Access to technical bottleneck facilities: the new European approach
Communicaties & Strategies 2002-2, p. 33.

Natali Helberger [1]

1. Introduction [2]

The control over technical bottlenecks [3] has become one of the most pressing issues in competition and information policy. With the increasing sophistication and diversification of the digital service market, market entry depends on a growing number of diverse technical facilities and competing standards. Often, these are proprietary techniques under the control of one or a few market players with their own vested economic interests. The exclusive control over bottleneck facilities, or the standard embodied, gives a wide choice of possibilities to impede potential and actual competitors, particularly where exercised by powerful, vertically or horizontally integrated operators. Possibilities to influence competition range from plain denial of access to disfavourable conditions, lack of compatibility and software support, to abuse of their stronger negotiation position when it comes to the purchase of programming rights etc.

The European Commission recognises the importance of access issues for the future of the digital markets and recently presented the final proposals that will shape future European policy. The European Access Directive [4] incorporates two sets of rules that deal with bottleneck issues at the infrastructure level. Article 6 of the Access Directive deals specifically with broadcasters' access to an established CA system, while Articles 9-13 of the Access Directive [5] deal more generally with access to technical facilities in the communications sector.

This paper presents an analysis of the new European policy approach to the regulation of technical bottleneck facilities in general and of conditional access (CA) facilities in particular.

The analysis focuses primarily on the sector of digital broadcasting and advanced interactive services and the CA facility, because it is here that the contradictory approach to access questions is most apparent. The main aim of this paper is to examine the effect of the proposed regulation on technological and economic progress in the European information market. It seeks to identify the most suitable approach for dealing with technical bottlenecks – here primarily CA techniques – in order to realise the main policy objectives, that is, open markets, plurality, choice and consumer interests. This contribution begins by providing a concise outline of some of the problems and resulting challenges for regulators when adopting an adequate access regulation for the communications sector. It is followed by a description of both the absolute approach (under Article 6) and the flexible approach (under Articles 8-13) to access regulation, as well as some reflections on the likely impact on future market developments. Subsequently, an analysis of the existing approach to access questions leads to the conclusions. The goal of this paper is not so

much to present an exhaustive analysis of whether the Access Directive in its present form would be the optimal solution to regulate the future communications market and the organisation of national control, or to comment in detail on its legal content (e.g. the criterion of market definition, identification of significant market power, "toolbox approach" etc.), but to indicate some controversial points and stimulate a critical discussion on the future access framework.

2. Technical Bottlenecks in the Access Directive

2.1 Conditional access

Technical bottleneck control is a major issue in the context of the provision of paid-for contents, that is, broadcasting and interactive services that derive their profits from direct payments by consumers. Here, the technical platform (CA) is a vital aspect of the business model of many modern information services and a driving factor behind recent developments in the digital broadcasting and IS (information society) service markets. "Conditional access" [6] refers to a combination of hardware (set-top box, smartcard) and software devices (encryption system, subscriber management functions) which, together, allows the blocking of access to a content which is transmitted electronically, and makes it subject to an automated authorisation process: the CA device automatically identifies the requester, compares his identity, granted privileges, etc., with predefined conditions for access (business rules) and accordingly initialises or refuses the processing of the requested content in an intelligible form. Initially, CA was associated with the provision of pay-TV services; however, in recent years the set-top box has evolved into a PC-like device (or vice versa) that includes high-speed data interfaces, extra memory, powerful processors, a high-speed return channel and application program interfaces (APIs) [7] that are able to process all kinds of TV-centric or Internet-centric applications. Therewith, CA devices are increasingly moving towards becoming "virtual gateways" that permit the management of viewers' access to both digital broadcasting and Internet-based services.

