Cloud computing is a new development combining different services in a manner that arguably revolutionizes computer and Internet usage. The central feature of cloud computing is that existing and novel computing applications are increasingly being performed in a 'cloud' online – i.e. not on users' own hardware.<sup>8</sup> The announcement by Google and IBM of their collaboration on cloud computing research in 2007 sparked broader public awareness of cloud computing.<sup>9</sup> The 'revolutionary' aspect of cloud computing, however, may sometimes be overstated, as many applications of cloud computing – think of webmail – have been around since the Internet became popular for consumers.<sup>10</sup> Indeed, some have remarked that the move to cloud computing demonstrates a cyclical progression in computing: from centralized mainframes, to personal computers, to personal computers tied together in clouds.<sup>11</sup>

### I. Relevant characteristics of cloud computing

- 8 The underlying idea of cloud computing seems to be that functions that are now discharged either on the client or on the firm-internal local area network (LAN) server would be moved to the 'cloud'. The possibility of placing in the 'cloud' well-established local applications such as word processors or spreadsheets – and the documents produced therewith – has caught the public imagination and has brought cloud computing to the fore.

- 9 The nascent academic field that analyses cloud computing has developed many formal definitions of this phenomenon,<sup>12</sup> yet the recent set of precise definitions provided by the US National Institute of Standards and Technology (NIST) is rapidly becoming authoritative. We find the NIST definition of cloud computing a useful starting point. It mentions five defining characteristics of cloud computing: on-demand self-service, broad network access, resource pooling, rapid elasticity and measured service.<sup>13</sup>
- 10 (1) On-demand self-service implies that consumers have unilateral access to different cloud services whenever required. These cloud capabilities are available through (2) broad and ubiquitous network access, a virtual web platform accessible through a variety of devices—PC's, laptops and smartphones, for instance.<sup>14</sup> Such ubiquity distinguishes cloud computing from previous stages of evolution in computing:<sup>15</sup> cloud services are accessible from any point, over any network, using any device.<sup>16</sup> Because of this ubiquity, cloud computing enables (3) resource pooling (also referred to as multi-tenancy<sup>17</sup>), which means that a cloud offers access and services to multiple at the same time, and computing resources are assigned flexibly based on demand.
- 11 Resource pooling allows for (4) rapid elasticity, or mass customization<sup>18</sup> of computing power both on the demand and supply side: From the supplier's perspective, choices and options for consumers can be built into the software platform. Customers pick and choose on their side of the platform, in a process that can be automated easily.<sup>19</sup> The provider can thereby reap economies of scope, which are the essence of mass customization.<sup>20</sup> Accordingly, from the customer's side, cloud computing services can appear customized: customers get the right amount of services, with the combination of features and options that matches their needs.<sup>21</sup> For suppliers versed in a server-client model, the shift to cloud computing marks a radical change in the business plan: instead of selling software licenses, suppliers must move to an access- or subscription-based business model, whereby customers will purchase services offered on the cloud computing platform on a discrete (pay-as-you-go/access) or continuous (subscription) basis. For (corporate) consumers of cloud computing power, clouds in fact represent a form of outsourcing of IT services that used to be run in-house. Therefore, moving to cloud computing involves significant organizational change, which will usually imply that larger customers will have specific requirements regarding privacy, data protection and security, confidentiality, reliability, etc.<sup>22</sup>
- 12 The demand for IT outsourcing that cloud computing affords can be explained by multiple interrelated factors. The proliferation of digital data has created a demand for large amounts of processing power and storage owned and operated by third parties instead of by the users themselves.<sup>23</sup> Moreover, the Internet economy has so far both stimulated and thrived upon bottom-up market entry by small-scale startups,<sup>24</sup> for which cloud computing services offer opportunities to enter markets and innovate, without having to invest in costly hardware and other resources.<sup>25</sup> Furthermore, outsourcing through cloud computing meets a demand for 'utility-like' access to computing resources, which are available 'ontap' for a subscription fee.<sup>26</sup> This can be seen as a commoditizing effect on the market for online computing power.<sup>27</sup>
- 13 The rapid elasticity of cloud computing, finally, is facilitated by the (5) measured service provision that clouds enable: resource allocation can be measured and disclosed, 'providing transparency for both the provider and consumer of the utilized service'.<sup>28</sup>
- 14 Combining these five characteristics, cloud computing can thus be described as 'a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources ... that can be rapidly provisioned and released with minimal management effort or service provider interaction'.<sup>29</sup> This definition, however, does not address the wide variety of applications and services that are available through a cloud today. We want to distinguish different implementations of cloud computing in order to explain the phenomenon of cloud computing more accurately. At this stage of development of the cloud computing market, however, it would be premature to analyse systematically how subcategories of cloud computing individually relate to European regulation. Further implementations are likely to be added as cloud computing takes off, as well as further examples of the categories below. Following the same NIST scheme, we propose a subdivision as follows:
1. Software as a Service (SaaS): This is the most visible application of cloud computing on the consumer market. It involves access to services without having to install additional software on a computer. Applications such as Google Maps, YouTube and Salesforce's CRM are run from a cloud and involve data-intensive operations that are executed in the cloud, returning the results to the user.
  2. Platform as a Service (PaaS): These services offer remote access to development platforms for software without the need for buying and deploying the necessary software and hardware for this 'on the ground'. Platforms such as Microsoft Azure, Google App Engine, Servoy and Salesforce's force.com allow application builders to design, implement and run their products using the firms' own server power.

3. Infrastructure as a Service (IaaS): An IaaS offers remote computing and storage services. Consumers or corporate clients can store or backup data on servers with unlimited capacity. For instance, the *New York Times* makes available its archive from 1851 through 1989 via the Amazon S3 server.<sup>30</sup>

## II. Potential economic policy concerns surrounding cloud computing

- 15 In the following section, we will carry out a preliminary examination of potential economic policy concerns surrounding cloud computing. This examination is conducted in the light of the characteristics outlined above, on the basis of a rudimentary model, whereby a number of cloud computing providers (two for the sake of simplicity) compete to sell their services to an enduser.<sup>31</sup> This enduser, however, is using those services in various locations and with various devices (computer, smartphone, tablet, etc.). In order for the enduser to consume cloud computing services, a link between the cloud and the enduser must be established. That link runs over an IP network, which can rest on a variety of underlying architectures (DSL, cable/DOCSIS, cellular mobile [GPRS/EDGE/3G and further developments] or wireless (wi-fi, WiMAX, etc.).
- 16 In the first part of this analysis, we will assume that the link to the enduser is provided by a single supplier – at cost plus reasonable return and in a uniform and non-discriminatory fashion across different network types – in order to focus on concerns that could arise horizontally at the cloud computing provider level. Second, we will introduce multiple (and partly competing) network providers in the model to ascertain which vertical concerns could arise through the interplay of cloud computing providers and network providers.

### 1. Concerns at the cloud computing provider level

- 17 Assuming for the sake of argument that the link between the cloud and the user is always available at a reasonable price under uniform and non-discriminatory conditions across the various networks, we can concentrate for this section on competition between the cloud computing providers as the main phenomenon to study. Here, two features described above – outsourcing and mass customization – are relevant. First of all, the outsourcing of data storage and computing power naturally involves the delegation to clouds of data processing formerly run in-house. As in all outsourcing agreements, this creates depen-

dency of the outsourcing client on clouds. Second, this dependency is reinforced by the mass customization of the service, which implies some relationship-specific investment from the customer (to configure the services to its needs, in terms of features, consumption volumes, etc. and then to upload consumer-specific data on the cloud).

- 18 For cloud computing providers following a model of mass customization, there is limited interest in engaging in relationship-specific investments. Nevertheless, the relationship-specific investments from the customer side can suffice to create some product differentiation. In other words, there is a risk of the customer becoming locked in with the supplier. In that case, providers could conceivably create switching costs – for instance, by limiting the portability of customer data to and from competing services to enhance customer lock-in.
- 19 Indeed, the emerging literature on cloud computing has voiced concerns about consumers' demand to migrate data to and from different clouds (data portability),<sup>32</sup> and interoperability between clouds.<sup>33</sup> This is in essence a horizontal issue: potential interoperability and data portability constraints impede on the possibility for consumers to use complementary cloud services alongside each other and migrate their data from one cloud to another. At the same time, if potential customers find that the risk of lock-in is too high, they will refrain from purchasing cloud computing services altogether, or request assurances from cloud computing providers. So there is a trade-off, and cloud computing providers cannot enhance lock-in at will. Yet even if switching costs are kept in check, in order to induce uptake of the services, they might still be high enough to discourage the entry of new cloud computing providers. Consumer lock-in due to limited data portability and interoperability can thus be seen as a key challenge for the further development of cloud computing.<sup>34</sup>

### 2. Concerns at the ISP/network operator level

- 20 Second, the characteristics of cloud computing, as set out above, imply that data will have to be carried between cloud service providers and consumers. In the above section, we assumed away any concerns regarding the link between the cloud and the consumers for the sake of argument. In practice, however, that link is very significant for our analysis. Herein lies a key difference from the computing models used until now, where the link between the central and non-central units was part of the computing architecture and under the control of the provider or the customer: either it was a mere conduit (mainframe-terminal) or a local area network (server-client). In a cloud computing model, the link is in the

hands of third parties. What is more, because of ubiquity, it is part and parcel of the cloud computing model that service provision for a single cloud computing customer can run over various types of links, operated by different third parties, depending on where the customer is located and which type of device (and network interface) it is using. In other words, customers expect to have the same service, with the same quality and 'feel', irrespective of whether they reach the cloud computing provider via an ADSL network in Brussels, a hotspot in London, or a 3G network in Paris.

