

RESULT PAPER

```
elif operation == "MIRROR_X":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
elif operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

#selection at the end -add back the des
mirror_ob.select= 1
modifier_ob.select=1
bpy.context.scene.objects.active = modifier
print("Selected" + str(modifier_ob)) # modi
#mirror_ob.select = 0
#use = bpy.context.selected_objects[0]
#my_data["my_data"] = use.select[1]
```

Industrie 4.0 – Implications for competition law

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Introduction

Working Group 4 “Legal Framework” (WG 4) within the Industrie 4.0 platform is tasked with identifying what it sees as the most important legal points and issues arising as a result of Industrie 4.0 processes, and with outlining potential action to address these. One of the legal fields scrutinised by WG 4 in recent months has been competition law. This publication, in which corporate and association lawyers present the results of their work, seeks to answer the question whether the legislation designed for the analogue world is fit to keep up with the rapid developments of the digital transformation.

Digital networking and interconnection results in companies engaging in stronger cooperation with other companies – including their competitors. This raises questions for German and European competition law: Who is allowed to

cooperate with whom, and what criteria have to be met? Where does ownership of data come with market power and where are there risks of companies abusing this power? Who is responsible for the actions of AI-based autonomous systems and their compliance with competition law? These are some of the questions addressed by this publication.

Each of the five chapters starts with a factsheet (part A), which sets out the general topic, specific questions and fields of action. This is followed by part B, the legal appraisal, which looks at the relevant existing legislation and its contributions to the field of action and the questions raised. Part C, the final part of each section, sets out potential options for the legislator and specific recommendations for action as developed by the “Legal Framework” Working Group.

1. Market definition/definition and abuse of market power





A: Factsheet

Main issue:

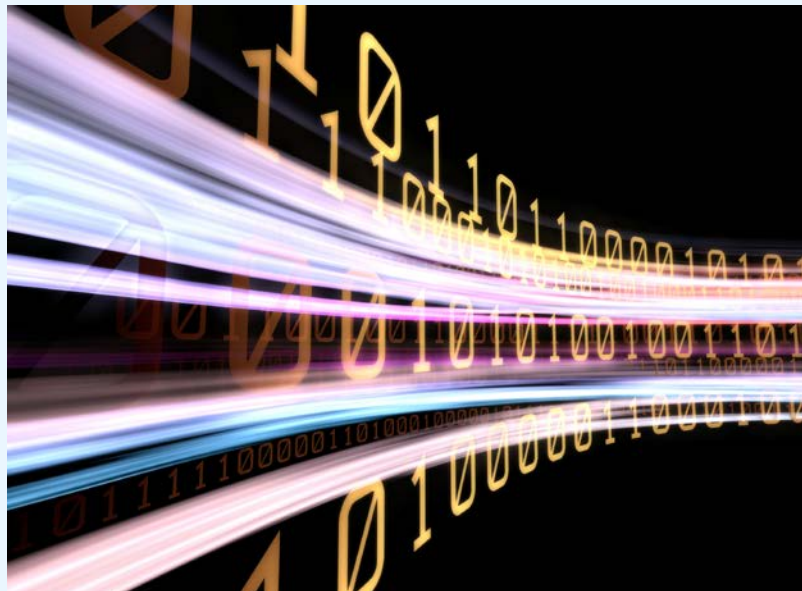
- Every appraisal under competition law starts with the process of defining the relevant markets. This is necessary (i) to establish whether the companies affected by the matter in hand compete with one another and (ii) to assess their respective positions on the relevant market.
- The main issue with market definitions that are too narrow is that a company may be prematurely found to be in a position of market dominance. This will mean that the company is no longer free to choose its business partners and that it is subject to certain restrictions as it designs its terms and conditions.
- If the market definition is too wide, this can result in (i) competition authorities being left unable to protect smaller competitors that are being forced out of the market, discriminated against or impeded and also in (ii) collaborations becoming subject to the far stricter provisions applying for competitors.
- Industrie 4.0 is likely to result in more hybrid products and stronger integration of customers and business partners in the value chains – developments that call into question the traditional approach to market definition which has focused on whether specific products or services can be substituted.
- Markets that function without monetary payments are gaining in importance, especially in the digital economy, and they pose a challenge to the traditional approach to market definition (e.g. measuring the level of cross elasticity of demand).
- The more business processes are shifting to the virtual space, the more complex (and in some cases less clear) the process of finding an adequate geographical market definition.
- It is likely that the processes of Industrie 4.0 will contribute to much faster developments in market shares and market power than has been the case in the traditional industrial sector. The new pace will probably be driven less by horizontal mergers or the construction of additional productive capacity than by a process of combining and interconnecting information and services from different sources.
- Platforms are emerging in many different fields and raise new questions about market definition and abuses of market dominance.





Resulting questions and fields of action:

- Will a physical product compete on the same market as the digital production data that allows for the production of an identical product?
- What economic procedures can be used to define markets on which services are rendered (in whole or in part) free of charge? What criteria have to be met for these services to be seen as belonging to the same market as the same goods that are offered (online or offline) in exchange for financial payment?
- Geographical market definition: What method can be used to ensure a correct assessment as to whether business processes (which may even be automated) in the virtual space serve to meet local demand or not?
- Is the 'reaction time' of competition law and the competition authorities good enough to successfully address abuses of market dominance on markets that are rapidly changing?
- What conditions need to be met in order for certain data to be potentially considered as a separate market in itself? What can be done to counteract the emergence or abuse of market power resulting from a company's monopoly on data or a combination of data and services, without such action standing in the way of innovation?
- What should be the criteria for operators of platforms that are used for large numbers of transactions to be considered providers of the goods and/or services sold on that platform (i.e. when should they be considered as companies competing on this market)? When should they be considered as mere brokers (under competition law)? (example Uber: service provider or mere broker?)
- With multi-sided platforms, it is possible for a single transaction to take place on several different markets: one side may be buying (customer side) a product/service, whilst the other (supply side) receives a brokering fee (and sells the product straight on to the customer side). Does this double role played by the platform and the need for that platform in order for both sides to have access to attractive transactions have an impact on market definition and/or on the market power held by the platform? If so, how?





B: Legal assessment

1. Method and purpose of market definition

The process of defining a market for the purposes of competition law, both in terms of geography and the nature of the goods/service sold, has long been based on the demand-side market concept, a practice that is recognised by practitioners and the courts in their case law. According to this notion, a market is comprised of *'all products that are sufficiently similar to one another in terms of their properties, their intended economic use, and their price range for an educated consumer to regard them as able to meet a specific demand and for him/her to compare them and weigh them against each other in a justified manner, regarding them as interchangeable'*¹. In other words, markets are always defined from the perspective of the opposite side of the market, which also means that supply and demand markets must be viewed separately. In addition to empirical studies, legal aspects may also play a role in the process of market definition as the extent to which two or more products are interchangeable (thus seen to compete on the same market) ultimately depends on a prescriptive assessment.²

In addition to this market definition based on the nature of the products/services sold, a geographical definition must also be found. According to this definition, a market is *'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'*³. Markets can be local, national or global in nature.

However, there are other factors that are not related to the opposite market side and yet frequently considered for the purpose of market definition (such as supply-side substitutability). If products are not interchangeable from the point of view of the demand-side, but suppliers are in a position to easily modify products that are technically sim-

ilar to suit their own production and the specific needs of the relevant demand-side group, these products are usually considered to be sharing the same market.

Sometimes, there is a tendency to define markets according to how companies are seen to behave on the market.⁴ Whilst this may seem like a circular argument given that the purpose of the exercise is to study a company's behaviour on a well-defined market, the fact that a company is able to act fairly independently in a given area suggests that this area is in fact a separate market on which the company is not facing any substantial/effective competition.

Defining relevant markets is not an end in itself, but serves to reflect the actual competition landscape and defines the area in which companies' competitive behaviour is to be assessed as to whether it should be challenged. Market definition is therefore an inevitable initial step towards establishing the extent of a company's market power and whether or not there have been infringements of competition law.

2. Market definition in the digital economy

In principle, the existing provisions on market definition form a rule-book that is method-neutral, open, sufficiently flexible to be used in many different situations, and that works even on markets that not 'physical' in nature. Nevertheless, there are some particularities taken into account by practitioners. For instance, geographical market definition plays a lesser role [in the digital economy]. This particularly applies for digital products (such as software) or services (such as search engines) provided directly via the internet and whose markets are geographically defined only (if at all) as a result of language barriers or cultural particularities. This also applies to Industrie 4.0 applications that can be used to interconnect machines across a factory, company group, or across national borders. Where physical products are sold over the internet (e.g. on B2B platforms), local or regional markets also often tend to be relevant only

1 KG WuW/E 1995f. – Handheld price label guns; cf. also Federal Court of Justice WuW/E 3058 (3062) – Transfer of pay TV signals; similar: Commission Notice on the definition of relevant market, OJ C 372, 9.12.1997, para. 8.

2 MüKoEuWettBR [Munich Commentary on European and German competition law]/Wolf, 2nd ed. 2015, Act Against Restraints of Competition Act Section 18, para. 9.

3 Commission Notice on the definition of relevant market for the purposes of Community competition law, OJ C 372, 9.12.1997, para. 8; ECJ Case 27/76, [1978] ECR 297 para. 10f. – United Brands.

4 Bechtold/Bosch Restraints of Competition Act Section 18 para. 6.

to the extent that different legal requirements may apply (e.g. in terms of tax law or data protection). Other questions, particularly regarding market definition by nature of product/service, are gaining in importance in the digital economy:

a) Market definition in cases where services are rendered free of charge

In adopting the 9th Act against Restraints of Competition and in particular in amending Section 18 (2a) Act against Restraints of Competition, the legislator has put an end to the discussion as to whether or not a market can exist where services are rendered free of charge, answering the question in the affirmative. This means that, in principle and for the purposes of market definition, it should not matter whether or not a user or consumer pays for a product or service or is given it free of charge. It is thus possible for products and services rendered free of charge to share a market with others provided in exchange for payment. As a general rule, services rendered free of charge will result in competitive pressure if their quality is not lagging far behind that of services available in exchange for a fee and/or if using them does not cause consumers any other serious disadvantages that will make them prefer to pay for the same service. The main criteria for using the service provided free of charge are likely to be good quality, reliability, integrity and speed. Deterrents could be inconvenient advertisements, the need to provide personal data and any other unreasonable terms and conditions.

In addition to these quality-based criteria, the economic methods used for market definition also need an update. Some traditional methods such as cross elasticity of demand cannot be applied to markets that operate without financial transactions. The same is also true for new markets characterised by very low-cost offers designed by their providers to lock customers into proprietary services. It is certainly doubtful that the practice of using mere qualitative methods to survey suppliers as to which competitors they think offer interchangeable products can deliver outcomes that have the necessary level of certainty. This is true all the more as not only the supply of specific services, but also demand for them is highly dynamic in the digital economy.



Once the market definition has been completed, it is then also difficult to determine market volume and market shares based on turnover, as this method no longer works or does not deliver reliable outcomes on a market where some suppliers provide services for payment, whilst others provide them for free or almost for free. The additional or alternative instruments of determining market shares and, by extension, market power in terms of units produced or sold also need to be “translated” from the traditional physical goods markets into meaningful indicators that work in the digital economy. What is required here are other quantitative indicators, such as the number of users, page views, reach, time spent on website etc. All this needs to become part of new procedures that are backed up empirically and give companies the possibility to assess their own situation under competition law.

b) Two-sided markets/platforms

In recent years, the question of what could be an adequate method for defining markets and assessing market power in the digital economy has been mainly discussed in the context of two-sided or multi-sided markets. A two-sided market is defined as a market participant that serves at least two sides/groups, allowing them to interact. Despite there being broad consensus on what a ‘platform’ is, there still is no uniform definition that would allow a distinction to be made in specific cases.⁵ A special characteristic

⁵ Bundeskartellamt, Hintergrundpapier, Digitale Ökonomie – Internetplattformen zwischen Wettbewerbsrecht, Privatsphäre und Verbraucherschutz, Tagung des Arbeitskreises Kartellrecht, Bonn, 2015.

of two-sided markets is the fact that either side/group will benefit if the other side/group on the platform grows. One example of this is the development of open standards for machine interaction, which are provided on a platform, so that other users can use them exchange for a fee. Now some users will further improve these open standards to make them compatible with their own (additional) machines, ultimately allowing ever greater numbers of different machines made by different manufacturers to communicate with one another. The more developers sell their improved standards on the platform, the more attractive the platform and the bigger the user group, which then in turn attracts other developers.

These mutual interactions are called indirect network effects and are a special feature of two-sided markets. Because of these particularities, it is impossible to merely take conclusions and findings made in the context of traditional markets/market players without network effects (e.g. concentration of market power causes welfare losses, prices can be viewed independently of one another)⁶ and apply them to two-sided markets or platforms.

Basically, there are two methods of market definition that could be used for two or multi-sided markets. Either, each market side or market relationship (in this case 'potential buyer of software' – 'platform' and 'software supplier on the platform') can be assessed separately or the assessment can view them all together. Whilst there is a broad consensus in favour of the second method, the decision must be taken case by case, depending of the characteristics of the two-sided market. If an overall assessment is made, this will extend to all the network effects as the results would not otherwise correspond to the economic reality.⁷

This raises the question as to how market shares and market power can be measured on 'two-sided markets'. The

simple *SSNIP*⁸ test can be difficult to apply as it can neither factor in network effects, nor close-to-zero prices. It also focuses almost solely on market shares and the cost-price margin, a method that is seen to produce results that are of limited value. Among the methods that have been suggested are broadened versions of the *SSNIP* test, the *UPP*⁹ test and the *critical loss analysis*.¹⁰ The first, in particular, has however met with broad rejection in the literature, where there have been calls for qualitative surveys following the basic idea of the *SSNIP* test.¹¹

The fact that digital markets can have a tendency towards monopolisation (also through direct network effects) should also be factored in. For instance, social networks can be expected to be a highly concentrated market, given that these networks' appeal increases with the number of users, many of whom only use their 'main' social network on a regular basis. By the same token, the platform needs to recruit as many advertisers as possible. This results in competition for the market (rather than on the market) and in 'winner-takes-all' markets.¹² This is a prime example of a market in which high market shares are not *per se* an indication of market failure, let alone abuse of market dominance.

Two-sided markets must be seen as separate from suppliers that appear to be 'platforms', but are actually one-sided sales platforms of a single supplier selling only their own products. A two-sided market can only exist where there is at least one indirect network effect (see definition above).¹³ Making this distinction, however, can be extremely difficult in practice; important indicators include whether certain key variables in the transaction (e.g. pricing powers) remain within a supplier's/trader's control – something that is not the case with a sales platform.¹⁴

Particular difficulties with correct market definition can arise in cases where a platform operator himself also acts as

6 Dewenter, Ralf; *Marktabgrenzung in der digitalen Wirtschaft. Passen die für die analoge Wirtschaft entwickelten Prinzipien?*, p. 10, Hamburg.

7 Monopoly Commission, *Sondergutachten*, Bonn, 2015, p. 39.

8 *SSNIP* = Small but Significant Nontransitory Increase in Price.