2.2 Electronic communications networks, services and associated facilities

The second category of facilities that fall under the Access Directive are broadly referred to as electronic communications networks and associated facilities, and basically comprises all facilities at the communications infrastructure level that can be involved in the process of transmitting signals. The term "communications networks" means all resources at the network level which permit the transmission of signals by wire, radio, optical or other electromagnetic means, including satellite networks, fixed and mobile terrestrial networks, the local loop, Internet, networks used for radio and television broadcasting, and cable TV networks. [8] The Access Directive also regulates access to physical infrastructure including buildings, ducts and masts. "Associated services" refers to the enhanced services at the upper levels of the technical distribution chain that support the provision of communications services [9] via networks. [10] These can be operational support systems, number translation systems, roaming and switching services, or the CA device, electronic programme guides (EPGs), [11] etc.

3. Regulatory challenges

The example of CA markets (e.g. the markets for access-controlled content services and CA facilities) serves to illustrate some of the major regulatory challenges access regulation faces in the communications sector, and which may also be faced by other information markets.

3.1 Bottleneck control

Usually, the more economically powerful a provider of access-controlled services is, the better its chances of exercising strategic control over access to the necessary technical resources. This can be control over technical facilities such as a transmission network, the CA device, browsers, the EPG or – probably even more important – a proprietary standard behind interfaces, operational support systems and software applications. [12] Proprietary facility control can be used to block market access for rival systems and manufacturers of consumer equipment, particularly where no adequate interoperability solutions exist that would facilitate the marketing of a second, competing system. Technical facilities, then, easily turn into bottleneck facilities, access to which is crucial for all those who wish to provide similar services. This is particularly true for small and medium-sized newcomers: these usually depend on access to resources, because for example in the case of access-controlled services, the provision of such services requires access to a viable CA system, a marketing platform, an electronic programme guide, programme contents, technical facilities, etc. If newcomers are not prosperous enough to overcome the relatively high entrance obstacles to establishing an own CA system, they will have to seek access to existing resources and thereby often depend on one or a few dominant players.

The particular impact of a certain standard is aggravated by the specific economies of many information products. In the case of CA, for example, this means that the economic influence of a particular CA standard depends to a considerable extent on the popularity of the content platform behind it (i.e. the access-controlled services) and thus on the number of broadcasters represented as well as the number of consumers already subscribed to the service, because consumers will value a successful digital platform more than an unpopular one (network effects). [13] Accordingly, access to or compatibility with the popular programme platform and the technical system behind it can be crucial for the very success of any competing content service. In other words, where a first mover on a market for access-controlled services has succeeded in establishing a CA system that has become recognised as a preferred/the dominant standard for content providers, potential newcomers to both the market for CA systems and that for access-controlled services may depend on access to that particular system.

3.2 Vertical integration

Convergence makes it attractive for enterprises to spread their presence over several, sometimes complementary markets (with the goal of marketing contents via several technical platforms) as well as different levels in the distribution chain. [14] Alliances are not restricted to the horizontal level, but involve players from different levels of the distribution chain. The result can be a high level of vertically integrated structures, that is, operators that control several steps in the distribution chain with the goal of optimising the processes of programme rights acquisition, the use/development of decoders and encryption techniques, or the control of the transmission infrastructure.

The impact of vertical integration on competition in, for example, the CA markets is ambivalent. On the one hand, both the control over different levels in the distribution chain and the leverage of market power from one to the other level (e.g. through cross-subsidies or control over resources) allow the realisation of network efficiencies and secure cost-efficient access to supply and distribution channels, often under more favourable conditions than the free market generates. The result might be lower prices for consumers (i.e. increased social welfare), a higher output and incentives to investment and innovation in the infrastructure sector. [15] On the other hand, the overall effect on competition is not necessarily positive, and where the enterprises involved are sufficiently strong, this can also result in anti-competitive control of competitors' access to facilities and markets. In other words, clear economic and strategic advantages could have negative effects on the position of competitors. Naturally, vertically

organised enterprises will favour own associated enterprises at other levels of the distribution chain and provide them with optimised terms and conditions for access to resources and facilities. This also opens up the possibility to discriminate against outsiders by means of price discrimination or otherwise less favourable contracting conditions. At the same time, the vertical integration factor can itself be a competitive advantage with considerable potential to influence market structures. Due to optimisation effects on internal processes and cost structure, vertically integrated operators often can offer similar services on more favourable conditions, which improves their competitive chances. At the same time, vertical integration offers the possibility of leverage of market power into downstream markets, for example through cross-subsidisation or artificial scarcity of resources. Paired with control over bottleneck control, this influence can go so far as the foreclosure of access to facilities or markets for competitors.