- 21 Therefore, unless cloud service providers plan to rollout their own networks – which only Google is planning to do on a small scale<sup>35</sup> – this required transfer of data between the cloud and the customer requires cloud providers to interact with Internet Service Providers (ISPs) or network operators. A number of remarks must be made here.
- 22 As a preliminary matter, contractual relationships between the cloud provider, the customer and the ISP are complex. The cloud computing provider (CCP) and the customer are bound by an agreement for the provision of cloud computing services. This agreement assumes that a means will be found to transfer data between the cloud and the customer. This is when ISPs step in. Presumably, the customer at any given time and location has a contractual relationship with an ISP at his or her end (ISP<sub>cust</sub>); otherwise the customer is unable to send and receive data. This can be a permanent relationship (subscription) or a temporary one (permission to use hotspot or Wi-Fi services, roaming). Given the desired ubiquity of cloud services, the identity of ISP<sub>cust</sub> might vary from time to time and from one location to another. However, at any given time and location, the customer is usually reachable through one ISP<sub>cust</sub> at a time.<sup>36</sup> As will be further elaborated upon below, ISP<sub>cust</sub> thereby gains some market power (i.e. a situational monopoly, even if transitory), in a way reminiscent of the terminating operator in traditional telecommunications. In turn, the CCP must also have a relationship with an ISP (ISP<sub>CCP</sub>) in order to branch out of the cloud and towards the customer. ISP<sub>CCP</sub> can be the same as ISP<sub>cust</sub>, or the CCP can indirectly rely on ISP<sub>CCP</sub> having some form of arrangement (peering, routing) with ISP<sub>cust</sub>. It will already be apparent that, given ubiquity, a CCP must entertain and maintain relationships – direct or indirect – with a large number of ISPs that might potentially qualify as ISP<sub>cust</sub> at any given time and customer location.<sup>37</sup>
- 23 ISPs find themselves in a difficult strategic position at this juncture: their service – Internet access – has been on a path to commoditization over the last decade. Access-based tariffs have been replaced by monthly flat-rate subscriptions, and even though the quality of the services has increased steadily – at least if speed is a reference – subscription prices have decreased. Yet ISPs must undertake significant investments to upgrade access networks to the capacity and performance level needed to use the next-generation applications (usually involving video). In order to generate the revenue streams needed to finance such investments, ISPs are driven to try to break the trend towards commoditization by introducing differentiated offerings. Among other means of differentiation, ISPs can turn their networks from mere conduits to two-sided platforms,<sup>38</sup> where content, service and application providers meet users. In order to do so, they need to generate mutually reinforcing network effects on both sides of the platform – for instance, by adding features to their network that enable them to offer better Quality of Service (QoS) parameters.<sup>39</sup> If and once ISPs embark on a differentiation strategy, two potential concerns could arise.
- 24 A first concern relates to *vertical integration and discrimination*. ISPs can decide to make cloud computing part of their differentiation strategy, i.e. to try to gain a competitive advantage through the offer of cloud computing services. This could be done either on their own motion (greenfield entry),<sup>40</sup> via vertical integration with a CCP, via some form of preferential agreement with a CCP or even unilaterally by giving a preferential QoS level to a given CCP provider.<sup>41</sup> In all these situations, by implication, the ISP would discriminate against competing CCP providers in favour of its own/affiliated/preferred CCP. Vertical issues have already been mentioned repeatedly in the literature as being of key importance in the further development of cloud computing.<sup>42</sup> Yet it seems that ISPs have strong incentives to interact with CCPs and not to engage in discriminatory practices. Since cloud computing services must be ubiquitous and CCPs are unlikely to rollout their own network to reach their users, as mentioned above, CCPs will want to ensure that their services are available through as many ISPs as possible. Moreover, two-sided-platform theory predicts that ISPs benefit from offering access to as many CCPs as possible,<sup>43</sup> since this makes their platform more attractive to users. Clouds and ISPs thus seem to have strong incentives to interact amicably.
- 25 A second concern arises more clearly in Europe and is related to the *internal market*. In principle, CCPs have little to gain from ISP efforts to escape commoditization by turning their services into two-sided platforms. From the perspective of the CCP, it is preferable if the ISP rather invests in upgrading its network so as to provide the best possible commodity service, i.e. Internet access at the highest possible speed, with the best possible quality of service. The situation in Europe is already complicated enough, when compared to the USA. Following consolidation in the USA, a CCP in fact must deal with only two large providers of fixed and mobile line communications,<sup>44</sup> two additional mobile com-

munications providers<sup>45</sup> and a few large cable-based ISPs. In the EU, each of the 27 Member States comprises a few mobile communications providers (one of which is usually the fixed-line incumbent) and perhaps a couple of competitive fixed communications providers, including cable-based ISPs. Despite some consolidation at the European level, business plans are still essentially made at the Member State level. Accordingly, a CCP would have to oversee upwards of 100 ISPs to ensure that its service is ubiquitous. If these ISPs all decide to embark into differentiation strategies, then a CCP could be left with a patchwork of different ISP platforms to contend with. Since these platforms would offer varying levels of Quality of Service, it could become impossible for CCPs to implement ubiquity (with a constant feel across ISPs), at least in Europe. At present, the TCP/IP protocol, with its end-to-end principle and best-efforts routing, is used across Europe, so this issue does not truly arise. The internal market is fostered by the same token. With the implementation of QoS differentiation, as part of an effort by ISPs to escape commoditization, the internal market could become fragmented so that CCPs would not be able to deploy ubiquitous services across the EU.

- 26 Contrary to interconnection, it is not possible to deal with QoS differentiation among European ISPs simply via contracting, i.e. entering into an agreement with one ISP and relying on this ISP to provide uniform QoS across the EU, just like major ISPs can offer universal connectivity to their customers. The problem is not so much transaction costs arising from a contractual maze (as with interconnection), but rather the fragmentation among QoS offerings across the EU. Aggregating all those various QoS offerings in the hands of one contractual partner for CCPs does not overcome that fragmentation as such.
- 27 In summary, three potential concerns come up when approaching clouds from a (European) economic policy perspective. First, we find *interoperability and portability* concerns between cloud computing providers. Second, we find that *vertical integration and discrimination* issues could arise between CCPs and ISPs if ISPs decide to integrate vertically into cloud computing. Third, we find that the *internal market* could be fragmented by a patchwork of different ISP platforms and their various network management policies so that CCPs could not provide ubiquitous services, i.e. services with the same 'feel' and quality across the many ISPs present in the EU.
- 28 In the rest of this paper, therefore, these three concerns will be addressed specifically when assessing how cloud computing relates to European law. We will embark on this endeavour by outlining what effect European competition law, network regulation and electronic commerce regulation have on the development of cloud computing.

## C. Cloud computing under European law

- 29 As in the policy concerns set out above, the following outlines the possible approaches to cloud computing in European law and policy. As described above, cloud computing in essence is an IT service for which there is no explicit regulation on a pan-European level. Nonetheless, three European legal regimes are potentially relevant to the concerns set out above: EU competition law, EU electronic communications regulation and EU electronic commerce regulation.

### I. The regulatory division of labour

- 30 Before examining each of these three regimes, the 'regulatory division of labour' among them must be briefly explained. On the one hand, EU economic regulation is characterized by a rich and complex relationship between competition law and sector-specific regulation. On the other hand, the regulation of the converged telecommunications and media rests on a distinction between network regulation and content regulation. Both these interactions between legal fields have an effect on cloud computing services, as will be illustrated in this section.
- 31 The first legal articulation that has an effect on cloud computing is between sector-specific regulation and general competition law. As is now well established, EU law proceeds differently from US law: under EU law, competition law is always applicable across the whole economy, irrespective of any sector-specific regulation.<sup>46</sup> Accordingly, sector-specific regulation is always formulated against the backdrop of competition law, with some implications. At the systemic level, rightly or wrongly, sector-specific regulation is seen as a temporary phenomenon which complements competition law until such time as competition law alone can suffice to police the sector in question.<sup>47</sup> At the substantive level, sector-specific regulation relies on economic analysis and borrows concepts from competition law. At the institutional level, competition and regulatory authorities are meant to coordinate their actions. For instance, in electronic communications regulation, heavier obligations are only available against operators holding 'Significant Market Power' (SMP). The SMP concept in turn is based on the concept of dominance under general competition policy – in an attempt to dovetail the two regimes and avoid a proliferation of competition standards.<sup>48</sup>
- 32 Regulation of content, by contrast, does not overlap as much with competition law as electronic communications regulation. Accordingly, the policing of proper market functioning is by and large left to competition law, including state aid law – which

plays a large role in regulating public broadcasting. Sector-specific regulation of media and broadcasting has traditionally pursued other objectives, beyond proper market functioning, such as plurality and cultural diversity, with a strong role for national politics in the policymaking process.<sup>49</sup> The harmonizing attempts in the content sector have a more 'vertical' character than in telecommunications, and content regulation is concerned more with guaranteeing the internal market freedoms.<sup>50</sup> There is a wide range of content-related regulation, yet we wish to focus on the regime that is most related to cloud computing: the Electronic Commerce Directive.<sup>51</sup>

- 33 Thus, the European legal regimes that potentially have an effect on cloud computing are characterized by an interaction between sector-specific regulation and competition law, and a horizontal separation between content and network regulation. While especially the content-network divide in European law has been subject to criticism,<sup>52</sup> our aim for this article is not to critique any of these two divisions of labour as such; we will assume them for the sake of analysis. Rather, we want to investigate how the main outstanding issues in the development of cloud computing that we have outlined above – data portability and interoperability, vertical integration and internal market concerns – relate to these legal regimes.

## II. Competition law

- 34 In contrast with EU electronic communications or e-commerce regulation, competition rules always apply to all firms active in the EU – therefore, all cloud operators active in the European Union are subject to it.<sup>53</sup> In this section we will investigate whether competition law is able to address the three issues of interoperability and data portability, vertical integration and internal market fragmentation.

### 1. Market definition

- 35 Prior to any discussion of the substantive provisions, it is essential to try to assess how relevant markets could be defined to ascertain how competition authorities would comprehend the competitive constraints on cloud computing providers. Market definition hinges on establishing product and geographic markets,<sup>54</sup> with some attention to temporal dimensions as well. This temporal aspect is quite relevant in relation to cloud computing. The Commission has recognized that in markets with a high degree of technological progress – such as cloud computing – market conditions can change significantly over time, which would argue in favour of a (short) time window for markets, allowing for narrower market definitions.<sup>55</sup> In the EU, market definition typically depends on demand-side substitutability, which is

ascertained with the help of a qualitative analysis of product characteristics and intended use, sometimes complemented with quantitative analysis, using an SSNIP test for a hypothetical monopolist.