9 *UPP* = Upwards Pricing Pressure (Test).

10 Dewenter, Ralf; *Ökonomische Bedeutung von Netzeffekten bei der Marktmachtmessung*, Hamburg, 2017, p. 11.

11 Bundeskartellamt, *Hintergrundpapier, Digitale Ökonomie – Internetplattformen zwischen Wettbewerbsrecht, Privatsphäre und Verbraucherschutz*, Tagung des Arbeitskreises Kartellrecht, Bonn, 2015, p. 18.

12 Körber, Torsten, *Analoges Kartellrecht für digitale Märkte?*, WuW, 2015, p. 124.

13 Dewenter, Ralf; *Marktabgrenzung in der digitalen Wirtschaft. Passen die für die analoge Wirtschaft entwickelten Prinzipien?*, p. 7, Hamburg.

14 Bundeskartellamt, *Hintergrundpapier, Digitale Ökonomie – Internetplattformen zwischen Wettbewerbsrecht, Privatsphäre und Verbraucherschutz*, Tagung des Arbeitskreises Kartellrecht, Bonn, 2015, p. 18.

3. Determining the level of market dominance in the digital economy

Section 18(1) Act against Restraints of Competition stipulates that a company shall be considered to be in a position of market dominance if it is a supplier of or has demand for a certain type of goods or commercial services and does not face any substantial competition in the relevant defined market (in terms of its nature and in geographical terms), or if the company's market position is such that it towers above its competitors. Section 18(4) Act against Restraints of Competition sets out that a position of market dominance shall be presumed to exist where a company holds a share of at least 40% of the market. Furthermore, Section 18(6) Act against Restraints of Competition sets out that a collective position of market dominance shall be presumed to exist where a maximum of three companies hold [at least] 50% of the market or where up to five companies hold at least 66.6% of the market. In principle, these presumptions are also applicable to the digital economy.

It has to be questioned though whether market shares in digital markets have the same relevance [as in traditional markets]. So far, at least, digital markets have been characterised by a high level of dynamism and innovative power which have fuelled competition and resulted in major fluctuations

in market shares, sudden changes regarding the players involved, and also the emergence of new markets.

This means that the question as to whether a company that holds a very large share of the market is in a position of dominance or not can only be answered following a case-by-case assessment. For instance, the European Commission in its Microsoft decisions of 2004 and 2009 found that Microsoft, which held over 90% of the market for operating systems (Windows), could be presumed to be in a position of market dominance as this market share had remained stable over many years and as changing to a different operating system was associated with high costs. By contrast, in its 2011 Microsoft/Skype decision, the Commission concluded that a similar market share was not posing an obstacle under its merger review as the market was highly dynamic, as Skype services were provided free of charge, and as it was easy for users to switch to a different service. This decision has proven to have been correct, given that mobile users are now mainly using WhatsApp to communicate.¹⁵

Whilst market dynamics obviously warrant special attention in merger control, monitoring companies' conduct – which is a less interventionist instrument that usually does not have a structural impact – may also be warranted in situations whereby a company holds a very strong or dom-

15 Körber, Torsten, *Analoges Kartellrecht für digitale Märkte?*, WuW, 2015, p. 126.



inant market position for a limited time period only. German law operates with some very far-reaching presumptive clauses, particularly where oligopolies are concerned. Given that oligopolies are common on a lot of important digital markets, the question arises as to whether the presumption pursuant to Section 18(7) Act against Restraints of Competition can be proven to be false. This is particularly true if the competitive environment makes it likely that there is considerable competition between the companies forming the oligopoly. For traditional markets, this assessment can take the form of studying the competitive environment and past competitive behaviour. For digital markets (in particular non-monetary service markets), other factors such as competition over new customers are more important. However, further empirical studies are needed to pinpoint the exact parameters that will make it possible to stop companies from being able to abuse a position of market power that they have already attained. This additional work could result in an amendment of Section 18(7) Act against Restraints of Competition.

4. Abuse of market dominance

Evidently, market dominance in itself is not illegal, nor is it an indication that a company has broken the law. Market dominance merely signifies that the competitive forces of the market have been weakened and that the company that dominates the market has a special responsibility – namely not to abuse its power and distort the market.¹⁶ This type abuse is defined in Section 19(2) Act against Restraints of Competition; examples are also provided.

Section 20(1) Sentence 1 Act against Restraints of Competition specifies that the same applies *mutatis mutandis* in cases of *relative market power*, i.e. in situations whereby a company acting as a supplier or buyer of a certain type of goods or commercial services is dependent on one company to the extent that there are no (reasonable) possibilities for them to switch to a different one. Companies that are in a position of *relative market power* are subject to certain prohibitions under competition law.

In principle, the same types of abusive behaviour that can be found in traditional industries can also occur in the digital markets. For obvious reasons, this document cannot provide full list of these types of cases. There are, however,

two types of cases that are especially relevant for the digital economy and which have therefore been singled out for a more detailed description.

a) Abusive terms and conditions in non-monetary market settings

In the traditional goods markets, abusive pricing and abusive terms and conditions usually take the form of a dominant company providing a service in return for something they would not be able to obtain (because its economic value exceeds that of the service rendered) if the competitive forces were intact. The consequence here is an overall assessment of the pricing situation and the terms and conditions.

When assessing cases of abuse in the digital economy – especially in non-monetary markets – the focus is not so much whether the pricing is appropriate, but on the quality of the conditions themselves, meaning whether they are fair in serving both sides interests. This assessment is conducted on the basis of competition law and other fields of law (e.g. the law governing terms and conditions, data protection law).

The key difficulty, however, is to answer the question as to whether any terms and conditions that are different from what is typically deemed normal under the applicable legal system are in fact different from the terms and conditions that would be expected to apply in a specific market where there is effective competition; i.e. whether these terms and conditions are not in fact justified by the fact that a service is provided free of charge, so that, for instance, the far-reaching access to data claimed by the supplier can be seen as an adequate non-monetary ‘payment’.

Cases where there is no clear evidence supporting either the conclusion that certain terms and conditions are the result of market power or that the absence of these terms and conditions would enhance competition raise the question as to whether the monitoring of abusive behaviour under competition law is the right instrument for addressing any ‘defects’ that may exist. Even from a competition-policy angle, the better option might be to improve the legal framework in other respects, e.g. consumer protection, thereby creating a level playing field.

¹⁶ Fuchs/Möschel in Immenga/Mestmäcker, TFEU Art. 102 para. 130 with further references.

b) Access to data as an essential facility

In the digital economy, a form of market power that is mainly driven and maintained by data autonomy is attracting ever greater attention. This type of data autonomy may be protected by legal means, for instance when a company acquires (exclusive) rights to the data in question, but it can also result merely from the fact that a company has been able to use network effects or other means to gather data in such large amounts that competitors find their way to the (downstream) markets barred.

It seems entirely possible that data can represent an essential facility – at least in those markets where the formation of strong data pools has been enabled only by strong network effects. After all, there can be cases whereby network effects are stopping other competitors from building up parallel data pools in the same way as subadditive costs stop the construction of parallel infrastructure in cases where there is a natural monopoly.

See Chapter 2 for detailed information about the issue of market dominance as a result of data sovereignty and the possibility of applying the essential-facilities doctrine.

5. Scope for sanctions and intervention

There is a basic assumption that sufficient sanctions/possibilities for intervention are available under substantive competition law. These include administrative fines, prohibitions, cease-and-desist orders, instructions and – as a last result – unbundling.

However, the (lack of) procedural speed on the part of the competition authorities is regarded as problematic, particularly where the new markets are concerned. With digital markets constantly changing and developing in meaningful ways, any investigation by the competition authorities that is conducted with the necessary care will lag behind the actual developments. In some cases this has meant that decisions were made or approvals given with respect to issues that had already been taken care of by dynamic market developments (e.g. the decisions on the right to choose between different browsers in Windows or the decision on Windows versions not equipped with the Media Player). What is more problematic, however, are those cases

whereby abusive behaviour results in the company entering a position of market dominance, with a risk of monopolistic structures evolving. Unlike in the traditional markets where this kind of development tends to stretch over many years or even decades, in a digital market such processes can be completed in less than the duration of average proceedings for abuse of market power.

For this reason, it seems sensible to take action to expedite critical proceedings. This can be done first of all by allocating additional human resources within the competition authorities. It is also necessary to ask the question as to whether greater use should be made of interim measures. It is important to bear in mind, however, that the use of interim measures seems highly problematic in new situations which have not yet been studied empirically and for which there is no established precedent. There danger here is that market dynamics could be disrupted as a result of intervention that later proves unwarranted or even that the market could be distorted by measures taken against individual market players. Any such action should therefore be restricted to cases where failure to take such action threatens to result in irreparable damage to competition.

Finally, some constellations give rise to the question as to whether some action is at all possible without causing disproportionate interference in the dynamics of a market. For instance, some have been calling for search engines to become bound to neutrality. There is a major controversy about whether this proposal has any merits given that Google, for instance, changes its search parameters up 1,000 times per year (i.e. almost three times a day).¹⁷ This would make it extremely difficult to monitor all these changes and act upon them if necessary. The authorities would clearly be stretched beyond their limits.

Nevertheless it seems doubtful that there is a need for new institutions such as a dedicated Digital Agency. Most importantly, this would raise new issues with regard to the remit of the new institution, the Bundeskartellamt and other supervisory authorities. Furthermore, the digital transformation will ultimately extend to nearly all sectors, which means that all of the existing institutions and authorities will have to prepare for the challenges resulting from this development.

¹⁷ Haucap, Justus, *Ordnungspolitik und Kartellrecht in Zeitalter der Digitalisierung*, 2015, in: *Ordnungspolitische Perspektiven*, Düsseldorf.



C: Guidelines and recommendations for action

At present, there are fairly few calls for (statutory) regulation. This seems understandable given that “the modern, globalised and digitised, highly fragmented and interconnected world is far too complex to be fully captured or perfectly steered by national statutory regulation.”¹⁸

This also raises the issue of the dangers inherent in a legal framework that is overly interventionist and detailed. Not only could such a legal framework deter new market participants or drive them to other parts of the world, it could also disrupt what should be innovation-driven competition. The market in the digital economy is more dynamic, fast-paced and unpredictable than the traditional market and it tends to be easier for new competitors to establish themselves if they provide a good or even better product or service. The existing framework (particularly following the 9th amendment of the Act against Restraints of Competition) provides a suitable and flexible framework in this respect, even though it sometimes faces challenges caused by the dynamic nature of the digital market.

There is room for improving the existing legal framework by means of developing economic methods to assess various effects that can be observed in the digital markets. The objective here is to gain insights that are better underpinned by empirical studies and use these to develop guidelines that will improve the level of legal certainty for

all sides. Furthermore, it would appear useful to add to some of the definitions and examples provided in the Act against Restraints of Competition in response to the special features of digital markets. For instance, it might be worth exploring the option of introducing a definition of ‘two-sided markets’ and/or ‘platforms’ into the Act to make it easier to establish whether or not a company dominates one of these markets.¹⁹

Beyond this, there seems to be some need for improvement with regard to authorities’ speed of intervention. Even though the speed at which authorities step in and/or impose sanctions is deemed ‘too slow’ for the digital market and therefore partly ineffective, they can still have some effect as a deterrent. However – wherever possible – the speed at which these measures are taken should be brought closer to the speed at which the relevant players are moving. At the same time, however, it is important to take into account just how sensitive the digital markets are to outside intervention.

There are also some calls for improving market participants’ options to enforce their individual rights on the market. The purpose here is to provide better protection against abusive practices on the market.²⁰ There is however some doubt as to whether this can prove effective in a majority of cases, given the complexity of the issues arising in the digital economy, the lack of precedent, and the restrictions that come with civil proceedings.

18 Boehme-Neßler, Volker, *Unscharfes Recht, Überlegungen zur Relativierung des Rechts in der digitalisierten Welt*.

19 Cf. Chapter 5 for further observations on the debate regarding the issue of finding a uniform definition.

20 Monopoly Commission, *Sondergutachten*, Bonn, 2015, p. 163.

2. Market power from data sovereignty and control

```
mod = modifier_ob.modifiers.new("
for object to mirror_ob
mod.mirror_ob = mirror_ob
on == "MIRROR_X":
mod.use_x = True
mod.use_y = False
mod.use_z = False
ation == "MIRROR_Y":
mod.use_x = False
mod.use_y = True
mod.use_z = False
ation == "MIRROR_Z":
mod.use_x = False
mod.use_y = False
mod.use_z = True

tion at the end -add back the deselection
select= 1
b.select=1
t.scene.objects.active = modifier_ob
ected" + str(modifier_ob) # modifier
r_ob.select = 0
.context.selected_objects[0]
objects[one.name].select = 1

"please select exactly two objects."

OPERATOR CLASSES -----

s.Operator):
mirror to the selected object""
t.mirror_mirror_x"
x"

ext):
.active_object is not None
```





A: Factsheet

What is it about?

- Industrie 4.0 is inseparable from data. Data is indispensable for Industrie 4.0 applications and a key factor determining a company's level of competitiveness. Many new business models will emerge (only) on the basis of the technical possibilities that now exist, such as gathering, storing and processing all kinds of data pools which include personal data, but also (and especially) non-personal 'machine data'.
- This is why many companies seek to compile relevant data. Unless the right to certain data has been assigned otherwise by statute or data protection rules are violated, those who collect data are 'sovereigns' of that data. Third parties may then conclude agreements with the 'data sovereigns' that will allow them to use the data for their own purposes or for economic gain.
- In some circumstances, it can be difficult for third parties to gain access to this data – a situation that may result in 'power structures' or monopolistic structures in terms of data sovereignty that are undesirable for the overall economy. This can happen as a result of a company's special position on the market and/or its having exclusive access to data. Such scenarios raise the question of access rights for third parties.



Resulting questions:

- How important a factor is access to data when establishing market power? What type of data plays a specific role for competition?
- Can data pools qualify as 'essential facilities'? If so, what are the prerequisites for this presumption to be considered justified and what would the consequences be?
- What other types of data-driven market abuse are possible? What is the role of competition law in the context of contract design where the contracts in question relate to data?
- Where data is key for companies to be competitive, how can access to that data be guaranteed if the essential-facilities doctrine does not apply? Beyond competition law, are there other interventions that can serve to protect free data flow and, if necessary, access to data pools?



B: Legal assessment

1. Introduction

As in the traditional economy, data and access to data is an important factor in competition in the world of Industrie 4.0. This insight is not entirely new, given that data has always had an economic value and enhanced companies' position on the market, even in many traditional sectors of the economy. But the importance of data and of access to data for a company's ability to compete successfully is especially high in the context of fully interconnected industries generating and using vast amounts of data (i.e. in the context of "big data").

2. Appraisal under antitrust law

a) Market dominance resulting from control over relevant data

Section 18(1) Act against Restraints of Competition stipulates that a company shall be considered to be in a position of market dominance if it is a supplier of or has demand for a certain type of goods or commercial services and does not face any substantial competition in the relevant defined market (in terms of its nature and in geographical terms), or if the company's market position is such that it towers above its competitors. At European level, this provision has its equivalent in Article 102 TFEU. This type of market dominance can also become manifest in that a company is able to bar another company from accessing a downstream market altogether or to at least make it substantially difficult for that company to enter the market.