3.3 Market foreclosure

Major operators that have succeeded in establishing a sufficiently strong market position benefit from a number of factors that can allow them to effectively fight new market entries. Relevant factors can be:

- the possibility of horizontally integrated enterprises to share costs and risks;
- the possibility to provide services more cost-efficiently (i.e. at lower prices) due to economies of scales and optimised use of resources and distribution channels;
- if vertically integrated, the possibility to compensate for losses at one level with profits from another level; or
- to produce a situation of artificial scarcity of resources.

However, newcomers in this first phase of market establishment are especially vulnerable as they face considerable obstacles to market entry, such as:

- high, irreversible investments for the installation of a facility, the necessary distribution and marketing structure, marketing, acquiring a reputation and goodwill, etc.;
- switching costs for consumers as a result of long-term subscription contracts with the established operator and different decoder standards that make the changeover to an alternative provider less attractive;
- cost asymmetries in access to necessary resources and higher production costs (last-entry disadvantage);
- competitive advantage of the first mover (network externalities).

In other words, high entrance obstacles paired with the presence of major, already established operators create competitive conditions that favour market foreclosure. [16] The chances that new market entries will improve competition and discipline the market behaviour of the established (contestability of markets) are correspondingly low.

3.4 Dominance

In such a situation, possible network effects catalyse this development and contribute significantly to strengthening lastingly the dominant technical platform. [17] Consumers might favour the best established provider with the widest choice/scope/coverage (network externalities), which again allows this provider to optimise its internal processes and cost structure (economies of scale) and invest the derived profits in the platform to extend its coverage and reputation, which again will attract further consumers at the expense of less successful competitors. [18] Even without the occurrence of obviously non-competitive

behaviour, the presence of dominant economic and publicistic power can affect the structure of markets and services: the structure of programme platforms, the outcome of bidding for programming rights, the prospects of free-TV besides pay-TV, [19] the establishment of standards, the range of compatible services available, plurality and diversification within the media environment of a national market.

3.5 Conclusions

The market structure in information markets challenges competition regulators in both structural and behavioural terms. Structural challenges to functioning competition derive from, for example, the strong trend towards vertical integration and control by a few dominant market players of several levels in the distribution chain for services. Law makers must decide whether and – if so – to what extent vertical structures are desirable, or are to be considered a threat to competition, and make political choices accordingly. The second decision to be made concerns the choice of adequate behavioural rules if enterprises with economic power abuse their potential in order to influence competition in their favour. In this context, the exclusive control over access to bottleneck facilities, or proprietary standards inherent to those facilities, calls for particular attention. There are many possibilities for abuse, ranging from refusing to grant access to refusing to supply the information necessary to make competing systems interoperable, thereby effectively eliminating both current and potential competition.

However, general competition law is not well suited to shape the market's structure and effectively prevent the abuse of bottleneck control. [20] It follows that one of the major questions for legislators is how to deal with the issue of vertical integration and prevent the abuse of market power in the form of denying access to technical bottleneck facilities.

The task for media policy is difficult: initiatives should promote new facilities (such as CA) if they are promising drivers for the future media industry. On the other hand, they must prevent the abuse of such facilities when this threatens the contestability of markets. Contestability in this context means ensuring new market entries, disciplining the market behaviour of dominant players and stimulating a pluralistic and diverse service offer. As regards demand, initiatives must guarantee consumers fair and easy access to the necessary equipment at reasonable prices.