- 36 Product market definition issues would arise at the upstream (cloud computing provider) and downstream (ISP) level. At the upstream level, at its narrowest, the relevant market could be limited to individual types of cloud computing services (i.e. SaaS, PaaS, IaaS), because these services differ in characteristics and use. Such a definition would overlook supply-side substitutability, however. Cloud computing services rely on mass customization, meaning that providers try to exploit economies of scope by ensuring that large investments into facilities can be leveraged across many services at limited cost (software modifications). A broader market definition would include not just cloud computing, but also software solutions from which users are migrating to cloud computing (e.g. software installed locally in a server-client environment). Here the outsourcing characteristic of cloud computing is of importance: Is cloud computing a new market in and of itself, or are clouds simply part of the larger market for IT services?
- 37 At the downstream level, market definition exercises have already been conducted in the course of applying electronic communications regulation. Some conclusions can be drawn from that practice, bearing in mind that relevant market definition carries limited precedential value. As far as retail customers are concerned, the Commission has usually considered that broadband Internet access is separate from narrowband access, because substitutability runs in one direction only (from narrowband to broadband). Furthermore, mobile and fixed access are generally put on separate markets because of their different product characteristics.<sup>56</sup> On that basis, there is a good chance that ISPs would not all be put on the same market.
- 38 Beyond that, it is worth examining whether the specific approach to market definition for wholesale call termination (fixed and mobile) might have an impact here. Since the first Recommendation on relevant markets in 2003,<sup>57</sup> the Commission has considered that when it comes to the wholesale market for call termination, each network forms its own relevant market. In essence, when a call is made, the operator of the calling party (the originating operator) has no choice but to deal with the operator to which the called party is subscribing (the terminating operator) in order to complete the call as requested by its customer, the calling party. There is no alternative to the terminating operator, since the number of the called party is reachable only through the terminating operator. By aggregation, considering that all subscribers of a given operator are in the same position vis-à-vis that operator, the Com-

mission found that all the subscribers of a given operator – i.e. all subscribers reachable via the network of that operator – are on a separate relevant market for call termination.

- 39 This reasoning can be applied by analogy to cloud computing. For a cloud computing provider, at any given point in time, a customer can usually be reached via one ISP only – i.e. the ISP to which the device used at that point in time is attached, whether it is a DSL- or cable-based ISP, an ISP associated with a workplace LAN, a mobile provider or the ISP to which a Wi-Fi network is connected. What is more, given the ubiquity that is characteristic of cloud computing, customers might be reachable via a succession of ISPs as they move around, in a way which the customers themselves might not be able to control entirely,<sup>58</sup> much less the cloud computing provider. It is true that, in contrast with call termination, there is a greater chance that at any given point in time, a cloud computing customer might be reachable via more than one ISP, so that no situational monopoly would arise. Nevertheless, in the current state of technology, it is difficult for either the cloud computing provider or its customer to move rapidly and efficiently from one ISP to another to react to unfavourable conditions that an ISP might offer at any given point in time.
- 40 As far as geographical markets are concerned, clouds are built on the premise of ubiquity, mobility and pervasiveness, which is not easily captured into a geographic market defined as the area where competitive conditions are comparable.<sup>59</sup> The markets are presumably larger than purely national. After all, the ubiquity and portability of clouds leads towards a market scope that goes beyond national borders. For example, the market for business software, in which Oracle and SAP AG are key players, has traditionally been nationally oriented, bounded by language, physical software copies and local storage of data.<sup>60</sup> Relative newcomer Salesforce has disrupted these market characteristics by offering its SaaS services exclusively through clouds, without being established in all countries where its service is available. Similarly, cloud-based office applications such as OpenOffice, GoogleDocs and docs.com widen the geographic scope in comparison with shrink-wrapped office software, which was more nationally oriented. There is every indication so far that the market for cloud computing will be global, though it cannot be excluded that, should linguistic and cultural preferences play a larger role in customer choices, national markets may remain.
- 41 Geography has more impact at the downstream ISP level. There one can observe significant differences in regulation among Member States. Roaming practices and interconnection regulation, for example, do have a (geographic) effect on clouds, yet possibly not to the extent that it constitutes a ‘condition of com-

petition ... appreciably different in [other geographic] areas’.<sup>61</sup> The geographic markets for ISPs that form the platform between end-users and clouds are more fragmented than the (potential) geographic market for the clouds themselves. After all, ISPs are connected to physical infrastructure that ties them to a specific jurisdiction, while clouds naturally operate across the internal market in a transnational manner. Therefore, considering path dependency and the presence of legal barriers, broadband provision markets would be national.

## 2. Interoperability, data portability and competition law

- 42 At first sight it may seem difficult to fit issues of data portability and interoperability under EU competition law. For the sake of argument, we will assume that interoperability and data portability constraints are potential results of anti competitive behaviour – which is often referred to in case law on this topic.<sup>62</sup> Difficulties in achieving interoperability and data portability in cloud computing can already lead to what would be classified as customer lock-in, by primarily technological means, further resulting in customer dependency on the services of CCP (especially when a strong element of outsourcing is present in moving to cloud computing). That lock-in effect can be aggravated by the abusive conduct of a CCP within the meaning of Article 102 TFEU, whereby other CCPs are excluded from competing for the customers of that CCP. Furthermore, even in the absence of exclusionary conduct, a CCP could also abuse its dominant position by exploiting its customers.<sup>63</sup> On the scale of dominance issues, exclusion of competitors (or foreclosure) is generally held as more harmful than exploitation of customers. This is because exploitation may trigger entry (solving the competition problem), whereas foreclosure blocks the competitive provision that would benefit consumers and make exploitation impossible.<sup>64</sup> For the remainder of the discussion, we will leave exploitative abuse aside.
- 43 Before trying to assess whether a given course of conduct is abusive, however, dominance must first be established. Market dominance is generally understood to concern a situation in which a firm is able to set prices and other competitive parameters independently of competitive pressure. Relevant evidence includes market shares, potential for future expansion and entry, and buying power.<sup>65</sup> Case law testifies to a reliance on market shares as an indicator of dominance,<sup>66</sup> and a broad interpretation to entry barriers.<sup>67</sup> Generally, market shares of over 40% raise scrutiny. Even in the absence of clear-cut figures on market shares in the cloud computing sector, it seems unlikely that any active cloud service currently enjoys such market shares in any re-

levant market. We have defined three varieties of cloud computing services above, and there seems to be vigorous competition between the various firms active in these branches of cloud computing, such as Google, Microsoft, Amazon, Apple, Salesforce, IBM and so on.<sup>68</sup> Moreover, the entry of Amazon, for instance, into the cloud market demonstrates that though entry into the cloud computing market carries significant fixed costs, barriers to entry are not insurmountable. There may well be more firms like Amazon in other sectors with excess server capacity, keen on entering the IaaS market:

*Entry barriers may also become less relevant with regard to innovation-driven markets characterised by ongoing technological progress. In such markets, competitive constraints often come from innovative threats from potential competitors that are not currently in the market. In such innovation-driven markets, dynamic or longer term competition can take place among firms that are not necessarily competitors in an existing 'static' market.<sup>69</sup>*

- 44 Were a single CCP to enjoy market shares of over 40% and be considered dominant, it would still need to be proven that such dominance is abused. In line with the approach put forward by the Commission in its Guidance Paper, this is a matter of identifying a theory of harm whereby the conduct of the dominant firm results in anti-competitive foreclosure (i.e. exclusion of competitors leading to consumer harm).<sup>70</sup> Here the conduct could be any conduct which creates or increases customer switching costs and lock-in – for instance, making it more difficult than technically necessary to port consumer data from one CCP to the other, or to work with two or more CCPs simultaneously. Thereby the customer acquisition costs of rivals would be raised or – in the extreme case – rivals would even be foreclosed altogether if they were deprived of a large enough potential customer base for viable entry and expansion. It is already apparent that this course of conduct does not fit neatly within the broad types of abusive conduct identified in the Guidance Paper.<sup>71</sup> Furthermore, it is in the essence of cloud computing services that – especially when the customer is outsourcing to the CCP – the customer is locked-in as a result of relationship-specific investments on its part to customize services and relocate its private/proprietary information on the CCP facilities. As was seen above, market forces will conceivably constrain CCPs on customer lock-in. Accordingly, evidence of ‘intent’ would likely play a large role in any finding of abuse on the part of a dominant CCP; ‘intent’ is here understood broadly as a deliberate and plausible plan on the part of the CCP.<sup>72</sup>

### 3. Vertical integration and EU competition law

- 45 As mentioned above, the literature on cloud computing has voiced concerns over vertical integration between CCPs and ISPs with potential anti-competitive effects.<sup>73</sup> In a European context, such vertical restraints can be dealt with under either Article 101 or 102 TFEU. Of course, vertical integration can also occur through a merger between a CCP and an ISP, but we will set this hypothesis aside for now.<sup>74</sup>

#### a.) Under Article 102 TFEU

- 46 For ISPs, high market shares above the dominance threshold are a possibility, all the more so if product markets differentiate between fixed and mobile broadband and if, as caselaw so far indicates, the geographic scope of ISP markets seems national (or in the US context, state-level).<sup>75</sup> Under such circumstances, it would not be surprising to find that one or two ISPs are dominant in a given Member State.<sup>76</sup> Furthermore, if the termination market construction described above is followed, then all ISPs are dominant on a market formed by their own network.
- 47 Case law is growing rich in Article 102 TFEU cases related to European ISPs, as a result of which ISPs are severely hampered from abusing their dominance through means of predatory pricing<sup>77</sup> or margin squeeze,<sup>78</sup> for instance. Here we are looking at a situation where an ISP – which would have integrated into cloud computing or otherwise affiliated with a cloud computing provider – would refuse to deal with an unaffiliated CCP on the same terms as it deals with its own cloud computing operations or its affiliated CCP.
- 48 At first sight, this could be an instance of discrimination within the meaning of Article 102 (c) TFEU.<sup>79</sup> Actually, it may not be: there are some difficulties involved in extending the concept of discrimination in Article 102 (c) away from discrimination between two third parties and towards discrimination – in a vertical integration context – between an outside third party and the dominant firm’s own operations that compete with that third party.<sup>80</sup> Even if there are some precedents for such an extension,<sup>81</sup> the Commission carefully avoids stating clearly whether discrimination as such can constitute an exclusionary abuse in its Guidance Paper on Article 102 TFEU and the preceding documents<sup>82</sup> – let alone whether discrimination between internal operations and third-party competitors is a stand-alone abuse. Indeed, the more competitive markets are, the more difficult it is to consider that dominant firms should as a matter of principle treat third parties on the same footing as their own internal operations. There is a ‘gray zone’ – that is, markets where a

firm holds a dominant position without being super-dominant because serious competitive alternatives exist. A similar issue appeared before the ECJ in *TeliaSonera*, where the Court held that a dominant firm could commit a margin squeeze even if the upstream product was neither an essential facility nor a regulated offering.<sup>83</sup> *TeliaSonera* did not concern discrimination, so the issue outlined in this paragraph remains open.