There are many different factors that can contribute to this type of market dominance. Section 18(3) Act against Restraints of Competition provides a list of indicators to be taken into consideration when assessing a company's market power (including vis-à-vis its competitors), which includes the following: market share, financial situation, access to procurement and/or sales markets, affiliation with other companies, legal or factual barriers hindering other companies from entering the market, actual and potential competition driven by companies based within or without the scope and jurisdiction of this Act, ability to shift production/demand to other products or commercial services,

possibilities for the opposite side of the market to switch over to other companies and sell to/buy from them. Under the 2017 9th amendment of the Act against Restraints of Competition, several new characteristics of the company and its competitive situation were added to this list (which remains non-exhaustive). The new criteria revolve mainly but not only around multi-sided markets and networks and can be found in sub-section 3a: direct and indirect network effects, several services used in parallel?, how difficult is it for consumers to switch?, size and network effects, access to data relevant for competition, competitive pressure driven by innovation.

The right to control data and/or the factual control over 'access to data relevant for competition' (all of which can be subsumed under the term 'data sovereignty') can therefore be a relevant factor establishing market power. There is no doubt that this 'data sovereignty', which comes with the power to grant or deny access to this data, can be relevant under competition law, and the competition authorities give appropriate consideration to this.²¹ Under the 2017 9th amendment of the Act against Restraints of Competition (Section 18(3) No. 4), 'access to data relevant for competition' has been made a criterion to be considered as part of the analysis to establish a company's position on the market.

However, there are a lot of unanswered questions. Most importantly, the rights to control data have yet to be unequivocally regulated. At present, there is neither a 'property right to data' nor a comprehensive 'copyright for data'. The question as to whether a 'property right to data' should be introduced is still the subject of debate. This means that, at present, data ownership tends to result from the factual control over the data. It is more akin to having control over trade and business secrets than to a legally protected position enjoyed by their owner. Moreover, there are many different categories of data, each with their own very different set of characteristics, applications, value and 'relevance for market power'. For instance, user data gathered on the internet tends to be non-exclusive, which means that it can be gathered by several different companies at the same time and even several times. By contrast, 'industrial data' or 'machine data' is often exclusive in that it can only be collected using specific devices that are controlled by a single company. Access to both types of data is relevant for competition and can be a factor that leads to market dominance. However, with exclusive data it is much more likely

21 Cf. 'Competition Law and Data' by the French Autorité de la concurrence and the German Bundeskartellamt of 10 May 2016; cf. Bundeskartellamt 'Big Data und Wettbewerb', October 2017.



that other competitors will be barred from accessing this data and, by extension, downstream product markets. It is therefore necessary to maintain a clear distinction between ‘access to data relevant for competition’, a factor that may lead to market dominance, and the ‘denial of access to data relevant for competition’ – a type of behaviour that may constitute an abuse of power.

It does not follow automatically from the fact that access to data relevant for competition has been made a criterion in establishing a company’s level of market dominance that ‘data sovereignty’ by itself – even if it takes the form of control over exclusive data – must necessarily translate into market power within the meaning of Section 18 Act against Restraints of Competition. Just like with other exclusive rights (such as patents) that may (but need not) result in market power, there is no automatic connection between the two. As with patents and other property items, it is also important to consider that companies do not suddenly find themselves in possession of data but actively invest in data gathering and processing. Section 18 Act against Restraints of Competition therefore rightly lists access to data relevant for competition as one of several factors to consider.

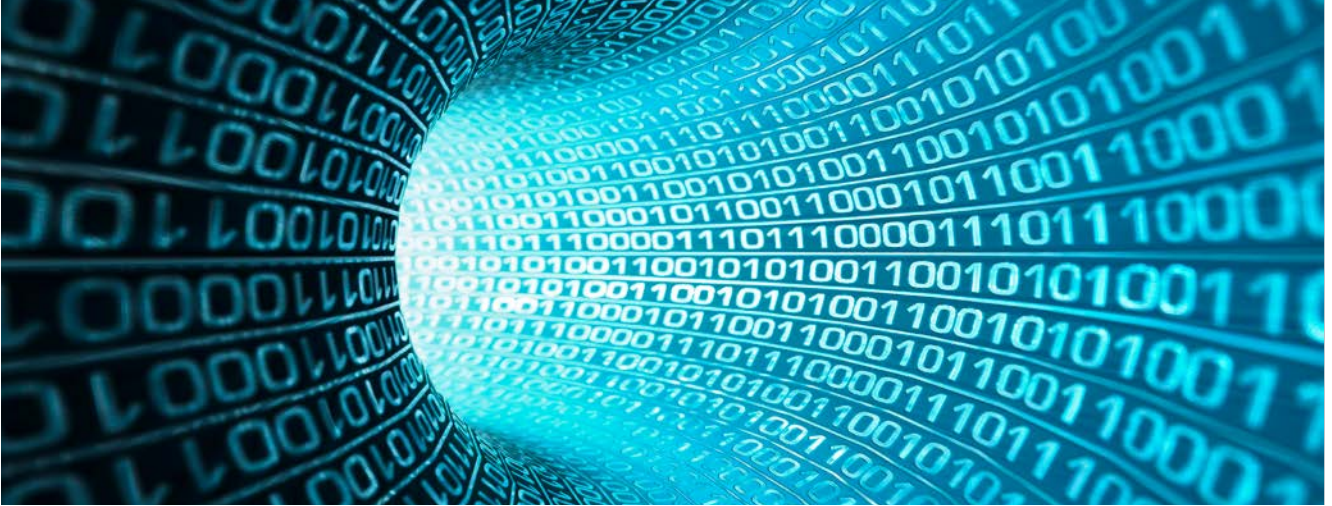
In each individual case, the task must be to establish the extent to which the many factors linked to data can really translate into market power and also the relevant markets where this is the case. Among the relevant factors to consider are: type of data, amount of data, quality of data; whether it is up to date, available, can be analysed and monetised, and/or whether withholding this data from other companies can restrict these in their ability to compete.²² This also means that the notion that ‘a lot of data equals a lot of power’ is too overly simplified to be true. The public debate centres very much on raw data. Whilst this data can be relevant for competition, it often (depending on the industry) becomes so only once it has been compiled with other data and processed, at which point it acquires value (that is also relevant for competition). Whenever data is considered as a factor that may lead to market dominance, the analysis must also extend to its impact on the markets directly affected and its meaning for the purposes for which it is being used.²³ Data that is highly valuable for one country may be worthless for another.

Ultimately, what is required is an in-depth analysis of the relevant factors relating to data relevant for competition and also the many other potential factors that may result in market dominance, which – taken together – can indicate whether or not a ‘data-rich’ company is likely to be in a position of market dominance. Data relevant for competition will always be just one factor indicating market dominance – as can also be seen from the wording of Section 18(3a) Act against Restraints of Competition. Whether or not a company acquires market power will largely depend on entrepreneurial creativity, i.e. on *how* it uses the data. Success on the market will depend on the quality of the services offered using (among other things) the data.

It should be noted that market power, market dominance and even monopolies as such are legal – even if they occur in a context of power over data. Only if a company abuses its dominant position on the market (or, in Germany and within the scope of Section 20 Act against Restraints of Competition, if it abuses its relative market power), does this constitute a violation of competition law.

²² Cf. Nuys, WuW 2016, 512, 516; Körber, NZKart 2016, 303, 305 f.

²³ Cf. Weber, ZWeR2014, 169, 173; Körber, NZKart 2016, 303, 305.



Therefore, a company's refusal to share data with others is illegal under competition law only if the data pool in question constitutes an 'essential facility', in which case the mere refusal to grant access to this data may constitute an abuse of market dominance, or if the company abuses its market power resulting from control over the data in any other way that constitutes a violation of competition law.

b) Abuse of market power and data relevant for competition

aa) Data pools as 'essential facilities'

In principle, the mere refusal by a company that is in a dominant market position to grant third parties access to its data pool is as legitimate under civil and competition law as a refusal by that company to share a patent, factory or other facility with one of its competitors. A refusal of this kind is an expression of the company's freedom of ownership and its contractual freedom and of the principle that nobody must be forced to promote outside competition to one's own disadvantage.²⁴ If a company has invested heavily and incurred risks to establish infrastructure (e.g. data pools) to become a first mover, the mere fact *per se* that other companies have less data (at that point in time) or that they are finding it difficult to catch up does not justify an intervention by the competition authorities to have access rights bestowed on them.

It is established in the case law of the ECJ regarding 'essential facilities', which has also been adopted by the Federal Court of Justice²⁵, that a company's refusal to grant others access to its own data pool will represent an abuse of market power only in 'exceptional circumstances' – even if the company is in a dominant position. In principle, a mere refusal to grant access to one's data pool can only be deemed to constitute an abuse of market dominance if the data pool in question is an 'essential facility'.

A legal provision casting the essential facilities doctrine into law can be found in Section 19(2) No. 4 Act against Restraints of Competition. In principle, however, this provision only applies to physical networks and infrastructure. Furthermore, its practical relevance is rather limited given that there are now dedicated legal acts regulating networks (Energy Industry Act, Telecommunications Act, General Rail Act). The scope of application of these does not include immaterial goods such as data pools. However, the general ban on abusing one's market power as set out in Article 102 TFEU and Section 19 Act against Restraints of Competition provide a legal basis for applying the 'essential facilities' doctrine to intellectual property rights and business secrets (and, therefore perhaps also data pools).

Given the exceptional character of the essential facilities doctrine under both constitutional and competition law,

²⁴ Körber, NZKart 2016, 303, 308.

²⁵ Cf. e.g. Federal Court of Justice NJW-RR 2005, 269, 272 – Standard-Spundfass; Federal Court of Justice NJW-RR 2008, 996 – Soda Club.

the relevant provisions rightly set the bar high for any facility to be presumed ‘essential’. This can only be the case if the facility cannot be duplicated or replaced **and** if access to this facility is an absolute requirement for a company wishing to become active on a downstream market.²⁶ This means that an essential facility cannot be presumed to exist solely on the basis that it is (so far) the only one of its kind. In fact, as the ECJ has established in its *Bronner* case, it has to be shown that it is impossible for a competitor of the first mover to duplicate this facility (unilaterally or in cooperation with other competitors) – even if this competitor is equally efficient and puts in the same amount of resources as the first mover.²⁷

Furthermore, the ECJ has made it clear in its settled case law ever since the *Magill* case that a requirement for a company to provide access to an ‘essential facility’ can only be an option if ‘exceptional circumstances’ apply.²⁸ This means that ‘exceptional circumstances’ can only be deemed to apply if all of the following criteria are met: (1) competitors’ access to the facility is indispensable for them to be able to access a neighbouring market; (2) refusal to grant this access renders any effective competition on this market impossible; (3) there is no objective justification for denying access to the market; and – if the case revolves around access to intellectual property rights or business secrets – (4) denial of access to the essential facility stops a new product from being sold on the market.²⁹

In the light of this case law, it is questionable whether the ‘essential-facilities’ doctrine can be applied to data pools. It would seem that, as a rule, it cannot be applied in any cases concerning non-exclusive data pools which others could also compile if they put in the efforts required. Given the decision reached in the *Bronner* case, it also seems doubtful that the presence of economies of scale and of network effects benefitting the company dominating the market represents a sufficient criterion. However, the same need not apply to exclusive data pools (e.g. vehicle data or other machine data) or data pools that cannot be compiled by equally efficient competitors, perhaps not even coopera-

tion with other market participants, in any way that would make good economic sense.

Nevertheless, it is important to bear in mind that there is no automatic right to access exclusive data, even if, in principle, it qualifies as an essential facility. Companies are still free to present an overriding objective justification for denying access to their data. These arguments must then be weighed against the interest of protecting competition. In the case of vehicle or machine data, for instance, it is important to consider that this data may represent trade and business secrets or that using this data may result in such secrets being revealed. Ultimately, with big data and data analytics there is a high inherent potential for production and productive processes (within an engine, fluctuation margins, any inefficiencies etc.) to become completely transparent to competitors. This seems particularly relevant wherever meta data is also made accessible.

By extension, this also means that granting access to data cannot only resolve issues under competition law, but also give rise to such issues. After all, information-sharing between competitors is also restricted under competition law, specifically under Art. 101 TFEU/Section 1 Act against Restraints of Competition.³⁰ In the case of personal data, the provisions of data protection law are also applicable. If a customer, for instance, has granted a company permission to use their data, the company would need the customer’s consent to pass on the data to another company, even it does so for reasons linked to competition law. This also means that the competition authorities cannot order such data to be passed on in violation of data protection law.³¹

Finally and for completeness’ sake, it should be pointed out that – even if all of the requirements under the essential-facilities doctrine are met – there is of course no right to access to data pools free of charge. Instead, it follows from the relevant case law that adequate financial compensation must be provided. In other words, those seeking access to other companies’ (raw) data pools ought to care-

26 Wolf, in: Münchener Kommentar zum Kartellrecht, 2nd ed. 2015, Section.

27 ECJ, 26.11.1998, Case C-7/97, [1998], I-7791 para. 43 f.- Bronner.

28 ECJ, 6.4.1995, related Cases 241 and 242/91, [1995], I-743 – Magill (RTE and ITP).

29 ECJ, 29.4.2004, Case C-418/01, [2004], I-5039 – IMS Health GmbH.

30 Cf. e.g. Zimmer in: Immenga/Mestmäcker, Wettbewerbsrecht, 5th ed. 2014, Section 1 Act against Restraints of Competition para. 265 ff.

31 Körber, NZKart 2016, 348, 350 f..

fully weigh up whether this will really pay off. The answer will much depend on the value of the raw data and on how important this data is for competition in this particular case. If the value for competition is not inherent in the data itself but in the information derived from the data once it has been processed, and if the companies seeking access to the data are lacking the relevant resources (e.g. the necessary algorithms), any competitive advantage resulting from the data will not be transferred to competitors simply by giving them access to this data.³²

bb) Exploitative or discriminatory design of data agreements

In those cases in which access to data is or must be given in practice, this is done by way of an agreement. Evidently, such agreements may also be used on a voluntary basis when there is no right to access data under the essential-facilities doctrine – provided that there are no other legal obligations (under competition law or data protection law (see section above)) preventing companies from sharing data.

If a company dominates a market (partly) as a result of its data sovereignty and if this company provides access to this data in exchange for payment, there is a danger that it might be abusing its market power to impose unfair conditions (in particular abusive prices) on those seeking access to the data. For instance, Section 19(2) No. 2 Act against Restraints of Competition stipulates that a company seeking to impose higher-than-normal fees or any other conditions that are different from those that would very likely be seen in an intact competitive environment shall be considered to be abusing its position of dominance. Under Article 102 lit. a, it is unlawful for any company to directly or indirectly impose “unfair purchase or selling prices or other unfair trading conditions”.