4. Access to technical bottleneck facilities: the new European approach

This is where sector-specific regulation comes into play. With the new Access Directive, the European Commission took an initiative to approach the bottleneck problem at the infrastructure level. The goal of the initiative is ambitious: “this Directive harmonises the way in which Member States regulate access to, and interconnection of, electronic communications networks and associated facilities”(Article 1 (1) of the Access Directive). The term “access” is understood in the widest possible sense as “the making available of facilities and/or services, to another enterprise, under defined conditions, on either an exclusive or a non-exclusive basis, for the purpose of providing electronic communications services.” In other words, the Access Directive seeks to establish a uniform, harmonised approach towards the treatment of technical bottleneck issues at the infrastructure level. [21]

The new approach abandons the former concept in which the regulation of access to electronic communications networks and associated facilities took separate paths. The first European regulatory initiative to approach the question of access to CA systems was Article 4c of the Standards Directive [22] – which was subsequently repealed in the framework of the revision of European communications laws and was replaced by Article 6 of the Access Directive – whereas

the regulation of access to and the interconnection of other selected telecommunications facilities fell under the Open Network Provisions (ONP) Framework, which led to the liberalisation of national telecommunications markets. Under the new communications framework, the ONP concept has been extended to cover, in far more general terms, access to *all* technical bottleneck facilities in the communications sector (apart from the CA).

Scope of the new framework

Not included: [23]

Application layer Mobile and fixed telephony services, Internet access, browsers, portals, user- and information services, broadcasting, paid-for content services, interactive applications, EPG

Included in the new framework:

Teleservices Subscriber management services, CA, API, operational support systems
Network and carrier services Routing, transcontrol, Internet backbone links, switching facilities
Spectrum, physical infrastructure Wire and wireless telecommunications network, local loop, cable, satellite, terrestrial and broadband networks

4.1 The absolute approach

4.1.1 Scope

Article 6 gives a clear and exhaustive definition of the subject of its regulation: it exclusively refers to CA services for digital television and radio [24] broadcasting services (anticipating the end of analogue broadcasting). [25] It does not apply to bottlenecks other than the CA device itself, such as APIs, EPGs, [26] the memory of the set-top box, the operating system of the set-top box, relevant programme or technical information, etc. Nor does it apply to CA devices that control access to non-broadcasting services, [27] respectively Internet and other individualised communications services, even if the signals are transmitted together with the broadcasting signal and are received via the same consumer equipment device. An extension of the scope of Article 6 is bound to strict procedural provisions and involves the participation of the European Commission. [28]

The approach accentuates the opacity of the theoretical distinction that is made between CA devices for broadcasting and those for non-broadcasting services and/or online services. Presently, the development of the service market is deeply troubled by the phenomenon of

convergence, and the corresponding development of CA systems suggests that the future lies in advanced set-top boxes capable of controlling access to broadcasting as well as a wide range of interactive service applications. In contrast, Article 6 claims that questions of broadcasters' access to the CA facility still occupy a special position and that CA devices that control access to IS services are supposed to fall under an access regime other than broadcasters' access to the CA facility. The distinction might have far-reaching practical consequences. As will be shown, the regulatory regimes for broadcasters' access to the CA device under Article 6 and access to the remaining technical bottlenecks differ considerably on some points, and it is likely that the divergent systems will generate very different market outcomes.

4.1.2 Access obligation

Article 6 and Annex 1 of the Access Directive mandates an absolute, unconditioned access obligation: "All operators of conditional access services … are to offer to all broadcasters, on a fair, reasonable and non-discriminatory basis … technical services enabling broadcasters' digitally transmitted services to be received by viewers or listeners authorised by means of decoders administered by the service operator …"

In other words, operators of CA devices are not in a position to freely determine either their contracting partners or the terms of access. The mere fact of having control over a CA facility triggers an unconditioned access obligation – unconditioned in the sense that Article 6 does not specify any reasons to legitimately deny access. As opposed to other existing concepts of access to facilities – notably in telecommunications and general competition law – the access obligation here is absolute. It is, in the first instance, not made conditional upon the existence of any particular market structures, be it the existence of significant market power (SMP) or the level of vertical integration: all operators of CA devices are obliged to grant access, provided they do not use the CA facility for exclusively internal purposes. [29] It is, however, worth mentioning that the revised version of the access obligation entitles Member States to provide for the possibility of exemptions in the case of a lack of SMP; in other words, where as a result of market analysis [30] a national authority finds that one or more operators do not have SMP on the relevant market, it may amend or withdraw the access obligation with respect to those operators, subject to conditions. [31] Notably, the Access Directive leaves some room for a more market-structure-oriented approach.