49 Leaving aside discrimination, another way to analyse the conduct of an ISP would be to treat it as refusal to supply.<sup>84</sup> A refusal to supply may be actual or constructive.<sup>85</sup> The Commission recognizes that refusal to deal cases are more likely to occur in cases of vertical integration,<sup>86</sup> where, for instance, clouds would integrate with ISPs and then foreclose rival CCPs upstream (or rival ISPs downstream). However, it is acknowledged that imposing duties to supply can have an adverse effect on innovation, both on the addressee and *ex ante* on future innovators, and lead to free-riding by less efficient competitors.<sup>87</sup> These are real concerns, particularly in emerging markets that depend on technological progress, such as cloud computing. It would therefore be advisable for the Commission and courts to take a prudent approach to refusal-to-supply cases when ISPs integrate vertically into cloud computing. Moreover, as laid out earlier, it seems unlikely that a refusal to give access to a competing CCP will materialize, given that there seem to be strong latent network effects for clouds:<sup>88</sup> the value of clouds for consumers will increase by the amount of consumers on the cloud, which is only reinforced by interoperability constraints.<sup>89</sup>

50 Even then, in the light of existing caselaw, it is uncertain how a refusal-to-supply case initiated by an ISP and affecting a cloud service provider would fit with the caselaw, in particular the so-called ‘essential facilities doctrine’ established by the European courts, most notably in *Bronner* and *Microsoft*.<sup>90</sup> Here *Bronner* is most relevant, considering that it involved access to a delivery network. The three-pronged test that *Bronner* outlined<sup>91</sup> has as its main question whether the essential facility (an ISP’s infrastructure) is indispensable for a service (a cloud operator) to reach its consumers, regardless of whether alternative methods of carriage fall within the same market.<sup>92</sup> It is in any event unlikely that a cloud service provider will be willing and able to rollout its own network to reach endusers, even if in *Bronner* the threshold for liability is set high.<sup>93</sup> The tremendous sunk costs that come with building network architecture do amount to ‘economic obstacles’ that would make it ‘impossible, or unreasonably difficult’ for a cloud to access endusers. However, it is possible that the existence of competition on the ISP level would outweigh this obstacle for the ECJ. This brings us back to the discussion about market definition: if one takes a broader view and considers that there are a number of ISPs

available to reach a given customer – whether competition is service- or facilities-based – it seems likely that this third prong of the *Bronner* test will not be met. If, on the other hand, one emphasizes the ubiquity of cloud computing and concludes that at any given point in time and location, there is only one ISP through which a customer can be reached, then the *Bronner* test might be met.

51 Even if one factors in *Microsoft* and reads it as loosening the severity of the *Bronner* test, the outcome would not be different. In *Microsoft*, the Commission and the General Court refused to follow Microsoft’s line of argumentation, which would have privileged breakthrough innovation and competition for the market at the expense of incremental innovation and competition in the market.<sup>94</sup> Even then, the Court insisted that it had to be proven that access to the interoperability information held by Microsoft was indispensable to compete in the workgroup server market.

## b.) Under Article 101 TFEU

52 Article 101 TFEU could also apply to vertical restraints arising from agreements between an ISP and a CCP. Here again the hypothetical case would be that a CCP and an ISP enter into a preferential arrangement, whereby that CCP is the ‘exclusive’ or ‘privileged’ partner of that ISP, and other CCPs are either excluded altogether or treated less well than the exclusive or privileged CCP.

53 The key legislative document in EU competition law on vertical restraints such as these is Regulation 330/2010 on Vertical Restraints (the block exemption), together with the Guidelines on Vertical Restraints that the Commission released at the same time.<sup>95</sup> As often in vertical cases, the assessment of such vertical agreements to a large extent depends on the existence of market power,<sup>96</sup> which in turn rests on the definition of relevant markets. Regulation 330/2010 automatically exempts vertical agreements when both suppliers and buyers hold less than 30% of their respective markets,<sup>97</sup> but whether this threshold is met in a particular case may depend on whether a broad market for cloud computing is defined, or whether a more narrow definition – segmented along the lines of specific services such as SaaS, PaaS and IaaS – is retained, as discussed earlier. With a broad definition, few CCPs if any will hold a market share over 30%. A narrower definition might yield market shares of more than 30% or some CCPs, in which case any vertical restraint between a CCP and an ISP will fall outside the block exemption.<sup>98</sup> Furthermore, if, at the ISP level, each ISP is put on a separate relevant market on the model of the termination markets, then the block exemption will not apply in any event.

- 54 If, for the sake of argument, the market share thresholds were not exceeded, then the CCP and ISP must avoid the ‘black list’ of restrictions that defeat the application of Regulation 330/2010, including resale price maintenance.<sup>99</sup> The most relevant provision of Regulation 330/2010, however, concerns ‘non-compete obligations’ which, if they last more than five years, will not be covered by the exemption.<sup>100</sup> Should a CCP-ISP agreement contain a clause whereby the CCP becomes the exclusive CCP to be accessible over the facilities of the ISP in question, that clause should not last more than five years. It is more likely, however, that the agreement would give preferential treatment to the affiliated CCP, as opposed to competing CCPs (rather than exclude competing CCPs altogether). Such preferential treatment would not qualify as a non-compete obligation within the meaning of Article 5 of Regulation 330/2010, and accordingly it would remain covered by the block exemption. Even if Regulation 330/2010 seems to apply, it was conceived with other types of agreements in mind and does not provide a good fit for the kind of arrangement under review here.
- 55 If, on the other hand, a preferential CCP-ISP agreement would fall outside of Regulation 330/2010 because either of the parties held more than 30% of its respective market, then the agreement would be assessed directly under Article 101 TFEU. Under Article 101(1), what would stand out is the fact that the agreement puts other CCPs in a disadvantaged position as regards access to the ISP’s customers. Whether that constitutes a restriction of competition depends, unsurprisingly, on the extent to which other CCPs are hampered when compared to a counterfactual without the preferential treatment.<sup>101</sup> In other words, are there sufficient alternatives to the ISP for other CCPs to reach their customers? As was discussed above, given that cloud computing services are meant to be ubiquitous, at any given location and point in time it is quite likely that a given customer using a given device can be reached only via one ISP. If that is the case, then in all likelihood a preferential treatment clause in an agreement between an ISP and a CCP would restrict competition by applying different conditions to other CCPs and putting them at a disadvantage.<sup>102</sup> It would then become a matter of assessing whether Article 101(3) TFEU can apply to save the preferential treatment clause.<sup>103</sup> At first sight, difficulties are bound to arise with at least two of the conditions of Article 101(3) TFEU: the benefits from preferential treatment are hard to identify,<sup>104</sup> let alone the contribution to consumer welfare via passing those benefits on to consumers.<sup>105</sup>

#### 4. Internal market fragmentation and EU competition law

- 56 As for the third concern – namely, that the internal market could become fragmented because of differing choices made by ISPs regarding their respective platforms, thereby making it difficult for CCPs to implement cloud computing as intended – little can be done under EU competition law. Indeed, as long as ISPs do not engage in discriminatory conduct within the meaning of competition law, they should not face liability under either Article 101 or 102 TFEU – even if they hold market power. Of course, the key issue is whether there is discrimination within the meaning of competition law. As long as all CCPs have access to the facilities (and to the customers) of an ISP on the same footing, then there should be no discrimination in the eyes of competition law. That does not imply that all CCPs must have the same terms and conditions; an ISP could very well offer different terms and conditions, depending on a CCP’s requirements as to capacity and quality of service (and the corresponding willingness to pay). As long as all CCPs can purchase the same capacity and quality of service for the same price, competition should not be affected (even if CCPs end up in different situations because they make different choices).<sup>106</sup> What is more, competition law does not prevent different ISPs from offering different formulae and tariffs for capacity and quality of service.

#### 5. Conclusion on EU competition law

- 57 In the previous paragraphs, we tried to outline whether and how EU competition law could help in dealing with the three concerns identified at the outset (to the extent that intervention is warranted).
- 58 In the end, competition law is only partially able to address the issues of data portability/interoperability and vertical integration, both of which have an effect on the further development of cloud computing facilities in Europe. Moreover, it is doubtful whether EU competition law can be of any use to prevent fragmentation of the internal market. The previous paragraphs point to a number of issues that deserve further research. First of all, market definition is by no means clear at either the CCP or the ISP level. In the latter case, in particular, the competition law analysis hinges on whether the ubiquity required for cloud computing means that ISPs find themselves in a situational monopoly, along the same lines as terminating operators for fixed or mobile voice calls. Second, the notion of discrimination within the meaning of Article 101 and 102 TFEU needs further investigation, in particular as regards discrimination between third parties and a competing subsidiary of the dominant firm, and the need for super-domi-

nance or some form of essentiality for such discrimination to be relevant for competition law purposes.

### III. Network regulation

59 In the following section, we will outline to what extent European network regulation addresses the concerns outlined above relating to interoperability and data portability, vertical integration, the European internal market.

60 EU electronic communications regulation applies in tandem with EU competition law: the core regulatory mechanism applies only to operators holding significant market power (SMP) in a predefined market in the electronic communications sector. In principle, the rationale behind this mechanism is that sector-specific regulation would be progressively scaled down as the sector develops and grows more competitive, so that in the end it could be policed through competition law alone.<sup>107</sup>

61 The EU regulatory framework for electronic communications that was revised in 2009 is based on a platform of four main directives: the Framework Directive, the Access Directives, the Authorization Directive and the Universal Service Directive.<sup>108</sup> These directives are implemented at the national level, with key tasks assigned to National Regulatory Authorities (NRAs).

#### 1. Electronic communications regulation and data portability and interoperability

62 It remains to be seen whether the regulatory framework applies to cloud computing services at all. The first question to be asked is whether cloud computing services fall under the definition scheme. The scope of the regulatory framework, as far as cloud computing is concerned, is given by the definition of 'electronic communications service', which consists 'wholly or mainly in the conveyance of signals on electronic networks, including telecommunications services', yet excludes 'services providing, or exercising editorial control over, content transmitted using electronic communications networks and services'.<sup>109</sup> Cloud computing services thus fall under the framework inasmuch as they limit themselves to 'wholly or mainly' sending signals on electronic communications networks.<sup>110</sup>

63 If anything, and as described before, clouds are concerned with the IT-related services of storing and processing of data, and in most cases need ISPs to facilitate the sending and receiving of their signals on networks. It seems clear that clouds are neither communications infrastructure nor 'associated' services, and are moreover not concerned 'wholly or

mainly' with conveying signals on networks. This does not, however, automatically imply that clouds are concerned with 'providing or exercising editorial control' over content transmitted. In any event, it seems unlikely that the framework for electronic communications has a direct effect on cloud computing services.