Such abusive design of pricing or conditions need not necessarily take the form of a dominant company asking for unfair terms in exchange for access to its data. A dominant company may also be committing such abuse when using types of contracts/agreements to impose unfair conditions on its contractual partner(s) as it seeks to access their data. A case of this kind is currently being reviewed by the Bundeskartellamt. Whilst this particular case pertains to personal data and the terms and conditions imposed on Facebook users, similar cases might also arise in a B2B context over non-personal data. In order for abusive behaviour to

be established in such a case, however, it would likely have to be proven that the company’s ability to impose such conditions derives from its dominant position, and that this may have a negative impact on competition. In many cases this is very difficult to prove in practice.

Regardless of whether they have an ‘essential facility’, companies that are in a dominant position are subject to the bans on discriminatory behaviour as set out in Article 102 lit. c TFEU and Section 19(2) No. 1 Act against Restraints of Competition. If a company has granted another company access to its data pool on a voluntary basis, it must not arbitrarily withhold that access from others seeking it. It would therefore seem sensible to use criteria similar to those used for intellectual property rights. In its *Standard-Spundfass* decision, the Federal Court of Justice explained that the ban on discrimination serves to prevent situations whereby a dominant company abuses its position “to issue licences in a way that limits access to the relevant market based on criteria that go against the intention of the Act against Restraints of Competition, which is to guarantee free competition.” However, the Federal Court of Justice went on to point out that the ban on discrimination “does not include a general ‘most-favoured-company’ clause designed to force the company dominating the market to give everyone the same favourable treatment, particularly in terms of prices. Most importantly, the company dominating the market should not be denied the possibility to respond to various market conditions in a differentiated way. Whether or not unequal treatment is warranted and justified therefore depends on the exact nature and extent of this different treatment. This will largely depend on whether the actions placing other companies at a relative disadvantage seem to improve conformity with the principle of competition as they balance certain interests with regard to what is being offered in the case in hand, or whether these actions are arbitrary or rooted in thoughts or intentions that are alien to behaviour that makes good economic or entrepreneurial sense. Furthermore, it is important to ensure that the power exercised by the company dominating the market should not result in a disruption of competition between the companies affected by the unequal treatment.”³³ In a nutshell: a company that collects data in exchange for a service or sells data may treat different contractual partners of the same type in different ways only if this differentiation is objectively justified.

32 Körber, NZKart 2016, 303, 306.

33 Federal Court of Justice NJW-RR 2005, 269, 272 – *Standard-Spundfass*.



3. Recommendations for competition policy

In principle, the well-established assessments conducted under competition law, which focus on market power and abuses of market power, provide the necessary basis, including for Industrie 4.0 and the issue of access to data. The new Section 18(3a) No. 4 Act against Restraints of Competition was introduced by the legislator in recognition of the fact that access to data relevant for competition is one of the criteria to be used to determine a company's level of market power. At the same time, however, the legislator also said very clearly that 'data sovereignty' is but one criterion of several to be used.

A differentiated analysis is required to establish whether and to what extent the essential-facilities doctrine can be a viable approach for resolving issues around access to data. It might be necessary to make a distinction between exclusive and non-exclusive data. Following the recent amendment of the Act against Restraints of Competition, however, the competition authorities and the courts ought to be given room to find more differentiated solutions for issues that may arise and to establish how the well-known, tried and tested criteria can be applied to data-driven markets. This is a field in which the Bundeskartellamt is already very active, having produced various publications, engaged in the Facebook proceedings and begun a sector-specific investigation into online marketing on 1 February 2018. Likewise, the Bundeskartellamt is also following the developments on the data-driven markets of Industrie 4.0.

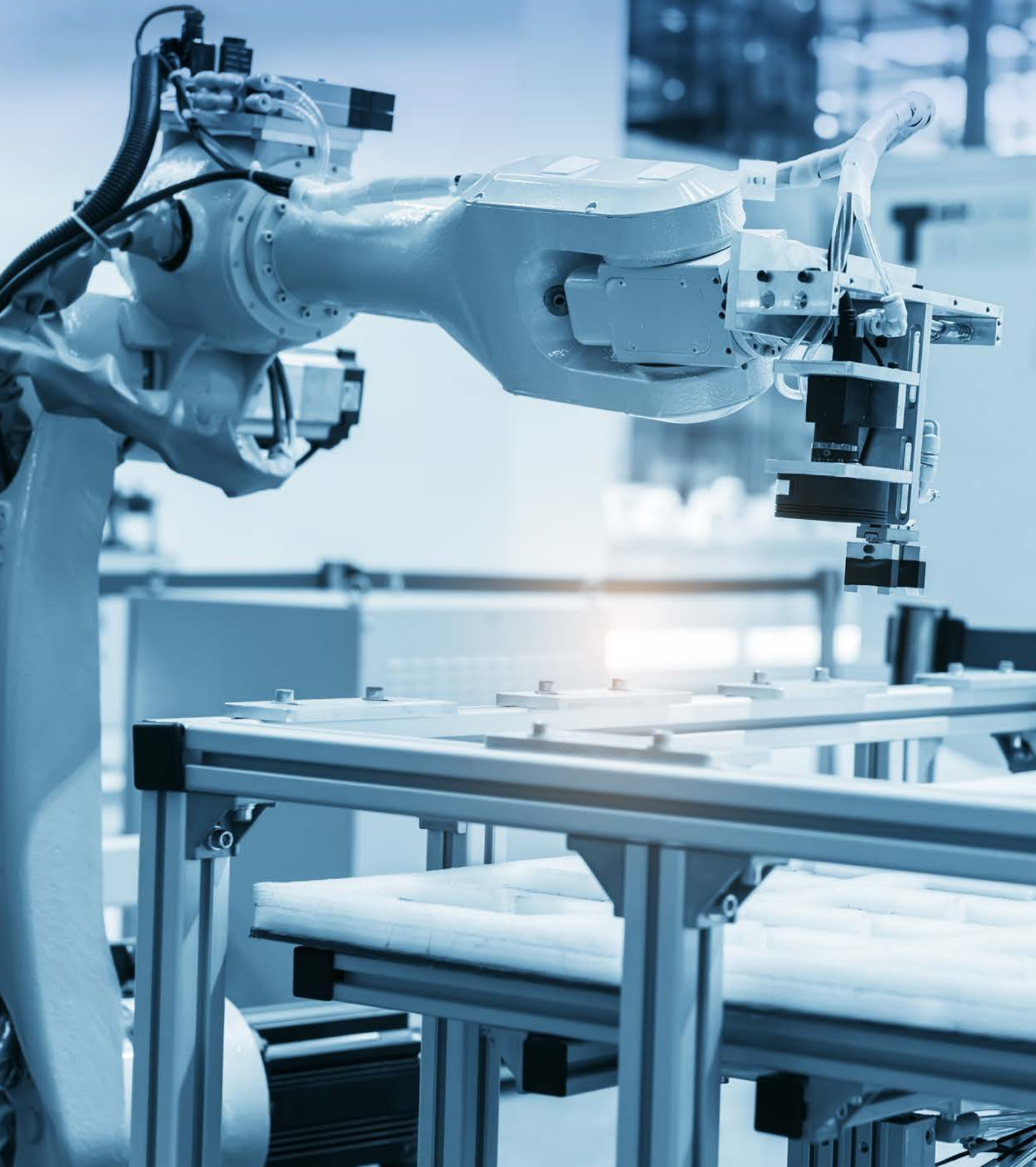
As no market failure has been established to date and as rigid statutory regulation would not be adequate given the

dynamic nature of data-driven markets, it would seem too early to introduce general provisions under competition law to regulate access to data for all sectors. If certain sectors are experiencing problems in this area, then it would make sense to begin by taking sector-specific action. However, any such action, even for individual sectors, must be approached with caution, in particular where *ex ante* instruments are concerned. These should only be envisaged where market failure has been found and where it has been established that this market failure cannot be cured under competition law. It is also important to bear in mind that regulatory requirements designed to prevent 'data power' (e.g. portability rights) can, in actual practice, impose significant cost burdens on small and new companies, in particular, and that this can have the undesired effect of further stabilising monopolies.

By contrast, any regulatory approaches designed to reduce statutory obstacles to the free flow of data and to encourage companies to grant access rights on a voluntary basis are to be welcomed. This is the approach also followed by the Commission in its current proposal for a framework for the free flow of non-personal data in the European Union.³⁴

On that basis, companies should first be given room to take their own decisions freely and to conclude agreements on access to data in line with competition and data protection law. At present, there seems to be no need for any (further) legislative action. However, we would call for the developments on the data-driven markets to be closely monitored so that any market failure (of which there is currently no indication) could be addressed by the authorities or, if necessary, by the legislator.

3. Responsibility for “Robot cartels” and the free flow of data – flow of information 4.0





A: Factsheet

Main issue:

- Industrie 4.0 will result in an increase in machine-to-machine (M2M) communication, with machines changing their actions independently based on certain parameters and how these change. Human input might be limited to programming the machine in the first place. The system will then autonomously train itself and take decisions. These autonomous decisions may well affect parameters that are relevant for competition, such as pricing, capacity-planning, customers, or business strategies.
- Under Industrie 4.0, there will be increased networking between machines and companies. This will also make it possible for companies to access other companies' information. There may be cases whereby none of the companies involved might not know from the outset which specific pieces of information can and will be accessed by algorithms. This also means that information that is sensitive for reasons to do with competition might be shared.
- For experts on competition law, the question here is whether the existing laws with their defined notions of what is an agreement, concerted action or information sharing is fit to be applied to these new situations.



Resulting questions:

- Where are the limits of human responsibility for M2M communication, in particular M2M communication based on self-learning algorithms?
- What if a self-learning algorithm decides that the best economic solution is to reach agreement with another machine on one of the parameters defining the competitive landscape (e.g. sales price adjustments)? Could this be construed as a breach of competition law?
- If the answer is yes, who should be held liable? The user or the developer (who might not know everything about the context in which the machine he is programming will be used), or both?
- Does Industrie 4.0 call for a review of the definition of what is a potential competitor? With the emergence of new business models (some of which are easy to implement), the traditional understanding of what makes a potential competitor would now see large numbers of vastly different companies involved in Industrie 4.0 qualified as potential competitors. This means that adopting a wide definition of competition would result in companies' becoming restricted in their possibilities to share data that is sensitive in the context of competition, and these restrictions might have their own, sometimes severe, implications for the relevant markets.
- Which of the parties involved in the information-sharing is responsible for preventing data sensitive in the context of competition from being shared with competitors? Should this responsibility lie with the company providing the information or the one receiving it, or both? Are (technical) safeguards required that will prevent any information sharing?
- What needs to be done if data is shared M2M nevertheless? Are recipients of information required to refuse any information that is sensitive in the context of competition immediately upon receiving it? This would mean that they would have to review and assess all the information they automatically receive (perhaps also using an automated algorithm)?



B: Legal assessment

1. Accountability for ‘colluding computers’ under competition law

The current legal situation does not specify how ‘colluding computers’ (i.e. algorithm-based collusion between competitors or sharing of information that is sensitive in the context of competition) are to be treated under competition law. The liability regime in place under German and European competition law is likely to be insufficient here, but can still provide some important inspiration.

Under the current legal system, infringements of competition law are the result of actions of a natural person. This ‘connecting offence’ can be attributed to a legal person, which will then be deemed directly complicit in the offence. Ultimately, this can mean that an entire company group may be held liable (liability of the ‘economic unit’ or ‘affiliated companies’) under European (and now also German) competition law.

a) Potential case scenarios

Practices that are illegal under competition law include collusion and concerted practices designed to prevent, restrict or distort competition or having this effect. The ban on illegal behaviour extends to any sharing of information that is sensitive in the context of competition (e.g. current prices, conditions, business strategies). There are various scenarios as to how ‘colluding computers’ might violate competition law. These notably include the following:

- An algorithm used as a mere ‘transmitter’ or tool implementing a human plan: in this case, natural persons would rely on computer-based communications rather than entering into direct contact. Algorithms could be used either for sharing information that is sensitive in the context of competition or for adjusting prices (perhaps at a supra-competitive level).
- Hub & Spoke: a central platform serves as a hub for sharing information that is sensitive in the context of competition to various ‘spokes’, and perhaps for coordinating their competitive behaviour. This could be done by means of an algorithm collecting information from

the participating competitors, processing this information and handing it back to them (cf. Section 2 below for more information about information-sharing).

- Algorithms deployed by one trader analyse the market and any changes (e.g. price fluctuation in competing online shops) and autonomously adjust the trader’s own retail price. This so-called ‘dynamic pricing’ has already been standard practice for a long time. Whilst it does not involve any direct M2M communications between competitors, it is still a computer-based way of monitoring the market and adjusting one’s business practices. The precision and speed involved in dynamic pricing can result in a level of coordination that would be impossible for humans to achieve without the help of computers. From a competition lawyer’s perspective this can be a cause for concern, given that there is a possibility that traders may use algorithms to automatically adjust their retail prices upwards, eliminate incentives for discounts, or breach competition law in some other way, because their competitors can respond to their actions (almost) in real time, using their own computer systems.
- Concerns may also arise where algorithms are used that not only can analyse big data (*big analytics*), but also can take decisions based on their own learning (*deep learning*), thus developing sales strategies over time that might not have been foreseeable at the time when the algorithm was programmed.

b) Appraisal under competition law

If several companies competing on the same market use an algorithm that, for instance, causes price coordination at supra-competitive level, this raises the question as to (i) whether this conduct is permissible under competition law, and – if it is not – (ii) whether this conduct can be held against the relevant natural persons and whether the firms on behalf of which the natural persons are acting can be liable.

Whenever an algorithm is used as an extension of the natural person and behaving in a way that, without the use of an algorithm, would be clearly in breach of competition law (e.g. price agreements or collusive agreement on using a specific price-setting algorithm), it should always be

assumed that there has been a breach of competition law. These are cases whereby a human intention to act has been put into practice using computers as a predictable technical means of implementation (e.g. price agreements via *price bots*). It is likely that the company engaging in coordination about the use of the algorithm or using the algorithm can be held directly liable for this under the existing law and that, under German law, the natural person involved could also be held liable. There is also the possibility of claiming vicarious liability in those cases where the company’s collusive behaviour is aided by a technical service provider (external software engineer) programming the algorithm.

The question as to whether competition law has been breached is a little more difficult to answer where information that is sensitive in the context of competition is shared in a computer-based, centrally organised system. The assumption here would be that – just like in the offline world and as has been established in European and national case law – even the act of passively accepting information constitutes a breach of competition law, unless the recipient has objected to the transmission of the data or proven that they have not taken notice of this information (for details, cf. Section 2.b below). As in the previous scenario, the technical means being deployed merely serve to put into practice a type of conduct that is disapproved under competition law. To the extent that the technical process can be controlled and prevented, the existing law will form a sufficient legal basis for holding companies and individuals engaged in such behaviour to account. However, unless exceptional circumstances apply, it will be nearly impossible to prove that a piece of information has not been taken notice of if this information was shared in a purely electronic way and if there is a possibility that it might have been accessed automatically.