"Whose access services broadcasters depend on to reach any group of potential viewers" – this further limitation of the access obligation was introduced in the course of the drafting process of the new Access Directive. Possibly, this could mean for CA operators that once alternative CA systems are offered, they could deny access with the argument that broadcasters can switch to another system. The further details are unclear. Interpretation in the light of general competition law (essential facility doctrine) would suggest that broadcasters would probably have to accept also less favourable solutions or even undertake adequate efforts to establish alternative solutions themselves. [32]

4.1.3 Interoperability

Distinct from the question of open access to third parties' CA facilities is the question of interoperability between competing CA systems. Presently, there is some evidence that interoperability between competing CA systems might be of even more practical importance than the "access to the decoder" question. This can be explained by the fact that the majority of providers of access-controlled services presently active on European markets are relatively large commercial providers of content services who operate an own CA system.

For a long time, the chore problem with interoperability in the digital television sector was associated with the CA hardware, that is, the equipment at the consumer side. It was argued that if two or more competing, proprietary and incompatible CA systems were in use on one and the same market, subscribers would have to purchase two different set-top boxes in order to receive services from both providers. Consumer reluctance to accept such "decoder towers", the accompanying switching costs, not to speak of the possible loss of network benefits from subscribing to an incompatible or unpopular technology was for a long time considered the main obstacles to market entry and competition. With the increasing sophistication of applications and services, however, simple hardware set-top box solutions are being replaced by more intelligent devices, equipped with an own operating system and API. Consequently, the interoperability issue now extends to the compatibility of services and applications with the proprietary soft- and middleware of the CA facility; in other words, the situation is similar to that in the computer world.

According to the Access Directive, interoperability is "of benefit to end-users and is an important aim of this regulatory framework." [33]

Article 18 (1) of the Framework Directive states:

" In order to promote the free flow if information, media pluralism and cultural diversity, Member states shall encourage …

a) providers of digital interactive TV services for distribution to the public in the Community on digital interactive TV platforms, regardless of the transmission mode, to use an open API;

b) providers of all enhanced digital TV equipment deployed for the reception of digital interactive television services on interactive digital TV platforms to comply with an open API in accordance with the minimum requirements of the relevant standards or specifications." [34]

However, neither the Framework Directive nor the Access Directive would oblige CA controllers to make their systems interoperable. The Commission reserved the right to take action and make the implementation of standards for the API compulsory, according to the procedure laid down in Articles 18 (3) and 17 (3) and (4) of the Framework Directive. Another question is whether such action will come on time, or whether market developments would render further initiatives obsolete. As far as the interoperability/compatibility with regard to other CA components is concerned, Article 6 of the Access Directive does not expressly deal with questions of interoperability. It was argued that mandating one particular approach to interoperability could hamper technological and market development by imposing common standards at too early a stage. Instead, the development and implementation of common standards was left entirely to industry initiatives, such as the work of the DVD Group. So far, however, the proliferation of industry-driven interoperability solutions is modest. Only a small number of systems possess a common interface to make systems interoperable. As far as interoperability solutions exist at all, they are generally Simulcrypt agreements. [35]

4.1.4 Terms and conditions

It is principally left to the parties to negotiate access and to define the conditions under which such is granted, that is, price, commencement and duration of access, and scope of the agreement, and also such related matters as confidentiality and protection of consumer data, handling of security questions, dispute settlement, etc. It can reasonably be assumed that equally strong negotiating parties will negotiate terms that are felt by both parties to be fair, reasonable

and non-discriminatory. This is different in markets where there continue to be large differences in negotiating power between enterprises, as is the case with CA control, where enterprises rely on access to the dominant CA standard.