64 The Access Directive contains general interconnection requirements with corresponding powers for NRAs,<sup>111</sup> yet in principle those requirements concern electronic communications service providers only. As a consequence, the regulatory framework seems of little help for enhancing data portability and interoperability of clouds: only interconnection of the networks is ensured, not of the services that run on these networks. This is yet another example of the vacuity of the network/content distinction of the framework: the provisions of the Access Directive concerning interconnection in general could apply to CCPs and empower NRAs to intervene should lack of interoperability and data portability ever become so prevalent that overall welfare would be affected.

#### 2. Electronic communications regulation and vertical integration concerns

65 The above does not mean that the electronic communications regulatory framework has no bearing at all on the concerns outlined above. Quite to the contrary: ISPs are providing an 'electronic communications service' over 'electronic communications networks', and they therefore fall fully under the regulatory framework. As a consequence of cloud computing not being an electronic communications service, however, CCPs find themselves, for the purposes of the regulatory framework, in the same position as an end-user<sup>112</sup> of electronic communications services and networks.

66 As we saw above, EU competition law is available in situations where an ISP would vertically integrate – through merger or agreement – with a CCP, and would subsequently deny access to competing CCPs or offer them less favourable terms and conditions than the affiliated CCP. Next to competition law, perhaps the SMP regime contained in the regulatory framework for electronic communications could be used to police such behaviour.<sup>113</sup>

67 As a first step for the application of the SMP regime, the relationship between CCP and ISP should fall within a relevant market that has been selected for market analysis by the NRA. The Commission takes the lead in recommending which specific markets must be analysed by NRAs. The SMP assessment procedure is based on the definition of product markets<sup>114</sup> and geographic markets,<sup>115</sup> together with particularities of telecoms markets, such as a sub-

division of service markets and access markets,<sup>116</sup> and wholesale and retail access markets.<sup>117</sup> As mentioned above, CCPs are assimilated to endusers for the purposes of electronic communications regulation so that the interaction between them and ISPs takes place on a retail market. With the second Recommendation on relevant markets, in 2007, the Commission left out all retail markets (save for access to the telephone network at a fixed location).<sup>118</sup> The markets that have been selected as far as ISPs are concerned – wholesale network access and wholesale broadband access – are wholesale markets, where ISPs are dealing with other ISPs that are requesting access to their network in order to provide a competing ISP service to end-users. Of course, NRAs can select additional markets to those set out in the Commission Recommendation, but only under strict circumstances, including the three-criteria test set out in the Recommendation on relevant markets.<sup>119</sup> So far NRAs have hardly ever been successful in selecting additional markets.

- 68 Accordingly, the electronic communications framework is of very limited help for concerns related to vertical integration, since the market affected by the behaviour of the ISP is not part of the set of markets to be assessed and, if necessary, regulated under the SMP procedure. The regulatory framework stands idle in addressing this potential problem.
- 69 If ever a market for access to ISP facilities by CCPs or endusers – for the purpose of transmitting content – were selected for assessment, then the next step would be to assess whether one or more ISPs hold significant market power (SMP) on this market. Even if the Commission states there is a difference between dominance under EU competition law and SMP – the latter would not automatically imply the former<sup>120</sup> – in practice NRAs are directed to rely on Article 102 TFEU case law relating to dominance in their SMP assessments. The Commission stays close to ECJ case law<sup>121</sup> and stresses a number of factors beyond market share to determine SMP.<sup>122</sup> The assessment of SMP turns around the same issues as were identified above under Article 102 TFEU.
- 70 Defining a firm as having SMP allows NRAs to impose ex ante obligations from the framework to prevent SMP firms from restricting competition on their own or adjacent markets.<sup>123</sup> Interestingly enough, on this point the Access Directive seems to be running ahead of the SMP regime. The recent set of amendments extended the definition of ‘access’ in the Directive to mean the making available of facilities and/or services to another undertaking, under defined conditions, on either an exclusive or non-exclusive basis, for the purpose of providing electronic communications services, *including when they are used for the delivery of information society services or broadcast content services*.<sup>124</sup> (emphasis added)
- 71 As will be demonstrated below under electronic commerce regulation, cloud computing services are likely to fall under ‘information society services’. Does this mean that the access requirements of the framework<sup>125</sup> can also be invoked by clouds to get access to an ISP’s network? It is unclear whether this is the case. Even though it should not matter in the first place for what purpose access to electronic communications services is being used, one can wonder whether this actually changes anything. For a cloud service provider to require access to an ISP network, it should thus also offer electronic communications services. As EU electronic communications law now stands, EU institutions have yet to acknowledge that content providers – including CCPs – can face access problems in relation to ISPs that are not significantly different than those of electronic communications network or service providers, and could therefore usefully be dealt with under the electronic communications regulatory framework.

### 3. Electronic communications regulation and internal market fragmentation

- 72 In many ways, the relationship between clouds and ISPs is reminiscent of the network neutrality debate, which has been on-going for some years now. The network neutrality debate concerns the question whether the original end-to-end architecture of the Internet<sup>126</sup> should be changed into a model of differentiated Quality of Service (QoS) as broadband services become more time-sensitive.<sup>127</sup> Considering the growing bandwidth needs of cloud computing, the issue of network neutrality is of particular significance in this context. It has been claimed that introducing a differentiated pricing structure for bandwidth could frustrate the emergence of cloud computing by pricing its providers out of the market.<sup>128</sup>
- 73 Priority services and differentiated prices could enable clouds to perform more reliable services. However, this will take a sizable chunk out of an ISP’s bandwidth, which is a scarce resource, especially in mobile broadband. This process will affect the market for network access. The electronic communications regulatory framework approaches the issue of network neutrality mainly from a transparency perspective. The rationale behind this policy is that regulators should refrain from direct intervention into the broadband market, and rather facilitate market mechanisms by informing consumers of the network management practices of their network operators.<sup>129</sup> In addition, the new framework has embraced an approach that is based on NRA powers to impose minimum quality of service as a measure of last resort.<sup>130</sup> Perhaps more than is customary in directives, that transparency policy<sup>131</sup> leaves much leeway for individual Member States to implement many diffe-

rent kinds of transparency regulation into national laws.<sup>132</sup> Therefore, transparency regulation is likely to differ across Member States with a possible adverse effect on the internal market for broadband access.<sup>133</sup>

- 74 In addition, as was mentioned above, once differentiated QoS offerings are introduced across the EU, it is quite conceivable that the business strategies and technological implementations chosen by the various ISPs will differ significantly, leading to a fragmentation of the internal market.
- 75 This may be particularly troublesome for content and service providers on the Internet, including the cloud computing market. After all, the market for clouds exceeds national borders, while clouds are still dependent on ISPs as a platform to reach consumers. These network operators are bound to different jurisdictions across Europe, with different access regimes and different transparency regulation to disclose network management. Not only does this add transaction costs for clouds to adapt to a variety of network management practices and their regulation, it also becomes increasingly difficult – if not impossible – to guarantee processing power and computational speed to consumers. Clouds are especially vulnerable to this situation as their main service comprises outsourced, computationally intensive – and thus bandwidth-hungry – processes, often for corporate clients with a strong demand for reliability as they depend on clouds to operate their business.
- 76 Against these developments, the regulatory framework offers the possibility of standardization procedures<sup>134</sup> (introducing standardized technical solutions to limit the fragmentation of the market) and harmonization procedures (harmonizing diverging regulatory solutions).<sup>135</sup> Practical developments in the telecommunications sector seem to be pointing in the opposite direction, however.

#### 4. Conclusion

- 77 Concluding overall, EU electronic communications regulation relates to cloud computing in a peculiar way. For the first two concerns – interoperability/data portability and vertical integration – the regulatory framework is comparatively less helpful than competition law because of definitional problems. Clouds may lie outside the scope of the regulatory framework, yet the ISPs clouds depend on to communicate with their users are subject to this framework. However, the relationship between CCPs and ISPs does not fall under any of the relevant markets currently selected for regulatory scrutiny under the SMP regime. We can conclude that the regulatory framework for electronic communications is of little help in mitigating these issues. As for the third con-

cern – fragmentation of the internal market – the regulatory framework currently contributes more to fragmentation than it prevents it, though it does contain provisions that could offer a basis to tackle the concern if necessary. It now remains to be seen whether European electronic commerce regulation can be of use in addressing those concerns.

## IV. Electronic commerce regulation

- 78 The Electronic Commerce (eCommerce) Directive relies on a different set of definitions than electronic communications regulation; instead of ‘electronic communications service’,<sup>136</sup> it concerns ‘information society services’ as defined in Directive 1998/34,<sup>137</sup> meaning ‘any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services’.<sup>138</sup> This definition is more appropriate for cloud computing services than those provided in the Framework Directive as it avoids a narrow definition into telecommunications terms. As such, electronic commerce regulation arguably is where cloud computing finds its ‘regulatory home’ – i.e. a European regulatory regime that clearly includes cloud computing within its ambit. The eCommerce Directive affects cloud computing services in mainly two ways. First, the Directive offers some clarification on jurisdictional issues for cloud computing. Second, the Directive addresses secondary liability for cloud computing services. We will analyse these two prongs of jurisdiction and secondary liability briefly below, and the results of the eCommerce Directive in relation to the concerns set out above: vertical integration, internal market fragmentation, and interoperability and data portability constraints. On the latter we can, again, be brief. The eCommerce Directive is rather vertically oriented, and does not go into interoperability and portability issues between services engaged in electronic commerce (information society services) at all.
- 79 The eCommerce Directive was clearly drafted with the internal market in mind,<sup>139</sup> and this is reflected in its efforts to streamline jurisdictional issues in the borderless world of electronic commerce. Regrettably, the eCommerce Directive has arguably created more confusion about jurisdiction than before. The Directive states that it does not ‘not establish additional rules on private international law nor does it deal with the jurisdiction of Courts’.<sup>140</sup> Moreover, the internal market provisions of Article 3 do not limit ‘the freedom of the parties to choose the law applicable to their contract’.<sup>141</sup> However, the preamble of the Directive seems to undercut the wording of the aforementioned articles by still insisting that ‘provisions of the applicable law designated by rules of private international law must not restrict the freedom to provide information society services as

established in this Directive'.<sup>142</sup> In any case, the Directive does lay down some jurisdictional guidelines,<sup>143</sup> and prohibits Member States from restricting the freedom to provide services by information society services providers from other Member States.<sup>144</sup> This makes a rich caselaw on freedom of establishment applicable to cloud computing services.<sup>145</sup> A problem that remains, however, is that the Directive does not address restrictions on cloud computing services that are not orchestrated by Member States' governments, but by private companies, such as network operators and ISPs. As a directive, it is unlikely for the eCommerce Directive to carry a horizontal direct effect – that is, to be invoked by parties in a private lawsuit. Nevertheless, these guidelines on jurisdiction do affect the internal market dimension of cloud computing, albeit not in a very helpful way. The eCommerce Directive would have been the appropriate regulatory tool to streamline operation on the internal market in terms of interaction with ISPs for innovative online services such as cloud service providers. For such aims, however, the Directive seems rather outdated.<sup>146</sup>