Furthermore, there is the question of whether the use of AI-based algorithms can represent a breach of competition law. If a company is using its programme code merely to exploit the transparency of the online world in order to be able to take informed decisions in its own competitive behaviour and without actually coordinating its behaviour with competitors (or their algorithms), this is likely to be seen as neutral under competition law. The same does not apply, however, if algorithms are designed to communicate with other algorithms and to alleviate or eliminate competitive pressure (*non-compliance by design*). In cases whereby self-learning algorithms are used and where these

prevent, restrict or distort competition (e.g. by causing price increases across the market due to M2M communications), it will not be possible to focus solely on whether this effect had been intended by the individual programmer, as the actual course of action will not always be predictable (in a sufficient level of detail). It would be necessary to have a debate on whether the mere use of an algorithm that comes without ‘safeguards’ (i.e. that is not *compliant by design*) should be treated as objectionable behaviour. However, it would be difficult to define the exact scope of the necessary safeguards, as the specific ways in which the algorithm will be used will not be fully known from the outset. Another possible approach would be to presume that there has been a breach of competition law caused by omission (violation of oversight obligations) whenever an algorithm’s behaviour cannot be predicted or controlled, but clearly results in a situation whereby the company’s behaviour results in supra-competitive pricing across the entire market which places a burden on customers.

It is true that there are a number of legal concepts under the existing law, ranging from oversight obligations under administrative law to the general principles under civil law (vicarious liability, strict liability), to the principles underpinning criminal law (duty to afford protection against dangers caused by one’s own previous actions). Given the fact, however, that competition law is underpinned by sanctions and that legal certainty for all market participants is of the essence, it is impossible to merely draw on these legal concepts without further ado, and apply them to cases of ‘colluding computers’.



c) Summary and recommendations for competition policy

The current legal provisions should be sufficient to deal with algorithmic behaviour in those cases whereby it is clear that the algorithm is merely used as a technical tool for implementing human intentions. It is necessary to explore ways of clarifying the exact behavioural standards expected of natural and legal persons for those cases whereby self-learning algorithms are used whose behaviour cannot be predicted to the necessary degree. The lack of legal certainty resulting from a failure to specify these requirements could have a negative impact on companies’ willingness to drive innovation in this field.



We recommend that clear limits be defined and a decision be made as to the extent to which computer-based competitive behaviour must be subject to technical safeguards or oversight obligations. Furthermore, it needs to be clear what companies using self-learning algorithms can do to exculpate themselves. In the interest of improving the level of legal certainty for companies it would make sense not only to have that legal clarification, but also new guidelines by the European Commission on algorithm-based behaviour and enforcement priorities (akin to the guidelines that exist for other fields of competition law). These new guidelines would serve to harmonise the ban on cartels set out in Article 101(1) TFEU; Section 1 Act against Restraints of Competition. Given the global nature of the economy and the internet, it would also be good if various competition authorities (e.g. within the International Competition Network (ICN)) were to jointly approach this issue.

2. Flow of information 4.0

a) Introduction

In many cases, the potential of the digital economy can only be harnessed by companies forming networks and sharing information. The European Commission has stated that greater openness with regard to access to data is to be one factor helping to establish an innovative European data economy that can successfully compete internationally. Data markets and the trade in data are to be strengthened and encouraged. In the context of Industrie 4.0, the talk is less about 'trade in data' and more about the development of 'data ecosystems'. These 'data ecosystems' are characterised by a combination of infrastructure and governance

structures that can be used by the platform and/or its participants to control access to the data they have uploaded.

Beyond their involvement in this kind of data exchange, companies are also using algorithms that take decisions based on available information. Artificial intelligence frees companies and their corporate decisions from the previous pre-defined IF-THEN statements.

It has yet to be clarified whether the existing provisions under competition law can correctly take account of (1) the modified conditions applying to information sharing and (2) the possibility of delegating corporate decisions to algorithms (including decisions about whether or not information is to be shared). The question of responsibility for 'colluding computers' has already been dealt with in Section 1. This section will look at whether the existing provisions on information sharing are fit to be applied to the new issues arising under competition law. We have not found any need for adjusting the legal concepts underpinning these provisions, e.g. the definitions of what is an agreement/concerted action/the criteria for establishing a restraint of competition.

There might, however, be some need for reviewing and perhaps clarifying the criteria to be used to attribute responsibility under competition law to individual participants in the platform and/or data and information sharing systems.

b) Legal responsibility of participants in data and information sharing systems under competition law

(1) Legal responsibility of participants in data and information sharing systems under competition law

Operators of platforms or data sharing systems can be held responsible under competition law, irrespective of whether there is a direct link between them and the market about which information has been shared.³⁵ This is obvious in cases whereby a platform operator has, for instance, implemented technical mechanisms that restrict participants in their pricing possibilities (or any other competitive behaviour).³⁶

But platform/systems operators also face responsibility if they could reasonably have been predicted that information might be shared in violation of competition law and if they have accepted that risk.³⁷ If they are to address that risk, platform/data systems operators will have to establish proven governance structures that prevent information that is relevant for competition from being shared between actual and/or potential competitors. The information shared under the system would have to be qualified accordingly and the system would have to come with technical safeguards (*compliance by design*). One way of achieving this could be to segment the information and to protect it with firewalls or other encryption or ID technologies.³⁸ Digital logs of the flow of information between participants could be used to deter them from sharing sensitive information and also serve as proof that no sensitive data has been shared via the platform/the system.

The exact nature of the necessary safeguards and the extent of any observation and surveillance obligations on the part of operators have yet to be clarified.

(2) Can participants be held to account under competition law?

Also yet to be clarified are the requirements that will result in participants in a data ecosystem of this kind being held accountable under competition law.

The assumption here must be that they will always be liable for breaches of competition law that go back to the initial data or information sharing agreement itself, i. e. where these agreements are not in line with competition law. It is reasonable to expect that a prospective participant in a data sharing system would seek out information about the other participants and the conditions that apply with regard to data access. Prospective participants must arrive at their own informed opinion as to whether the governance regime provides for information sharing between participants that include (potential) competitors and whether information that is sensitive in the context of competition will be shared. Each and every participating company is liable under competition law if there are visible indications that the data or information sharing may result in restraints of competition. The exact extent to which companies must inform themselves when faced with a data or information sharing system that may be complex and perhaps variable is, however, unclear.

Participants will also likely be presumed to be liable under competition law where they feed in strategic information relevant for competition into the system without there being sufficient safeguards that would prevent (potential) competitors from accessing this information. Again, however, there may be cases where there are doubts as to the exact extent to which a participant must seek reassurance that the relevant safeguards are in place or to which they can rely on the information provided by the operator of the platform or data system.

The decision by the ECJ in the *Eturas* case has established, however, that individual participants in platforms do not open themselves to liability solely by participating in a platform whose structure (e.g. technical pricing restrictions or restrictions with regard to other parameters relevant for competition) encourages coordination between participants – so long as it is still possible for these to conduct themselves in line with competition law.³⁹ In cases like these, participants only face liability if there is further evidence suggesting that

35 Cf. ECJ, Judgment of 22 October 2015, Case C-194/14 P, para. 34 – *AC-Treuhand*.

36 As in ECJ Judgment of 21 January 2016, Case C-74/14, para. 43, 44 – *Eturas*.

37 Cf. ECJ, Judgment of 22 October 2015, Case C-194/14 P, para. 30 – *AC-Treuhand*.

38 Cf. *Gassner*, MMR 2001, 140, 142.

39 ECJ, Judgment of 21 January 2016, Case C-74/14, para. 45 – *Eturas*.

they have realised that there is a breach of competition law and if they have condoned that breach.

Finally, the question as to whether and under what circumstances a participant in a data sharing system is to be held accountable for an infringement of the ban on cartels (specifically a concerted action) in cases whereby, in principle, the system and its specific governance structure provide for adequate safeguards against the sharing of strategic data between (potential) competitors, but where another participant in the system still uses the system to share information that is relevant for competition – without this action being part of a previously defined (or implicit) coordination strategy.

Following the criteria developed by the competition authorities and in the case law regarding information sharing in association meetings, even the act of unilaterally sharing information that is sensitive in the context of competition at a joint meeting can be regarded as a ‘concerted action’ within the meaning of Article 101(1) TFEU, provided and to the extent that it reduces the level of uncertainty for all those present regarding future behaviour on the market, that the information is accepted by those present at the meeting, and that it has an impact on market behaviour.⁴⁰ Even a company’s passive participation in a meeting like this may come to be regarded as an expression of ‘complicity’, which can trigger liabilities under Article 101(1) TFEU.⁴¹ In these cases, the mere presence of a company in a meeting results in the presumption that the relevant piece of information has been accepted and will be taken into account in the company’s future

behaviour on the market.⁴² This presumption is difficult to rebut for anyone who has participated in such a meeting. They have to prove that they have openly distanced themselves from this behaviour, and the other participants in the cartel must have understood this.⁴³ Simply leaving the meeting does not qualify as having openly distanced oneself from the information sharing. The key criterion here is that the other participants in the meeting must not have been left with the impression that the company will act upon the information that has been shared.⁴⁴ A company can dissipate this impression by pointing out that the company is represented at the meeting for a reason other than the sharing of information.⁴⁵ By contrast, a company that is vague about whether or not it will act upon the information that has been shared will be regarded as having condoned the infringement of competition law and thereby aided and abetted the offence or failed to cause it to come to light.⁴⁶

In Communication 2011/C 11/01, the European Commission sets out a set of general criteria that have been developed for cases involving companies participating in the same meeting. According to these criteria, a recipient of information is to be presumed to have accepted this information and to be adjusting its behaviour on the market to it even in cases whereby this information relevant for competition has been transmitted unilaterally in writing, by email, or by telephone. This presumption is to be considered refuted only in cases whereby the company explicitly declares that it does not wish to be given the data (Commission, Communication 2011/C 11/01, para. 62). The widening of the scope of this presumption drew criticism

40 E.g. ECJ, Judgment of 15 March 2000, Case T-25/95, para. 1849 – *Cimenteries CBR*.

41 Cf. ECJ, Judgment of 21 January 2016, Case C-74/14, para. 28 – *Eturas*.

42 Cf. ECJ Judgment of 21 January 2016, Case C-74/14, para. 28 – *Eturas*; ECJ, Judgment of 4 June 2009, Case C-8/08, para. 60 – *T-Mobile Netherlands* (for the refutable assumption that the companies that have participated in the coordination and continue to be active on the relevant market will use the information shared with their competitors as they define their actions on the market: para. 51. This presumption applies even if there has been only one meeting and extends to the cause-and-effect link). For German case law cf. Upper Regional Court Düsseldorf, Judgment of 29 October 2012, V-1 Kart 1-6/12 (OWi), NZKart 2013, 122, 123 – *Silostellgebühren I*.

43 Cf. ECJ, Judgment of 17 September 2015, Case C-634/13 P, para. 21 – *Total Marketing Services* with other references.

44 Cf. ECJ, Judgment of 8 July 1999, Case C-199/92 P, para. 162 – *Hüls*.

45 Cf. ECJ, Judgment of 17 September 2015, Case C-634/13 P, para. 20 – *Total Marketing Services*, ECJ, Judgment of 7 January 2004, related Cases C-204/00 P, C-205/00 P, C-211/00 P, C-213/00 P, C-217/00 P and C-219/00 P, paras. 81, 82 – *Aalborg Portland*; ECJ Judgment of 5 December 2006, Case T-303/02, para. 76 – *Westfalen Gassen* with other references.

46 ECJ Judgment of 5 December 2006, Case T-303/02, para. 84 – *Westfalen Gassen*; ECJ, Judgment of 7 January 2004, related Cases C-204/00 P, C-205/00 P, C-211/00 P, C-213/00 P, C-217/00 P and C-219/00 P, para. 84 – *Aalborg Portland*.

from academia from an early stage⁴⁷, with critics arguing that, unlike with a company participating in the meeting, there is no active part played by the recipient of information in writing, by email or by telephone. Furthermore, say the critics, the presumption that a company has accepted the information and acted upon it in its subsequent behaviour on the market should only apply where the information transmitted clearly represents a breach of competition law. In its decision on the *Total Marketing Services* case, the ECJ clearly lowered the bar for companies wishing to refute the presumption that they have accepted information that was shared unilaterally and is sensitive in the context of competition, and that they have subsequently acted upon this information: the Court stated that, unless a company has participated in a collusive meeting, it does not in all circumstances have to openly distance itself from the information sharing.⁴⁸

In the *Eturas* case, the ECJ continued to develop and specify this position.⁴⁹ Answering the question as to whether the fact that a notice had been sent to participants of a joined online booking platform for travel services is to be considered sufficient evidence that the participating companies were familiar or should have been familiar with the content of that notice, the ECJ highlighted that the burden of proof rests with the party or the authority making the allegation of an infringement of competition law, i.e. that these have to prove that a recipient is familiar or should have been familiar with information that was transmitted by a competitor and sensitive in the context of competition (para. 29). The Court declared that the presumption of innocence (Article 48 EU CFR) makes it impossible for authorities or courts to infer that the recipients of a message were/must have been aware its contents simply on account of the fact that the message has been sent (para. 39).

However, the Court specified that the presumption of innocence does not stand in the way of the presumption that the recipients of the message were/must have been aware of the contents of the message being considered in the light of other objective and consistent indicia. The rules regarding assessment of evidence

and the standard of proof, the Court said, have to be set in accordance with national law, which, in this case is bound to the principle of equivalence and the principle of effectiveness (para. 32, 34 ff.). The Court went on to explain that the principle of effectiveness requires that national law must provide for proof of a concerted practice or an agreement to be furnished not only by direct evidence, but also through indicia, provided that these are objective and consistent (para. 37). The Court states that knowledge of information that is sensitive in the context of competition must be inferred where “taken together, [...] in the absence of another plausible explanation” there is evidence of this (para. 36).

Finally, the Court declared that the presumption of innocence also does not make it impossible to presume (provided that this can be rebutted) that the dispatch of a message, taken together with other objective and congruent indicia, can be seen as signifying that the recipients were aware of its contents (para. 40). However, the Court specified that no “excessive or unrealistic steps” must be required in order to rebut this presumption. For instance, it must be possible for alleged recipients to furnish proof that they did not receive the message or did not look at it until after a certain period of time (para. 41).

The Court explained that, once it has been proven that a recipient had knowledge of information sensitive in the context of competition, it can be inferred, in principle, that the recipient has been involved in a concerted practice as it can be presumed that the recipient gave their tacit assent to a joint anticompetitive practice (para. 44) – that is unless the recipient has distanced themselves publicly from this concerted practice or reported it to an authority (para. 46). In cases in which information that is sensitive in the context of competition is transmitted other than during collusive meetings, the Court said, the relevant companies must also have other options to rebut the presumption that they have been involved in a concerted practice (para. 46).

This means that the ECJ has confirmed that it is lawful to presume that a company has accepted information relevant for competition that has been transmitted

47 Cf. e.g. *Dreher/Hoffmann*, WuW 2011, 1181, 1185.

48 Cf. ECJ, Judgment of 17 September 2015, Case C-634/13 P, para. 22 – *Total Marketing Services*.

49 Cf. ECJ Judgment of 21 January 2016, Case C-74/14 – *Eturas*.

other than during an anticompetitive meeting. However – and in contrast to what applies to participants in a meeting – this cannot necessarily be inferred merely from the fact that the data/information has been provided via a platform or even shared with a recipient directly. Recipients may put in place technical safeguards that will make it easier for them to prove that they did not retrieve/look at a certain set of data they have been sent. Even if it has been proven – perhaps through *indicia* – that a company was familiar with the information that is sensitive in a context of competition, there are additional ways for the recipients of the information to rebut the presumption that they have been involved in a concerted practice. This applies to presumption that the information has been accepted and to the presumption that the information has had an influence on the recipients’ behaviour on the market.

Nevertheless, there is a considerable lack of legal certainty that results from a lack of specific information as to the characteristics any technical safeguards must have in order for a company to be able to rebut the above presumptions and exculpate itself. Ultimately, this lack of legal certainty can hold back companies from networking and sharing data with one another.



c) Summary and recommendations for competition policy

In principle, the established rules on information sharing continue to apply in the new digital context and to data shared via platforms and data ecosystems. The case law that has been handed down by the courts so far and the decisions hitherto taken by the authorities suggest that the following needs to be considered when investigating a case of information sharing via a data platform or data sharing system:

- The isolated fact that a data platform/data sharing system that is *per se* structured in a way that is in line with competition law has been used by one company to provide information that is relevant for competition does not in itself result in all other participants also being held to account under competition law. Only once information that is relevant for competition has been

transmitted to a participant does the question of liability under competition law arise.

- Depending on the provisions under national law, the fact that information has been transmitted may result in a presumption that the recipient has knowledge of this information. However, the recipient must have an opportunity to rebut this presumption.
- If the recipient has knowledge of information that is relevant for competition, this will, in principle and in line with the *Eturas* decision, result in the presumption that the information has been accepted. However, this presumption, too, can be rebutted. The benchmark for a successful rebuttal is lower than would be the case if the company had attended a collusive meeting.
- The recipient also has the possibility to prove that the information that has been transmitted has not had an impact on the company’s market behaviour.

It has to be pointed out that these key principles do by no means provide answers to all the relevant questions that arise when assessing new forms of data sharing practices. The level of legal certainty that exists in this field will have a substantial impact on companies’ willingness to share information or make it accessible. In light of the fact that promoting data sharing is a declared goal of the European Commission, it would make good sense for the competition authorities to publish guidelines on the respective responsibilities of platform/systems operators and of participants.

3. Potential characteristics of a competitor (in the context of information flow 4.0)

a) Framework defined by competition law

Under the existing legal framework, it can take very little for a company to be considered a potential competitor. Commission Regulation (EU) No. 330/2010 provides the following definition of a ‘competing undertaking’: “*an undertaking that, in the absence of the vertical agreement, would, on realistic grounds and not just as a mere theoretical possibility, in case of a small but permanent increase in relative prices be likely to undertake, within a short period of*

time, the necessary additional investments or other necessary switching costs to enter the relevant market”.

According to Communication 2011/C 11/01, a company qualifies as a potential competitor if “if, in the absence of the agreement, in case of a small but permanent increase in relative prices it is likely that the former, within a short period of time, would undertake the necessary additional investments or other necessary switching costs to enter the relevant market on which the latter is active.” A “short period of time” within the meaning of the Communication is a period of up to three years.

b) Application in Industrie 4.0

Given the speed of innovation in information technology and especially in Industrie 4.0, it is likely that this particular obstacle will be cleared quickly and by many. This is all the more true as a market entry in IT-based services tends to be associated with fewer investment costs than in the traditional industrial sector (where new production lines are a significant cost factor). In its latest merger control cases, the European Commission has consistently looked at longer time periods when analysing the competition for innovation.

For companies wishing to share information without infringing competition law, this has created new problems, as sharing strategic information with a company that is merely a potential competitor can pose a risk. Depending on the type of information shared, this may even be subject to hardcore restrictions under Communication 2011/C 11/01.

If the definition used is overly broad, it will be almost impossible for companies to decide which other companies are their potential competitors. This is even more problematic as IT service providers may even enter the hardware market within the relevant period (e.g. Google smartphone; Apple’s plans for its own cars). By the same token, producers of hardware can also develop IT skills that could rival those of traditional producers and service providers (e.g. a producer of sensors might also develop monitoring software for these sensors). Again, this could happen within the relevant period. In the latter scenario, in particular, it can take very little time and low costs to enter a new market, which means that it is impossible for a company engaging in a business relation or networking with industrial companies to know whether these are potential competitors.

At the same time, information sharing between platform/systems operators and users is often essential in that it is the only way to make the platform/system work and generate economic benefits for both sides. Even the mere number and type of transactions handled by the platform may be classed as confidential information. There might also be situations whereby information relevant to competition (especially prices) may become accessible to potential competitors – a practice that would be problematic under Communication 2011/C 11/01.



c) Potential solutions

From a company’s point of view, this may lead to two radically different positions:

- On the one hand, they could come to regard any flow of information between potential competitors via platforms and interconnected systems as suspicious under competition law. This position would surely go too far and stop the networked economy from realising its potential.
- On the other hand, companies might come to largely ignore the risks of sharing information with potential competitors via networks. Whilst this would facilitate cooperation, it might trigger investigations by the competition authorities.

Therefore, the best way forward would be a middle way, which would require companies to look closely at which information they may share with potential competitors and in what circumstances.

The existing law can provide the framework for this. However, these provisions were designed for traditional economic processes and may easily result in a lack of legal certainty in the fast-moving world of Industrie 4.0. It would therefore be advisable to consider narrowing the definition so as to take account of the specific circumstances that apply in the context of Industrie 4.0, which is characterised by a division of labour within networks.

In particular, the definition of ‘potential competitor’ could be modified so that it would no longer merely look at how long it would take a company to enter into competition (which, for many business models under Industrie 4.0 would also be faster than the set time frame), but also at whether the company is working on any specific plans to do so. This would stop companies from inadvertently becoming potential competitors in the fast-paced business environment of Industrie 4.0. If the criterion were changed to whether a company has specific plans to enter a particular market, this would eliminate the need for constant monitoring. Instead, such monitoring would only have to take place when required. It would also make it easier to introduce a tiered system with regard to what information may be shared in line with competition law.

From a practical point of view, it could also be possible to use non-disclosure agreements to enforce a more restrictive flow of information once specific plans for market entry are being made, meaning that certain types of information can no longer be shared once a company becomes a potential competitor. This practice would have to be reflected in the Governance System (cf. 2. above).

d) Summary and recommendations for competition policy

The existing law provides a general framework regulating information sharing between potential competitors. This framework is adequate for the business models that are already in existence. In the light of Industrie 4.0, it could make sense to explore if and in what circumstances the specific plans that companies may have with regard to entering a certain market could be given greater consideration when assessing whether a company is a ‘potential competitor’. This would make it easier for companies involved in the kind of information sharing that is necessary within the networked economy to assess and monitor the risk of information sharing.

4. Admissible cooperation between companies in the field of Industrie 4.0





A: Factsheet

Main issue:

- Many use cases for Industrie 4.0 depend on greater networking between companies and new forms of cooperation. This also and necessarily extends to cooperation between competitors or potential competitors.
- There are Regulations that exempt certain types of B2B cooperation (such as R&D cooperation or vertical cooperation) from the ban on cartels, giving companies some degree of certainty as to whether their actions are in line with competition law.
- All other types of cooperation are subject to approval by way of an individual exemption. In order to obtain this, each company must conduct its own assessment and verify that the cooperation will not result in a restriction of competition or that any restriction is justified in that individual case. Communication 2011/C 11/01 by the European Commission sets out important guidance on interpretation. However, there is always a danger of an error of judgment on the part of the companies engaged in cooperation, which means that there is a lack of legal certainty.
- The question here is whether the existing rules for data-driven cooperation in the field of Industrie 4.0 are still adequate, or whether new exemptions are required so that companies can enjoy better legal certainty in the face of a high risk of being fined.



Resulting questions:

- Does it still make sense to have general block exemption regulations on the one hand and non-binding guidelines on the other at European level?
- Where exactly is the point where 'technical standardisation' within the meaning of competition law is reached? Can two companies decide to engage in bilateral cooperation to make their systems interoperable or must all market participants be allowed to join in?
- Is cooperation within Industrie 4.0 covered by the exemption for production agreements or is there a need for adjustment?
- Is it permissible for competitors to jointly operate a B2B platform as part of a sales agreement?
- If two companies want to become interconnected, they rely on software solutions, including external ones. In most cases, the two companies involved will be competitors on the demand market. Is it possible for them to coordinate their actions as they choose a suitable software provider or must they jointly purchase the software in order for the rules on purchasing cooperation to apply?
- So far, the relevant types of cooperation have been permissible unless the companies involved held a certain combined market share. Are companies whose market share exceeds these thresholds banned from engaging in cooperation under Industrie 4.0?
- The Federal Court of Justice and the Bundeskartellamt both presume that – in most cases – the formation of joint ventures is an infringement of the ban on cartels if at least two parent companies and the JV continue their activities on the same market. Does this presumption act as a brake on innovative business models for Industrie 4.0?
- Is there a specific need for amendment with regard to R&D cooperation in the field of Industrie 4.0?
- Can vertical cooperation under Industrie 4.0 result in a restraint of competition?



B: Legal assessment

Greater demand for flexible and comprehensive solutions for Industrie 4.0 means that the supply side must be able to make swift and flexible adjustments. Cooperation with other suppliers is necessary as not everyone will be able to satisfy demand purely by drawing on their own strengths. Cooperation between suppliers operating in different places in the supply chain raises issues under competition law only if it involves anti-competitive agreements. The same does not apply to cooperation between competitors or potential competitors. The European Commission recognises that horizontal agreements between competitors can have immense benefits, and has mentioned some relevant types of cooperation in Communication 2011/C 11/01. This provides some information as to what the criteria are for non-application of Article 101 TFEU or an individual exemption pursuant to Article 101(3) TFEU. However, it is important to know that Communication 2011/C 11/01 is not legally binding for the national courts and competition authorities. The only binding provisions can be found in the general block exemption regulations for R&D and for specialisation agreements. This legal assessment will begin with a closer look at the various types of horizontal cooperation, followed by a short description of vertical cooperation and its relevance in the context of competition law.

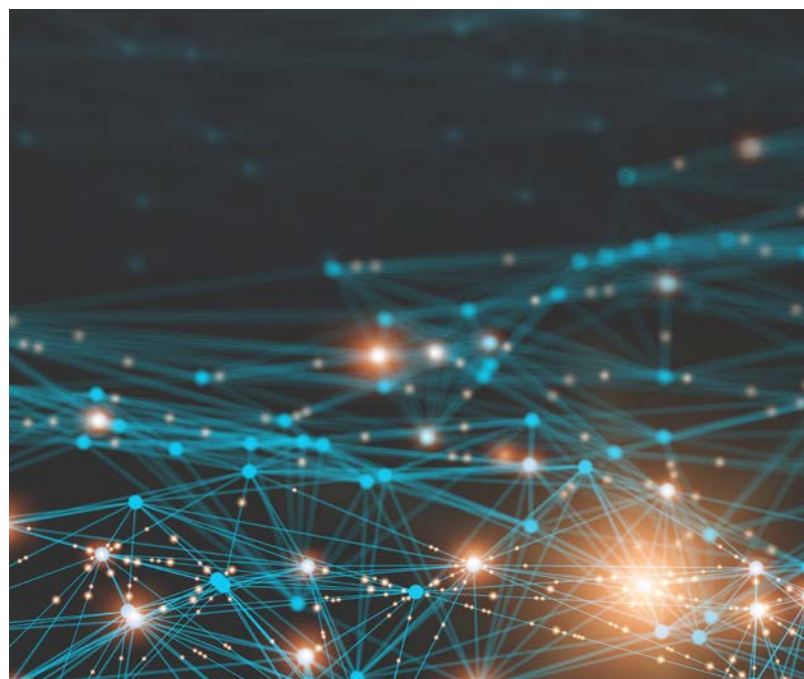
1. Cooperation on standardisation

Greater networking within Industrie 4.0 will particularly drive cooperation on standardisation. In its Communication 2011/C 11/01, the European Commission has made it clear that standardisation agreements do not restrict competition in an unlawful way provided that a) all market participants have the possibility to get involved in the standardisation process without any restrictions, b) the procedure used to adopt the relevant standard is transparent, c) compliance with the standard is voluntary, and d) access to the standard is granted in a fair, reasonable and non-discriminatory manner (para. 280).

These requirements are easy to put into practice if the standardisation process happens within a standardisation organisation or a consortium. Cooperation within Industrie 4.0, however, tends to happen between two companies or among a limited number of market participants who are using this cooperation in order to introduce new business

models based on interconnection and interoperability or to automate their supply relations with the help of data. In these cases, it is impossible to tell at the onset of the cooperation whether this will develop into a new industry standard. To the extent that a cooperation that is neutral under competition law makes it necessary to address issues related to interconnection and interoperability, the solutions to these issues should be designed to have no anti-competitive effect or in such a way that they can be qualified as necessary ancillary restraints. At the same time, it will often be more efficient to get as many market participants as possible involved in the discussions on interconnection and interoperability, as this will eliminate the need for complex case-by-case solutions to be developed for each individual transaction.

The European Commission holds that third parties need not be given access to the standard for as long as there are several competing standards or as long as there is effective competition between standardised and non-standardised solutions (Communication 2011/C 11/01, para. 294). There may be anti-competitive effects if there is a high probability that a standard will become the new gold standard within the industry. According to the European Commission, this risk is particularly high wherever the relevant competitors hold high market shares. However, the Commission has not specified any particular thresholds. On the contrary, it has even conceded that even high market shares do not warrant the conclusion that a standard is likely to have an anti-competitive impact (Communication 2011/C 11/01, para. 296). The softness of this criterion has resulted in a considerable lack of legal certainty.