- 80 Another internal market-related aspect of the eCommerce Directive is of relevance when discussing cloud computing, namely the secondary liability provisions.<sup>147</sup> In the Internet context, secondary liability involves the question whether service providers are liable for the actions of their users. Whether clouds fall under this safeharbour is likely to depend on the specific type of cloud computing service involved. The secondary liability provisions distinguish between 'mere conduit',<sup>148</sup> 'caching'<sup>149</sup> and 'hosting' services.<sup>150</sup> The hosting category is most applicable to clouds, mainly because this article in the Directive is more inclusive. It concerns services that offer storage of information, provided that service providers have no knowledge of illegal activities taking place, illegal material is removed expeditiously upon notification of such, and the provider has no authority or control over the recipient of service. However, it should be noted that the safeharbour of hosting services does not protect against injunctive relief.<sup>151</sup> These secondary liability provisions of the eCommerce Directive, however, have increasingly come under debate, and have recently been under attack by governments as well as courts in Europe.<sup>152</sup> If anything, this tendency shows that the Directive may be in need of a revision on the topic of secondary liability to better reflect the tension between the genuine inability of information society service providers to monitor users, and the legitimate attempts by governments to fight cybercrime and spam and protect citizens' privacy.<sup>153</sup>
- 81 It appears that cloud computing fits well under eCommerce Directive – at least in terms of definitions – and particularly the safe-harbour provisions will be welcomed by players in the cloud computing market. At the same time, while it is encouraging

for clouds to be protected against government interference when providing their services to EU citizens, this is not exactly where the main challenges lie for the further fruition of clouds as an emerging high technology market. If clouds will become subject to interference that hampers their innovative features, such interference is more likely to be coming from players out of reach of the eCommerce Directive: ISPs. If anywhere, this intersection is where European regulation should be active. In this respect, the eCommerce Directive will not be very helpful.

- 82 Even though the eCommerce Directive tries to streamline issues of jurisdiction and secondary liability in the developing digital realm, the breadth of the cloud computing sector exceeds the regulatory scope of the Directive. This leads to a situation in which the available regulation is many years behind the situation on the ground, and arguably is little more than a burden on innovative services such as cloud computing. At the same time, actual potentially problematic situations – such as data portability and vertical restraints – remain unaddressed.
- 83 The assessment of the three regulatory regimes scrutinized above (competition law, network regulation and content regulation) will be tied together in the conclusion below.

## D. Conclusion

- 84 This paper is intended as the first in a series that will tackle issues related to cloud computing and European law. After a thorough analysis of the phenomenon of cloud computing, the demands for cloud computing and its challenges, we have applied a specific framework of European law to clouds. Our main questions were generally how European competition law, network regulation and electronic commerce regulation relate to the emergence of cloud computing, and more specifically, how the most pressing challenges for further innovation in the cloud sector are addressed by these legal fields. Especially given the ambitious Digital 2020 agenda, is Europe ready to embrace cloud computing for the sake of a stronger and more competitive digital internal market?
- 85 From this initial overview, it appears that a number of issues warrant attention. We have identified three concerns that could overshadow the further development of cloud computing: interoperability and data portability concerns as between CCPs; exclusionary practices flowing from vertical integration between clouds and ISPs; and fragmentation of the internal market due to diverging business plans and technological implementations of differentiated QoS offerings by ISPs. We can tentatively conclude that, should these concerns warrant intervention, the existing European legal framework would probably not be up to the task.

- 86 In the end, competition law is only partially able to address the issues of data portability/interoperability and vertical integration, both of which have an effect on the further development of cloud computing facilities in Europe; it is doubtful whether it can be of any use to prevent fragmentation of the internal market. A number of issues deserve further research. First of all, market definition is by no means clear, at the CCP and at the ISP level. In the latter case in particular, the competition law analysis hinges on whether the ubiquity required for cloud computing means that ISPs find themselves in a situational monopoly, along the same lines as terminating operators for fixed or mobile voice calls. Second, the notion of discrimination within the meaning of Article 101 and 102 TFEU needs further investigation, in particular as regards discrimination between third parties and a competing subsidiary of the dominant firm, and the need for super-dominance or some form of essentiality for such discrimination to be relevant for competition law purposes.
- 87 EU electronic communications regulation relates to cloud computing in a peculiar way. For the first two concerns – interoperability/data portability and vertical integration – the regulatory framework is comparatively less helpful than competition law because of definitional problems. Clouds may lie outside the scope of the regulatory framework, yet the ISPs on which clouds depend to communicate with their users are subject to this framework. But the relationship between CCPs and ISPs does not fall under any of the relevant markets currently selected for regulatory scrutiny under the SMP regime. We can conclude that the regulatory framework for electronic communications is of little help in mitigating these issues. As for the third concern – fragmentation of the internal market – the regulatory framework currently contributes to fragmentation more than it prevents it, though it contains provisions that could offer a basis to tackle the concern if necessary.
- 88 Finally, European electronic commerce regulation does little to address the concerns that competition law and the Regulatory Framework for Telecommunications have left open. The eCommerce Directive does cover issues of jurisdiction and secondary liability for cloud computing services, but this is of limited help for the regulatory issues raised here.
- 89 This overall conclusion is striking, as the European Commission is intent to foster ‘a new Single Market to deliver the benefits of the digital era’ in its digital agenda as part of the new 2020 strategy ‘for smart, sustainable and inclusive growth’.<sup>154</sup> Indeed, ‘[c]itizens should be able to enjoy commercial services and cultural entertainment across borders. But EU online markets are still separated by barriers which hamper access to pan-European telecoms services, digital services and content’.<sup>155</sup> New services such as cloud computing demonstrate the level of convergence between network operators and ISPs, content providers and electronic commerce services. This situation calls for a streamlined approach in which the scope and reach that services like cloud computing afford is facilitated by regulatory frameworks. Now it seems the opposite situation is in place: certain features of clouds – such as jurisdiction and content requirements – are over-regulated, while potential problematic situations that would hamper the further development of clouds – such as discrimination arising from vertical integration, interoperability and data portability – are not adequately addressed. EU competition law and electronic communications regulation concentrate on making markets work at lower levels (networks) while the internal market dimension is neglected; and eCommerce regulation, which operates at a higher level, is more focused on the internal market but ignores how the internal market is impacted not just by Member State actions, but also by the decisions of private actors on competitive markets.
- 90 While the European institutions seem aware of some inefficiencies that European regulation causes for the further development of cloud computing,<sup>156</sup> the problems we outline seem inherent to the way EU competition law, network regulation and electronic commerce regulation operate and interact. Cloud computing brings to light the limits of three legal regimes addressing converging services in the e-commerce, telecommunications and technology sector. It is rather difficult to pigeonhole clouds in one of these three regulatory disciplines. This in itself would not be problematic were competition law, network regulation and electronic commerce regulation to form a ‘penumbra’ that would dovetail towards an integrated approach to convergent services. This is not the case. Even though competition law and regulation of networks and electronic commerce all have a profound effect on clouds, these three legal regimes seem to fail in covering cloud computing where it really matters.
- 91 This article has attempted to map the status of clouds under specific fields of European law. We have drawn tentative conclusions that attempt to be more provocative than definitive. Each of the issues addressed warrants more in-depth attention respectively, and more than anything else we have aimed to lay out a research agenda on the European legal context of cloud computing for the years to come.

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- 27 This has prompted some commentators to argue for a regulatory approach to cloud computing that mimics the regulation of utilities. It should be noted that this is based on assumptions of a natural monopoly with regulated retail rates because competition is not available to keep prices down. This model should not be considered useful for cloud computing given that even in the traditional utilities sectors such as electronic communications, energy and transport it no longer applies. See H. Demsetz, *Why Regulate Utilities*, 11 J L & ECON 55 (1968) for the seminal article criticizing the natural monopoly argument for regulating utilities; see also M. Loeb & W. Magat, *A Decentralized Method for Utility Regulation*, 22(2) J L & ECON 399 (1979).
- 28 P. Mell & T. Grance (n 12) p. 2.
- 29 Ibid.