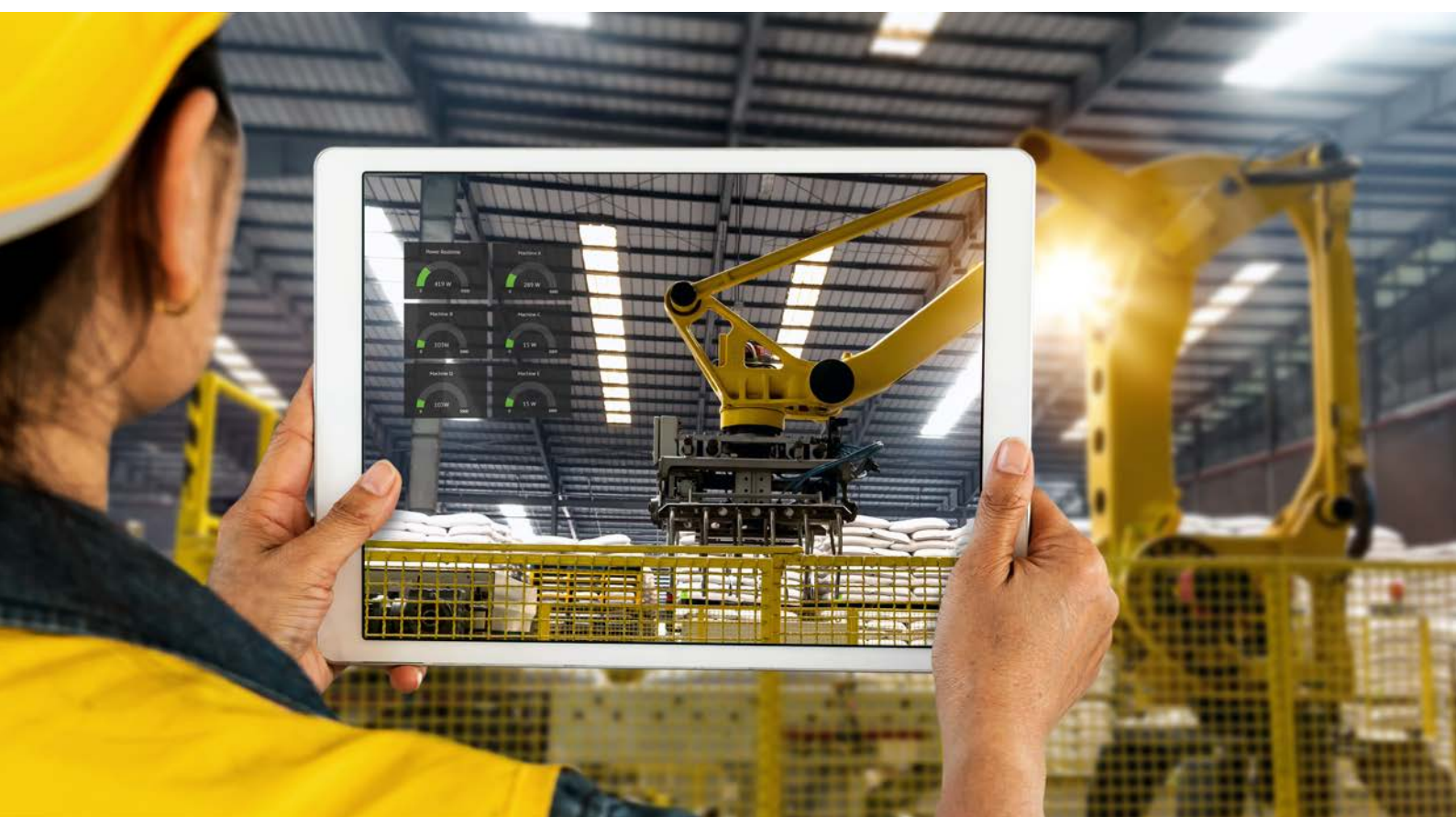


2. Cooperation on production

Agreements between competitors on unilateral or mutual specialisation in production and agreements on joint production are usually permissible under Commission Regulation (EU) No 1218/2010 – provided that the combined market share does not exceed 20%. Whilst there are scenarios whereby relevant Industrie 4.0 applications may result in this type of specialisation, it is also possible that this is not the case. Order-driven production or the versatile factory, for instance, serve to adjust production to the production capacity at a given moment, without resulting in a participant's production being ceased, restricted or actually pooled with that of a competitor. It may, however, result in an alignment of output and of production costs. There can be no doubt that these types of cooperation have the potential to deliver efficiency gains in the form of cost cutting and/or better production technology. This is why Commission Regulation (EU) No 1218/2010 ought to be amended to include exemptions for these types of applications. A high market share of the companies engaged in cooperation does not necessarily mean that this cooperation has an anti-competitive effect.

Communication 2011/C 11/01 mentions subcontracting agreements between competitors only in passing, referring

to them as a type of permissible cooperation (para. 150). For many Industrie 4.0 applications, it is essential that companies conclude subcontracting agreements for products, services, software solutions or data with (potential) competitors, so that they can meet the demand for swift and flexible new solutions. The obvious solution to be explored in this context is a clarification and widening of the notion of the 'consortium'. This would make it possible for cooperation taking place within Industrie 4.0 to be exempted from the scope of Article 101(1) TFEU. As said before, this type of cooperation is essential if customers' demand for swift and compatible solutions is to be met. In many cases no single supplier will be able to deliver the desired product without cooperating with others, who may be (potential) competitors. In the current legal practice, the requirements for cooperation between potential competitors to be recognised as a 'consortium' are quite strict, as these are only permissible if they are found to be essential. For this reason, it might make sense for the legislator to provide for legally binding clarification by widening the definition of what constitutes a 'consortium'. Given this very narrow scope of application *de lege lata*, subcontracting agreements are regarded as falling under the exemption of Article 101(3) TFEU unless they turn out to be a pretext for exchanging information that is sensitive in a context of competition (which may also apply to raw or enhanced data), and pro-



vided that the information sharing is restricted to that which is necessary for a specific delivery/supply. The safe harbour provision of Communication 2011/C 11/01 (combined market share of 20%) is however complex, difficult and cumbersome to apply, due to the uncertainties with regard to market definition. This is particularly true of the analysis regarding potential competitor – especially, when the cooperation is to be mostly based on sharing production data, which, as such, does not correspond to any of the criteria used in market definition. This means that there is no way of guaranteeing a satisfactory level of legal certainty. It would therefore be desirable to have a provision that uses criteria other than market shares or at least results in the thresholds being raised considerably.

3. Cooperation on sales

A potential Industrie 4.0 application in sales can be a joint platform for selling value-based services, for instance. Under the current legislation, horizontal cooperation on platforms can be exempt from the ban on cartels only if the very strict criteria for sales agreements are met. These include a combined market share of no more than 15%. In rare cases, it may even be permissible to set fixed prices for value-based services marketed via the platform (cf. Communication 2011/C 11/01, para. 254).

A platform rises and falls with its network effects. The more suppliers there are on the platform, the more customers will be attracted to it. In many cases, the suppliers on the platform will be competitors or at least potential competitors. Restricting the field to non-competitors or competitors holding only small market shares would make the platform significantly less attractive, and would undermine the desired network effects and thereby the entire concept of a platform. The result of this would be a preference for established and ‘pure’ platforms. Provided that there are organisational and technical safeguards in place (e.g. ‘Chinese walls’) to prevent traders from coordinating their prices via a platform, it must be permissible under competition law to share a sales platform – irrespective of the market share held by the traders.

4. Cooperation via joint ventures

The Federal Court of Justice and the Bundeskartellamt both presume that – in most cases – the formation of joint ventures is an infringement of the ban on cartels if at least two parent companies and the JV continue their activities on the same market (Federal Court of Justice, Decision of 8 May 2001, *Ostfleisch*, KVR 12/99, WuW DE-R 711, BKartA, *Bericht zur Entflechtung von Gemeinschaftsunternehmen im Bereich Walzasphalt*, July 2015, para. 75 ff.). Platforms depend on network effects, i.e. participation by as many traders as possible, which also means competitors. There are various reasons why this may require the formation of joint ventures between two or more competitors. For instance, companies may have justified reservations against selling their own products or services via a platform operated by a competitor, and may decide that they will only do so as equal partners in a joint venture. Similarly, a company might like to share the risk of adopting a new business model with a partner, without putting all their eggs in one basket by giving up their traditional sales channels. If there are organisational and technical safeguards in place to ensure that the joint venture operates independently of its parent companies, the JV will be an additional market participant competing with its parent companies, which is good for competition (cf. BKartA Decision of 26 January 2001 – B 3-110/00, BeckRS 2001, 10480, beck-online). It is certainly not common for JVs to be set up for the sole purpose of enabling coordination between the parent companies. A presumption to that effect would mean a considerable obstacle to the development of innovative business models in the field of Industrie 4.0.

5. Cooperation on procurement

If external software or services are needed to interconnect two companies, these can be bought by way of a purchasing agreement, unless the combined market shares of the two companies exceed 15% on the demand-side or sales markets (Communication 2011/C 11/01, para. 208). But even if the two companies do not combine their orders, they must be able to coordinate on which software supplier they want to work with and on the technical requirements that need to be met. This must qualify as a necessary ancillary agreement between two companies. If the two companies then purchase the products and services separately, it would not be necessary for them to exchange information on the terms and conditions.

6. Cooperation on research and development

The largest scope for B2B cooperation can be found in research and development. Article 2(1) Sentence 1 of Commission Regulation (EU) No 1217/2010 stipulates that mere R&D cooperation that does not involve any limitation of the rights of exploitation does not constitute a restriction of competition within the meaning of Article 101(1) TFEU. Where R&D cooperation does involve a limitation of the rights of exploitation, Commission Regulation (EU) No 1217/2010 sets out a complex rulebook which looks at whether the companies engaging in cooperation are competitors (Article 4) and whether any hardcore restrictions (Article 5) or ‘excluded restrictions’ (Article 6) apply. In principle, R&D cooperation in the field of Industrie 4.0 is no different from other types of R&D cooperation. The rules apply regardless of what is being developed. At this stage, there seems to be no need for any amendments to account for the particularities of Industrie 4.0, but this may change in future.

7. Vertical cooperation

Industrie 4.0 applications are also associated with greater networking between companies along the value chain. This ‘vertical’ cooperation is only subject to a review under competition law if it leads to restraints on competition. These in turn are exempted under Commission Regulation (EU) No 330/2010 (with the exception of hardcore and excludes restrictions), provided that the combined market shares of the companies engaged in the cooperation do not exceed 30% on the demand-side or sales markets. Digital interconnection along the value chain tends to foster lock-in effects and may result in de facto exclusive supply and sales relations. Once a particular technical solution has been chosen it becomes more difficult to change to other cooperation partners – irrespective of the relevant market shares. The standardisation work of organisations such as Plattform Industrie 4.0 has a very important practical role in reducing these lock-in effects before they even occur. Solutions must be based on technical standardisation and political support for this; competition law can only be a last resort for addressing power shifts that result in excessive market power.



C: Guidelines and recommendations for action

Section 2(2) Act against Restraints of Competition stipulates that exemptions from the ban on cartels shall be granted in line with the European block exemption regulations. This means that any need for amendment would arise at European level. Communication 2011/C 11/01 provides some important information on horizontal cooperation. Unlike the block exemption regulations, however, the text of the Communication only serves as guidance for interpretation. It may well be binding for the Commission, but not for the national competition authorities or the courts. As cooperation between competitors is becoming a more practical issue in the field of Industrie 4.0, a new block exemption regulation on horizontal cooperation (‘horizontal BER’) ought to be created so as to give legal certainty to companies engaged in this kind of cooperation.

Communication 2011/C 11/01 sets out some very detailed provisions on standardisation agreements, which could be incorporated into a new horizontal BER. However, we will also increasingly be seeing bilateral agreements for which it is impossible to say at the start whether these are likely to develop into a new (de facto) industry standard. This is why it is necessary to clarify that these types of cooperation must also be recognised as permissible.

So far, Industrie 4.0 application scenarios that rely on competitors coordinating their production capacities at short notice or in a flexible way are not listed as a type of permissible horizontal cooperation on production. It would therefore be desirable to have the existing provisions of Commission Regulation (EU) No 1218/2010 amended to include these scenarios.

Clear rules on production agreements are needed, in particular regarding subcontracting agreements between competitors. This could be achieved by widening the definition of ‘consortium’ or by clarifying that true subcontracting agreements do not restrict competition within the meaning of Article 101(1) TFEU, even if they are concluded among competitors. Another option could be to introduce a new separate category under a new ‘horizontal BER’, thus recognising the issue’s practical relevance. The new provisions would specify which types of subcontracting agreements

between (potential) competitors are exempted pursuant to Article 101(3) TFEU – either irrespective of the companies' market shares or up to yet-to-be-defined market shares well exceeding the current 20% threshold that applies for subcontracting agreements.

In its Communication 2011/C 11/01 (para. 254), the European Commission has already acknowledged the need for competitors to be able to cooperate on sales when using platforms. The current threshold of a combined market share of 15%, however, undermines the very network effects a platform needs in order to function properly. A new 'horizontal BER' would need to provide for competitors to be able to operate a shared platform regardless of their market shares, provided that organisational and technical safeguards are put in place to prevent competitors from using the platform to coordinate on prices. In terms of these necessary organisational and technical safeguards to prevent coordination, it would make sense to also specify some uniform minimum standards to prevent a lack of legal certainty.

If a platform is operated by a joint venture, safeguards must be put in place to ensure that the JV operates independently of its parent companies. There is no room for presuming a violation of the ban on cartels on account of the fact that the parent companies continue to operate on the same market as the joint venture. This means that greater clarification is in order, e.g. in the Commission Notice on ancillary restraints, or preferably by way of introducing an additional provision on sales cooperation into a new 'horizontal BER', so that companies have the legal certainty they need.

Cooperation on procurement can happen at different tiers and does not necessarily have to extend to joint purchasing. Coordination on the selection of software suppliers and on technical requirements for the purpose of enabling inter-connection between two companies must be recognised as a necessary ancillary restraint. Again, it would be desirable to have this clarified in a new 'horizontal BER'.

In cases of vertical cooperation, the only way to address the risk of lock-in effects is to politically promote technical standardisation, which will prevent both the supply and the demand side within a given value chain from being locked into their current trading relationships due to technical specifications – a situation that de facto amounts to exclusivity. If competition law has a role to play in this, it can only be that of a last resort.



A: Factsheet

Main issue:

- “Platforms act as central nodes for comparing interests, processing data, driving information, and creating new markets. They are playing a key role in shaping the digital economy and are increasingly defining the potential for growth and the framework for competition within a given country.” (White Paper on Digital Platforms).
- Platforms are enablers of human-machine machine-machine networking, i. e. networking within the industrial sector, with machines increasingly communicating with one another independently. This makes automation possible, resulting in fundamental changes to the way manufacturing, sales and manufacturing are organised and to the entire structure of our business sector.
- As a result of this, questions around the interoperability of different platforms arise, including around the need for standardisation of networks and network access, and around a potential need for specific platform regulation covering all or some platforms.
- Platform regulation is an issue that has led to manifold consultations, studies and discussions at the European and national levels and from many different angles.



Resulting questions and fields of action:

- First of all, it is important to ask how platforms within Industrie 4.0 could be best defined and whether any distinctions need to be made between different types of platforms.
- It is also necessary to agree on rules on how to define the markets served by platforms, and on criteria for measuring market power and the abuse of market power.
- Is the general toolkit used in competition law sufficiently equipped to deal with platform regulation or is there a need for specific regulation, perhaps even outside the scope of competition law?
- To the extent that any specific regulation should be found to be necessary, should its scope only include B2C platforms or also B2B platforms? With regard to digital platforms in the manufacturing sector and to industry-specific platforms, are there any particularities that need to be addressed by the regulatory regime?
- Are the general provisions of competition law (Sections 1ff, 18ff Act against Restraints of Competition/Articles 101 and 102 TFEU) suitable for governing interoperability, standardisation and access to platforms – all in the context of Industrie 4.0?