- 30 J.D. Lasica, *Identity in the Age of Cloud Computing: The Next-Generation Internet's Impact on Business, Governance and Social Interaction*, The Aspen Institute 2009, p. 7.
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- 32 M. Donahue & D. Ypsilanti (n 15), pp. 20-28; M. Iansiti (n 6) pp. 9-14; Picker (n 10), pp. 8-11.
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- 34 'Battle of the Clouds' (n 1), p. 13.
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- 37 In any event, a CCP will probably serve many customers, who can be on different ISP<sub>cust</sub>; corporate customers will also require that many or all their employees can use cloud computing services through whichever ISP<sub>cust</sub> they may be linked to.
- 38 M. Armstrong, *Competition in Two-Sided Markets*, 37 RAND J ECON 668 (2006); J. Rochet & J. Tirole, *Platform Competition in Two-Sided Markets*, 1 J EEA 990 (2003).
- 39 Such evolution is at the heart of the debate on 'network neutrality' that has been raging for years now, first in the USA and now in the EU and worldwide. J.P. Sluijs, *Network Neutrality Between False Positives and False Negatives: Introducing a European Approach to American Broadband Markets*, (2010) 62 FEDERAL COMMUNICATIONS LAW JOURNAL 77 (2010).
- 40 An ISP, however, may lack in reach to provide on their own the ubiquity and mobility that cloud computing affords. Outside of the reach of its own network, an ISP providing cloud computing services would be as dependent as any other CCP on having access to the networks of other ISPs.
- 41 This could occur if a given CCP would have such a strong brand that it would be a 'must-have' provider on a given platform. An ISP could very well unilaterally decide to give preferential treatment to that CCP, under certain circumstances.
- 42 A. Odlyzko (n 3), p. 57.
- 43 J. Rochet & J. Tirole (n 37).
- 44 AT&T and Verizon.
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- 46 As set out by the Commission Decision 2003/707 in *Deutsche Telekom* (Case COMP/C-1/37.451, 37.578, 37.579) [2003] OJ L263/9, para. 54. The Commission was confirmed on this point by the ECJ, Case C-280/08, *Deutsche Telekom*, [2010] Judgment of 14 October 2010, not yet reported.
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- 49 See I. Van der Haar (n 4), pp. 135-138.
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- 54 Commission Notice on the definition of relevant market for the purposes of Community competition law [1997] OJ C372/5, paras 7-24. It should be noted that the Commission's approach in the Notice departs slightly from the method employed by the Court of Justice in *Commercial Solvents*, for instance, which put emphasis on demand substitution. ECJ, Joined Cases 6 and 7-73, *Istituto Chimioterapico Italiano S.p.A. and Commercial Solvents Corporation v Commission*, [1974] ECR 223.
- 55 Commission Decision 92/163/EEC relating to a proceeding pursuant to Article 86 of the EEC Treaty (*Tetra Pak II*) [1992] OJ L72/1, para. 94.
- 56 Even if in a number of locations (especially in the new Member States) there is evidence that mobile and fixed communications are competing intensely with one another; Commission 'Explanatory Note to the Recommendation on Relevant Product and Service Markets (Second Edition)' SEC (2007) 1483 final 20.
- 57 Recommendation 2003/311 of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21 [2003] OJ L114/45.
- 58 As when roaming on mobile networks.
- 59 Commission Notice on the definition of the relevant market for the purposes of Community competition law [1997] OJ C372/5, para. 8: 'relevant geographic markets' are defined as follows: 'The relevant geographic market comprises the area in which the undertakings concerned are involved in the supply and demand of products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighbouring areas because the conditions of competition are appreciably different in those areas'.
- 60 Exact's accounting software suite is a good example of this local strategy – the company is established in 125 countries individually, and offers its products in 40 different languages.
- 61 See Commission Notice (n 58), para. 90.
- 62 For instance, ECJ, Case T-201/04, *Microsoft Corp. v Commission*, [2004] ECR II-4463, para. 319.
- 63 Even though exploitative abuses are rarely prosecuted in practice. For a critical discussion of this phenomenon, see B. Lyons, *The Paradox of the Exclusion of Exploitative Abuse*, 08(1) CCP WORKING PAPER (2007) <<http://ssrn.com/abstract=1082723>>, accessed 13 August 2011.
- 64 Communication from the Commission – Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings [2009] OJ C45/7.

- 65 See Commission Guidance, *ibid.*, paras 11-12. The SSNIP test is usually employed to establish geographic and product markets, but the test has also increasingly been applied to measure market power (in which case the hypothetical monopolist is replaced by the defendant, and the inquiry bears on movements between firms as a result of price increases).
- 66 ECJ, Case 27/76, *United Brands v Commission*, [1978] ECR 207.
- 67 ECJ, Case 85/76, *Hoffmann-La Roche v Commission*, [1979] ECR 461.
- 68 'Battle of the Clouds' (n 1), p. 13.
- 69 Commission recommendation (n 56), p. 10.
- 70 Commission Guidance (n 63), para. 19.
- 71 Commission Guidance (n 63), paras 32-46 (exclusive dealing); paras 47-62 (tying and bundling); paras 63-74 (predation); paras 75-90 (refusal to deal and margin squeeze).
- 72 ECJ, Case T-340/03, *France Télécom SA v Commission*, [2007] ECR II-107, para. 197.
- 73 P. Jaeger, J. Lin & J. Grimes (n 2); A. Odlyzko (n 3).
- 74 Following the judgment of the ECJ, Case T-210/01, *General Electric v Commission*, [2005] ECR II-5575 and the new Commission Guidelines on the assessment of non-horizontal mergers [2008] OJ C265/6, it is more likely that vertical mergers would be allowed to go through, knowing that possible anti-competitive practices arising as a consequence of vertical integration could be caught by Articles 101 or 102 TFEU.
- 75 See, for instance, *Wanadoo Interactive*, where the Commission established the French DSL provider Wanadoo to have held average market shares of 50 to 60%. Commission Decision, *Wanadoo Interactive* (Case COMP/38.233), [2003] para. 389.
- 76 Essentially the incumbent (or its cable-base rival) or whoever has a large enough share of the mobile market.
- 77 See ECJ, C-202/07 P, *France Telecom v Commission*, [2009] ECR I-02369 (referring to COMP/38.233, *Wanadoo Interactive*, n 74).
- 78 Commission Decision, *Wanadoo España v Telefónica* (Case COMP/38.784), [2008] OJ C83/6.
- 79 This provision lists, as an example of abusive conduct, 'applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage'.
- 80 P. Larouche (n 47), pp. 218-231.
- 81 *Ibid.*
- 82 It can be argued that Art. 102(c) TFEU was meant to cover exploitative discrimination (e.g. first-degree price discrimination).
- 83 ECJ, Case C-52/09, *TeliaSonera*, [2011] Judgment of 17 February 2011, not yet reported.
- 84 Cf. ECJ, Case C-7/97, *Oscar Bronner v Mediaprint Zeitungs- und Zeitschriftenverlag and others*, [1998] ECR I-07791; ECJ, Joined cases C-241/91 P and C-242/91 P, *Radio Telefís Éireann (RTE) and Independent Television Publications Ltd (ITP) v Commission (Magill)*, [1995] ECR I-00743; ECJ, Case C-418/01, *IMS Health v NDC Health*, [2004] ECR I-5039; ECJ, T-201/04, *Microsoft* (n 61).
- 85 I.e. the terms of access offered by an ISP are such that the CCP is denied access for all intents and purposes.
- 86 Commission Guidance (n 63), para. 76.
- 87 *Ibid.* para. 75.
- 88 P. Jaeger, J. Lin & J. Grimes (n 2), p. 280.
- 89 D. Lippold & P. Strykowski (n 25), pp. 146-152.
- 90 For a thorough analysis of the essential facilities case law in relation to network neutrality and particularly *Microsoft*, see K. Maniadaki, *Network Neutrality in the EU: Is There Scope for the Application of Competition Rules?*, THE 38TH RESEARCH CONFERENCE ON COMMUNICATION, INFORMATION AND INTERNET POLICY, WASHINGTON, DC, (October 2010), pp. 17-18.
- 91 The test in *Bronner* builds on the previous standard set in *Magill* (n 83) by stipulating that a refusal to deal by an essential facility needs to meet the (*Magill*) criteria of (1) eliminating all competition downstream, and (2) not being objectively justified, plus the new criterion of (3) the essential facility in question being indispensable for a third party to offer its service; *Bronner* (n 83) para 41. For a legal analysis of this case, see L. Evrard, *Essential Facilities in the EU: Bronner and Beyond*, 10 COLUMBIA J EUR L 491 (2004).
- 92 ECJ, C-7/97, *Bronner* (n 83), para. 43.
- 93 *Ibid.* para. 44.
- 94 See P. Larouche, *The European Microsoft case at the crossroads of competition policy and innovation*, 75 ANTITRUST LJ 933 (2009).
- 95 Commission Regulation 330/2010 of 20 April 2010 on the application of Article [101(3) TFEU] to categories of vertical agreements and concerted practices [2010] OJ L102/1. See also the Commission Guidelines on Vertical Restraints [2010] OJ C130/1. The seminal case in which vertical restraint complaints were pursued through an Art. 101 procedure was *Grundig*; see ECJ Cases 56 and 58/64, *Consten and Grundig v Commission* [1966] ECR 299.
- 96 See Vertical Guidelines, *ibid.*, paras 88-99 for a more specific outline of market definition for the purpose of applying Regulation 330/2010.
- 97 Regulation 330/2010 (n 94), Art. 3. Note that in addition, individual exemptions are available based on the application of the Guidelines on Vertical Restraints in the context of Article 101(3) TFEU.
- 98 *AMR Research Ranks Salesforce.com as Market Share Leader with 44% of Hosted Customer Management Market* (2006), <<http://www.salesforce.com/company/news-press/press-releases/2006/08/060820.jsp>>, accessed 8 April 2010.
- 99 Regulation 330/2010 (n 94), Art. 4. In principle, a CCP-ISP agreement should not involve resale price maintenance, unless the ISP would act as a distributor or reseller of cloud computing services (as opposed to a mere agent for the CCP). Note that the maximum price setting is nonetheless allowed under the block exemption, and minimum retail price maintenance can still be allowed under an Art.101(3) efficiency defence. Commission Guidelines (n 94), paras 223-229. Recall that resale price maintenance as a whole is no longer illegal in the US; see *Leegin Creative Leather Products, Inc. v PSKS, Inc.* 551 U.S. 877 (2007). For a comparative analysis, see J. Cooper et al., *A Comparative Study of United States and European Union Approaches to Vertical Policy*, 13 GEORGE MASON LREV 289 (2006).
- 100 Regulation 330/2010 (n 94), Art. 5(1)(a). If the non-compete obligation can be severed from the rest of the agreement, then the rest of the agreement remains covered by the block exemption. If a non-compete clause falls outside of the block exemption, it is likely to be objectionable under Art. 101 TFEU, unless a strong justification can be put forward under Art. 101(3).
- 101 Regulation 330/2010 (n 94), para. 97.
- 102 A situation that comes close to the case listed at Art.101(1)(d) TFEU.
- 103 Or the whole agreement if the preferential treatment clause cannot be severed from it.
- 104 Even when taking into account the extensive list of benefits at para. 107 of the Vertical Guidelines (n 94).
- 105 See Commission Guidelines on the application of Art.[101(3) TFEU] [2004] OJ C101/97, para. 83 and ff.
- 106 Unless the ISP has set up its tariffs in such a way as to indirectly discriminate in favour of one CCP over the others.
- 107 On the relationship between sector-specific regulation and competition law under the 2002 framework, see P. Larouche, *A closer look at some assumptions underlying EC regulation of electronic communications*, 3 J NETWORK IND'S 129 (2002).

- 108 These are Directive 2002/19 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive) [2002] OJ L108/7; Directive 2002/20 on the authorisation of electronic communications networks and services (Authorisation Directive) [2002] OJ L108/21; Directive 2002/21 on a common regulatory framework for electronic communications networks and services (Framework Directive) [2002] OJ L108/33; Directive 2002/22 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive) [2002] OJ L108/51; to which one should add Directive 2002/77 on competition in the markets for electronic communications networks and services [2002] OJ L249/21. These separate directives were amended in the course of the 2007 review by Directive 2009/136 amending Directive 2002/22, Directive 2002/58 and Regulation 2006/2004 (Citizens' Rights Directive) [2009] OJ337/11 and Directive 2009/140 (n 46). These amending directives were complemented by Council Regulation 1211/2009 establishing the Body of European Regulators for Electronic Communications (BEREC) and the Office [2009] OJ L337/1.
- 109 Art. 2(c) Framework Directive, *ibid.* For the purposes of the discussion, we leave aside the definitions of 'electronic communications networks', as well as 'associated facilities' and 'associated services'.
- 110 From the wording of the Directive it may be unclear what this 'wholly or mainly' criterion exactly entails, yet communication from the Commission during the 1999 review process that resulted in the 2002 Regulatory Framework – whose contours are still present today – sheds more light on what is covered under the framework and what is not. A distinction is made between communications infrastructure and 'associated services' such as access services – which both fall under the framework – and 'services provided over networks' such as broadcasting and electronic banking – which fall outside the scope of the framework. See Commission, 'Towards a New Framework for Telecommunications and Associated Services: The 1999 Communications Review' [1999] COM (99) 539 final, p. 21.
- 111 See Access Directive of 2009/140/EC (n 107), Art. 5(1): 'National regulatory authorities shall ... encourage and where appropriate ensure, in accordance with the provisions of this Directive, adequate access and interconnection, and the interoperability of services, exercising their responsibility in a way that promotes efficiency, sustainable competition, efficient investment and innovation, and gives the maximum benefit to end-users.'
- 112 As defined in Framework Directive (n 107), Art. 2(n).
- 113 SMP is established if '[an undertaking] either individually or jointly with others, ... enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers.' Framework Directive 2009/140/EC (n 107), para. 14(2). SMP inquiry is used as 'an overall forward-looking assessment of the structure and the functioning of the market under examination' and does not look for cartels or abuse cases *per se*. Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services [2002] OJ C165/6 8. Note that the markets can only be subjected to *ex ante* regulation according to the SMP procedure when three cumulative criteria are met: 1) the presence of high and non-transitory barriers to entry; 2) a market structure not tending towards effective competition soon; and 3) merely competition law would not adequately address the market failure(s) concerned. Commission Recommendation (n 56).
- 114 Commission Guidelines (n 112), paras 44-54.
- 115 *Ibid.*, paras 55-60.
- 116 *Ibid.*, para. 64.
- 117 *Ibid.*, para. 67.
- 118 Commission Recommendation 2007/879/EC of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services [2007] OJ L344/65, Annex I.
- 119 Framework Directive 2009/140 (n 46), para. 15(3).
- 120 Commission Guidelines, Commission Guidelines (n 112), paras 30-31. At the same time, the Commission is not entirely consistent in distinguishing between dominance under competition law and the SMP process: Art. 14(2) of the Framework Directive (n 46) states that SMP is 'equivalent' to dominance.
- 121 Commission Guidelines (n 112), paras 75.
- 122 Such as 'overall size of the undertaking, control of infrastructure not easily duplicated, technological advantages or superiority, absence of or low countervailing buying power, easy or privileged access to capital markets/financial resources, product/services diversification (e.g. bundled products or services), economies of scale, economies of scope, vertical integration, a highly developed distribution and sales network, absence of potential competition, barriers to expansion'; *ibid.*, para. 78.
- 123 *Ibid.*, para. 16.
- 124 See Access Directive of 2009/140/EC (n 46), Art. 2(a).
- 125 *Ibid.*, Art. 2(a): 'access to network elements and associated facilities, which may involve the connection of equipment, by fixed or non-fixed means (in particular this includes access to the local loop and to facilities and services necessary to provide services over the local loop); access to physical infrastructure including buildings, ducts and masts; access to relevant software systems including operational support systems; access to information systems or databases for pre-ordering, provisioning, ordering, maintaining and repair requests, and billing; access to number translation or systems offering equivalent functionality; access to fixed and mobile networks, in particular for roaming; access to conditional access systems for digital television services and access to virtual network services.'
- 126 For a technical definition of the end-to-end principle, see J. H. Saltzer, D. P. Reed & D. D. Clark, *End-to-end arguments in system design*, (1984) 2(4) ACM TRANSACTIONS ON COMPSYS 288 (1984).
- 127 On network neutrality in Europe, see e.g. J.P. Sluijs (n38); F. Chirico, I. Van der Haar & P. Larouche, *Network Neutrality in the EU*, TILEC DISCUSSION PAPER No. 2007/30 (2007); D. Sieradski & W. Maxwell, *The FCC's network neutrality ruling in the Comcast Case: towards a consensus with Europe?*, 74 COMM'S & STRAT'S 73 (2008); Valcke et al., *Guardian knight or hands off: the European response to network neutrality. Legal considerations on electronic communications reform*, 72 COMM'S & STRAT'S 89 (2008).
- 128 P. Jaeger, J. Lin & J. Grimes (n 2), p. 13.
- 129 Commission, 'Commission Staff Working Document: Impact Assessment', SEC (2007) 1472 95-96.
- 130 Art.22(3) of the new Universal Service Directive (n 107).
- 131 The new Consumer Protection Directive states the following: 'Member States shall ensure that national regulatory authorities are able to oblige undertakings providing public electronic communications networks and/or publicly available electronic communications services to publish transparent, comparable, adequate and up-to-date information on applicable prices and tariffs, on any charges due on termination of a contract and on standard terms and conditions in respect of

access to, and use of, services provided by them to end-users and consumers. 'These undertakings should also inter alia inform subscribers of any change to conditions limiting access to and/or use of services and applications, where such conditions are permitted under national law in accordance with Community law; and, provide information on any procedures put in place by the provider to measure and shape traffic so as to avoid filling or overfilling a network link, and on how those procedures could impact on service quality.' Directive 2009/136/EC, *ibid.*, Art. 21(3)(c) and (d).

- 132 National Regulatory Authorities (NRAs) 'may specify additional requirements regarding the form in which such information' is provided transparently; are to encourage 'the provision of comparable information to enable end-users and consumers to make an independent evaluation of the cost of alternative usage patterns'; and should encourage '[publishing of] comparable, adequate and up-to-date information for end-users on the quality of their services', while the Directive leaves to the Member States to determine means to pursue this transparency, either through NRAs, third parties or otherwise. *Ibid.* Art. 21(1); Arts. 21(2) and 22(1).
- 133 See J.P. Sluijs, F. Schuett, & B. Henze, *Transparency regulation in broadband markets: Lessons from experimental research*, 35 TELECOMMUNICATIONS POLICY 592 (2011), for an experimental study on the feasibility of transparency regulation in broadband.
- 134 Framework Directive (n 46), Art. 17.
- 135 *Ibid.*, Art. 19. The Commission can also try to achieve some measure of harmonization via its supervisory power over NRA decisions in SMP procedures, pursuant to Arts. 7 and 7a.
- 136 *Ibid.*, Art. 2(c).
- 137 Council Directive 98/34/EC of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society Services [1998] OJ L204/37, last amended by Council Directive (EC) 2006/96/EC [2006] OJ L363/81.
- 138 *Ibid.*, Art. 1(2).
- 139 *Ibid.*, rec. 5 'The development of information society services within the Community is hampered by a number of legal obstacles to the proper functioning of the internal market which make less attractive the exercise of the freedom of establishment and the freedom to provide services'; and at rec. 6 '[T]hese obstacles should be eliminated by coordinating certain national laws and by clarifying certain legal concepts at Community level to the extent necessary for the proper functioning of the internal market'.
- 140 *Ibid.*, Art. 1(4).
- 141 *Ibid.*, at annex: derogations from Art. 3.
- 142 *Ibid.*, rec. 23.
- 143 The place of establishment of an information society service is not necessarily the place where supporting technology for the economic activity pursued is located, but rather the place where the actual economic activity is pursued. If there are multiple such places, the place from where the service is provided is determined to be the place of establishment. If again there are many such places, the place of establishment is deemed to be where the firm's centre of activities is located – without specifying what this 'centre' is supposed to entail.
- 144 eCommerce Directive (n 136), Art. 3(2). The exemptions to this should pass a cumulative test of being (i) necessary for public policy, public health, public security, or consumer protection reasons; (ii) directed at an information society service that endangers any of the values under (i); and (iii) proportionate to those objectives. *Ibid.*, Art. 3(4)(a). Moreover, these measures can only be taken if the Member State in which the service is established has failed to do so, and the Commission has been notified, *ibid.*, Art. 3(4)(b).
- 145 Recital 19 provides an elaborate test analogous to case law in freedom of establishment cases; Treaty on the Functioning of the European Union (n 52), Arts. 49-55. For relevant case law, see ECJ, Case C-70/95, *Sodemare and others v Regione Lombardia*, [1997] ECR I-3395 and ECJ, Case C-55/94, *Gebhard v Consiglio dell'Ordine degli Avvocati e Procuratori di Milano*, [1995] ECR I-4165.
- 146 M. Hellner, *The Country of Origin Principle in the E-Commerce Directive: A Conflict with Conflict of Laws?*, 2 EUR REV PRIV L 193 (2004).
- 147 eCommerce Directive (n 136), Arts. 12-14.
- 148 *Ibid.*, Art. 12.
- 149 *Ibid.*, Art. 13.
- 150 *Ibid.*, Art. 14.
- 151 *Ibid.*, Art. 14(3).
- 152 The Italians seem particularly concerned with the eCommerce Directive's safe harbour provisions, judging by a recent proposed law that holds streaming video portals such as YouTube liable for copyright infringement by endusers. See D. Flynn, *Internet companies voice alarm over Italian law*, (26 January 2010), <<http://www.reuters.com/article/idUSLDE60E28B20100126>>, accessed 13 August 2011. Moreover, an Italian district court judge ignored the eCommerce Directive when ruling against Google in a privacy violation case involving (again) YouTube footage, and even sentenced Google executives with suspended imprisonment. R. Donadio, *Larger Threat Is Seen in Google Case*, THE NEW YORK TIMES (24 February 2010), available at <[http://www.nytimes.com/2010/02/25/technology/companies/25google.html?\\_r=1](http://www.nytimes.com/2010/02/25/technology/companies/25google.html?_r=1)>, accessed 13 August 2011.
- 153 On the intersection of privacy law and electronic commerce, see C. Kuner, *Beyond Safe Harbor: European Data Protection Law and Electronic Commerce*, 35 INTL LAWYER 79 (2001).
- 154 Commission press release (n 5).
- 155 *Ibid.*
- 156 See, e.g., European Commission, *Cloud Computing: Public Consultation Report* (December, 2011) available at <[http://ec.europa.eu/information\\_society/activities/cloudcomputing/docs/ccconsultationfinalreport.pdf](http://ec.europa.eu/information_society/activities/cloudcomputing/docs/ccconsultationfinalreport.pdf)>, accessed 13 March 2012.