B: Legal assessment

1. Definition of platform

At present, there is no general definition of ‘platform’ in a legal context. The reason for this is likely to be found in the fact that platforms come in all shapes and sizes, and are designed to fulfil very different purposes. This can be illustrated using examples from Industrie 4.0, which has various different application scenarios (cf. ‘Development of application scenarios for Plattform Industrie 4.0’). Various of these scenarios revolve around platforms designed to bring different stakeholders and market sides together. These scenarios notably include: ‘self-organising adaptive logistics’ (SAL), ‘value-based services in an industrial context’, ‘transparency and versatility of delivered products’, ‘smart product development for smart production’, ‘innovative product development and design networks’.

It is also possible to differentiate between B2C and B2B platforms, although this distinction is not clear cut. The main criterion here would have to be the nature of the relationship between the platform operator and their customers, who may be consumers or companies, the difference being that B2C platforms have end-users on one side of the platform. It would also be possible to look at whether the platform allows third companies to contact consumers or whether it only caters to companies seeking to contact other companies. There are also platform designs that allow for B2B2C and B2C2B constellations.

So far, the most well-known type of digital platform is B2C, for instance the services provided by Apple, Google, Microsoft, Facebook and Amazon, which have been much discussed by policy-makers and wider society. These platforms also tend to have a B2B component consisting in offering companies the possibility to interact with consumers (e.g. targeted advertising). As the Internet of Data, Things and Services is growing, the concept of digital platforms familiar in B2C markets is increasingly making its way into the B2B markets. At present, digital platforms are being established in numerous B2B markets including mechanical engineering and agriculture. They are designed for organising order books, procurement, production plans or logistics.

Most platforms in Industrie 4.0 are B2B platforms whose attractiveness does not (or not primarily) depend on their ability to enable interaction with consumers but rather with other companies. Depending on the actual application scenario, the platform will be designed to bring together very different types of stakeholders and to fulfil different purposes. Finally, it is also possible to differentiate platforms according to whether they are operated by an (IT) provider seeking to offer (technical) infrastructure or whether the provider is also selling other products and services and does so by drawing on information gained from the platform. Platforms can also be set up and operated by one manufacturer (or a consortium).

Platforms can be approached either from a technical (IT platform) or economic angle. The term ‘platform’ was coined in the late 1990s as a way of referring to electronic marketplaces. As technology-induced network effects led to a trend to oligopolistic and monopolistic market structures following the new technical possibilities for scaling up one’s business in today’s digital world, the term ‘platform’ took on a slightly different meaning and gained in importance. From a technical point of view, IT platforms are designed to facilitate the construction of digital ecosystems and enable multi-sided business links. There are different views as to whether it is true to say that modern IT platforms always generate a multi-sided business model or whether the term is synonymous with multi-sided markets. There might also be IT platforms that are used in the context of traditional linear business models.⁵⁰

For the purpose of its 2015 consultations on online platforms, the European Commission provided a definition of ‘online platforms’, drawing on competition theory developed for two-sided markets. According to this definition, online platforms are services provided on **two-sided or multi-sided markets** which use the internet to enable mutual relations between different user groups that are dependent on one another, and which generate value for at least one user group. Among the online services mentioned as examples of platforms were: general search engines (e.g. Google, Bing), specialised search engines (e.g. Google Shopping, Tripadvisor, Yelp), news aggregators (Google News), online marketplaces (e.g. Amazon, ebay, Booking.com), music and audio-visual platforms (e.g. Spotify, Netflix),

50 Cf. Gregor Engels, Christoph Plass, Franz-Josef Rammig (ed.): Acatech: Diskussion. IT-Plattformen für die Smart Service Welt. Verständnis und Handlungsfelder, p. 7f.



video-sharing platforms (e.g. youtube), online payment systems (e.g. Paypal), social networks (e.g. Facebook), app stores (e.g. Apple Store), and sharing economy platforms (e.g. AirBnB, Uber).

In a working paper entitled *'Marktmacht von Plattformen und Netzwerken'* (market dominance and networks) of June 2016, the Bundeskartellamt put forward the following definition to be used in the application of (German) competition law: 'Platforms' are to be understood as 'multi-sided markets' that facilitate direct interaction between two or more user groups connected by indirect network effects. 'Networks', by contrast, should be understood as enabling interaction between users from the same user group, and as generating direct network effects.

The amendments introduced into the 9th Act against Restraints of Competition with regard to the digital economy do not include a definition of 'platforms' – a decision that was consciously made. The new provision of Section 18(3a) Act against Restraints of Competition refers to 'multi-sided markets and networks'.

The Bundeskartellamt shares the understanding that platforms do not automatically cater to 'multi-sided markets'. There are also platforms that are based on 'multi-sided

business models' and that compete with traditional traders. The explanatory memorandum states with regard to Section 18(2a) Act against Restraints of Competition (goods or service provided free of charge) that it is necessary to decide for each individual case whether a product/service is to be attributed to one or several markets.

So far, however, the B2C markets have generated the bulk of the experience with the platform economy. We estimate that there is no clear consensus on what 'platforms' are in a production setting. There is hardly any literature about IT platforms in the manufacturing sector. Studies seeking to develop a typology of what the term 'platform' can entail have so far failed to take account of the fact that several different types of platform may come together, for instance in a production line.

Industrial manufacturing requires IT platforms that are different from those used in the services sector. It might be that B2B platforms tend to be characterised by smaller ecosystems than B2C platforms, and that the requirements are different. For this reason, separate studies might be necessary.

Nevertheless, the scope of the wide definition used for the purposes of competition law covers all of the application

scenarios that might arise under Industrie 4.0. The mere economic definition (direct interaction, direct or indirect network effects) seems sufficiently flexible to allow for any necessary distinctions to be made and for different types of industrial platforms and networks to be treated differently.

2. Application scenarios for Industrie 4.0

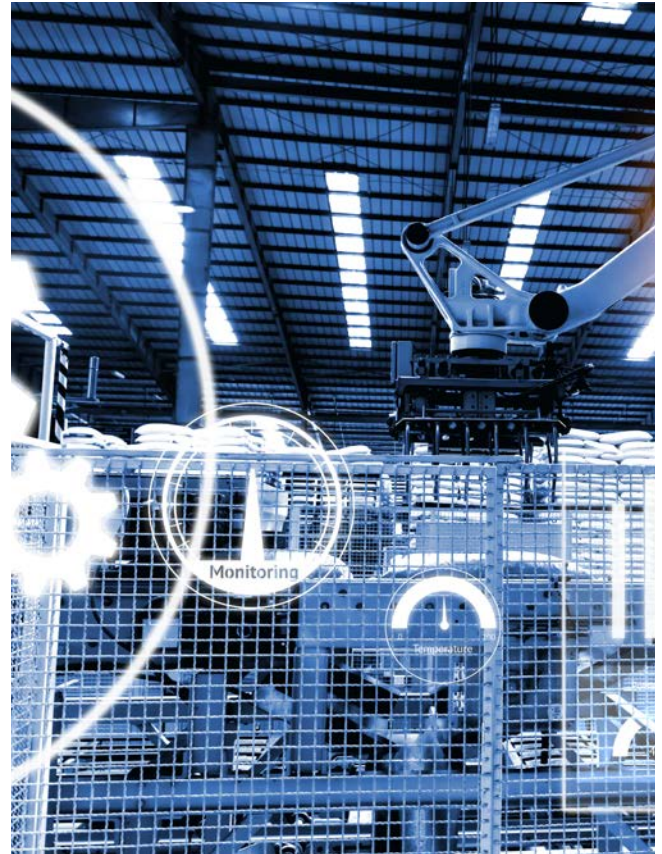
As a general rule, the application scenarios discussed in the context of Industrie 4.0 tend to be B2B platforms. Consumers come into the equation where data generated by them (e.g. mobility data) is fed into the platform and used to offer them additional services and products on the basis of that information. Whilst the relevant examples incorporate characteristics of both platforms and networks, there is a dominance of platform elements (i.e. interaction between several different user groups). These are not ‘audience-providing platforms’ of the type that is common in the B2C sector.

It is important to take note of the fact that most of the application scenarios that are being discussed in the context of Industrie 4.0 are multi-sided and that they bring together more than two groups of users (i.e. manufacturer, logistics company, suppliers, delivery company, customer). This makes the process of analysing the economic relations between the different user groups and the network effects of the relevant platforms far more complex than would be the case with ‘simple’ two-sided markets.

3. Legal analysis

The concerns raised about platforms and networks with regard to their compliance with competition law usually centre on the possibility that the market might tip towards a single supplier whose monopoly might then be impossible to challenge as a result of circular network effects, i.e. the trend towards monopolies or at least oligopolies which will bestow or reinforce market dominance on the relevant platforms or networks.

There are good and universally recognised reasons why the general clauses of competition law designed to prevent the abuse of market dominance make it illegal only to abuse market dominance, not to attain or strengthen a



position of market dominance (cf. Section 19(1) Act against Restraints of Competition). Potential ways of abusing a position of market dominance in our field include those of restricting access to platforms or data, using discriminatory pricing strategies, and giving preferential treatment to one’s own products.

The process used to assess platforms and networks under competition law is three-tiered, beginning with market definition, followed by the question of whether the companies involved dominate their respective markets, and third, whether they are abusing their dominant position.

Defining the relevant market(s) served by platforms and networks is the first step under both German and European competition law. A key question in this process is to see whether the various sides of the platform are to be considered as a single or several markets. For ‘matching platforms’, the Bundeskartellamt will presume that there is a single market if both sides have the same possibilities

to substitute their trading relations, i. e. could switch the relevant platform for the same products and services. If different sides of the market have different options for substitution, the Bundeskartellamt will assume that different markets are at play. Further questions need to be answered when defining the markets served by a platform uses one-sided business models and/or competes with multi-sided business models structured in a different way.

Where goods and/or services are provided free of charge to one side (as is the case with many B2C platforms), it had to be decided whether the platform is still operating on the same market as other competitors. The new Section 18(2a) Act against Restraints of Competition has clarified that this is the case – a decision that is in line with the decisions previously taken by the Bundeskartellamt and the European Commission. However, a single market will only be assumed to exist where the services provided free of charge form part of an over-arching business strategy.

Whilst market definition is important, it should not blind us to the fact that the question of market power is independent of the defined market and looks at whether two or more markets or market sides are dependent on each other due to network effects.

The general provisions (Section 18(1) Act against Restraints of Competition) state that a company is dominant if there are no competitors or no significant competition on the relevant market or if the company dominates vis-à-vis its competitors. These criteria also apply to platforms and networks. In the case of multi-sided markets and networks, this general criterion also includes the following: direct and indirect network effects, single homing and multi-homing, economies of scale and network effects, access to data relevant for competition, innovation-driven competitive pressure) (new Section 18(3a) Act against Restraints of Competition).

These provisions and factors (among others) make it possible to conduct a differentiated evaluation of the competitive landscape and to establish the respective level of market power.

If a market participant is found to be in a dominant position, the next step is to see if it is abusing this dominance. This could be through limiting access to the platform or

to data, discriminatory pricing, and giving preferential treatment to one's own products. Section 19 Act against Restraints of Competition is flexible enough to allow for these types of abuse to be addressed. A number of decisions taken by the European Commission and various national competition authorities demonstrate that these provisions (and the similar Article 102 TFEU) are workable and being enforced in practice.



C: Guidelines and recommendations for action

Whilst digital platforms may lead to market structures characterised by monopolies or oligopolies, the existing law should be sufficient to counteract any potential abuses of market dominance.

There is no denying the fact that *ex post* assessments under competition law can have certain disadvantages, particularly in markets driven by swift innovation, where these assessments may come late or even too late. However, the length of proceedings under competition law in this field is partly owed to the novelty of the facts and economic constellations to be considered. These are difficulties that would also have to be confronted if a separate rulebook were to be drawn up for the digital economy. Work could be done to expedite proceedings under competition law (cf. White Paper).

However, there are also other fields, including telecommunications law, where *ex ante* regulation is considered necessary (only) for markets (1) that are characterised by considerable and persistent barriers to access that are caused by structural or legal factors (2) that do not show a long-term tendency towards effective competition, and (3) where the general clauses of competition law are not sufficient for addressing the relevant market failure (Section 10(2) Telecommunications Act). These criteria are used to ensure that the general principle of proportionality is applied. Any *ex ante* regulation that would go beyond the existing rules on competition would therefore only be possible in cases where both the market itself and the oversight mechanism under competition law have failed. This would first have to be proven to be the case.

Furthermore, any *ex ante* regulation introduced without a prior facts-based analysis of the exact problem would also risk going beyond what is necessary to establish a level playing field, thus imposing excessive restrictions and potentially hampering innovation.

When assessing the advantages and disadvantages, it is necessary to bear in mind that Industrie 4.0 needs legal certainty and a fair and robust framework for competition, especially guaranteed access to the platforms that are relevant for Industrie 4.0. At the same time, it would be wrong to underestimate the innovative power that exists in Industrie 4.0. Unlike many B2C markets, the market for B2B platforms has not been fully formed yet – a situation that gives Europe and European companies a chance to become important players. This also means that many markets that may seem to be dominated by only a few may very well turn out to have a long-term tendency towards competition. Increasingly, there is a stronger focus on B2B, and Industrie 4.0 is an important example of this. Lawmakers should ensure that they do not adopt regulation that would subject European companies to rules that put them at a competitive disadvantage to their American or Asian competitors, which are not subject to such regulations and are free to grow in their home markets until they achieve a critical mass.

The competitive situation in B2B is different from that in B2C. As a general rule, there are numerous competitors and there are also other reasons why the market is less likely to tip than is the case in B2C: whilst direct and indirect network effects do of course play a role in B2B as well, other indicators used to establish the level of market dominance a platform has reached typically show that there is no such dominance. Companies tend to avoid single supplier policies and go for multi-homing, and they are less likely to

accept to be locked into a single platform. Whilst access to data is also essential in the B2B segment, companies tend to be more careful about relinquishing their data because they are better informed about its value. Also, much of the data at stake here is non-personal, and some of it is classified as confidential and therefore will not be disclosed. The B2B segment is also less likely to see many audience providing platforms, i.e. platforms that let one market side ‘pay’ by providing data or attention. Moreover, the sheer number of market sides, products and services that exist in many fields make it very likely that we will see highly differentiated platforms that are less prone to tipping. Also, we should take into account the lower number of users on both/all market sides compared to B2C platforms, and the fact that companies are likely to wield more power for negotiation than consumers.

Having said all this, it is not entirely impossible that there will be trends towards monopolisation or oligopolisation. Efforts for greater standardisation will have a role to play.

For the B2B sector, there are scenarios whereby platforms may not have incentives for isolating themselves. Some platforms will be established by independent brokers whose main interest will be to open the platform to third parties so as to bring new products and services to it. We also expect the formation of a ‘network of networks’, which is in the interest of platform operators as it will facilitate standardisation and interoperability.

B2B platforms are associated with a lower risk of anti-competitive discriminatory pricing than B2C platforms, where ‘individual pricing’ is used. Companies are sophisticated buyers and are in a stronger negotiating position than consumers – at least to the extent that they are not SMEs.

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