Therefore, Article 6 of the Access Directive stipulates that access must be given on a fair, reasonable and non-discriminatory basis, compatible with EC competition law. However, further interpretation is needed to assess when CA operators leave the terrain of legitimate economic freedom and abuse their economic power by stipulating non-competitive conditions. The final assessment of the legitimacy of single conditions is left a matter of *ex post* control, under the authority of national courts, possibly NRAs. [36] This task is rendered difficult by the practical problems of identifying discriminatory practices (unless they amount to a plain denial of access), which is the result of a lack of adequate information and reference points, especially in newly forming markets with no or only few comparable products and services.

Article 6 does not provide for any *ex ante* guidelines [37] that would outline the scope of the actual access obligation, nor does it provide for accompanying *ex ante* measures (apart from the obligation of accounting separation) that would help to make the sector more transparent. One major problem in this sector is unfair pricing, which is also due to the high level of vertical integration. Pricing problems in connection with service providers' access to a dominant operator's facilities will often revolve around excessively high prices or discriminatory prices. [38] Article 6 does not envisage any *ex ante* price control for CA access, nor does it regulate the question how prices are calculated and what principles may legally influence the price calculation. It is therefore up to Member States to adopt more detailed guidelines. [39]

As explained in Recital 11 to the Access Directive, the principle of non-discrimination is also meant to ensure that enterprises with market power do not distort competition, in particular where they are vertically integrated enterprises that supply services to competitors with whom they compete on downstream markets. Article 10 (2) might give some indication: "… that the operator applies equivalent conditions in equivalent circumstances to other enterprises providing equivalent services, and provides services and information to others under the same conditions and of the same quality as it provides for its own services, or those of it subsidiaries or partners." This somewhat cryptic definition basically prohibits treating third parties differently from own or associated services unless there is objective justification. However, the possible clarity so achieved might be illusory, since a number of practical questions remain unanswered, such as: under which circumstances are services comparable? Do providers of pay-TV, free-TV, interactive-TV, special interests channels, foreign channels, etc. all fall under the same category? Does the transmission medium play a role with the effect that the question of services transmitted over the IP protocol fall under another category like services transmitted via "traditional" means of broadcasting, such as satellite or cable? And are platform operators entitled to base their access decision on the character of the content of the third party's programming?

It is equally unclear whether the notion of "fair and reasonable" terms also extends to the interests of the CA operator. It remains to be seen whether judges will take the position that access conditions are "reasonable" only if they do not conflict with any protection-worthy and legitimate interests of the operator, that is, situations in which it is not reasonable to demand access. Possible examples might be limited capacities, the threat of economic loss with a view to the initial investments made by the access-control provider, the security and reliability of the system or public interests such as the maintenance of certain capacities and services. Similarly, it remains to be seen whether CA operators could successfully lodge complaints if the remuneration offered would not cover the actual costs of access provision, or if the operator is

asked to split certain functions which are invariably connected to a CA system (e.g. the authorisation process).

4.2 The flexible approach

The remaining technical bottlenecks fall under Article 8-13 of the Access Directive. Unlike the former Open Network Provisions (ONP) concept, the Access Directive does not distinguish between specific bottlenecks (with the exception of CA for digital broadcasting services). Instead, the new Directive extends access and interconnection issues to all electronic communications networks and associated facilities that are used for the commercial provision of publicly available electronic communications services or for the transmission of broadcasting signals. In other words, open access regulation is no longer restricted to selected elements of the telecommunications network; instead, a more general approach was adopted with the goal of establishing throughout Europe a common, harmonised framework for access questions at the infrastructure level.

4.2.1 Scope

Accordingly, Articles 8-13 of the Access Directive no longer work with predefined bottlenecks; instead, a new, flexible approach has been adopted: the NRAs are entitled to determine under what circumstances which facilities are considered potential bottlenecks to market entry and competition. Conceptually, this means that Articles 8-13 do not automatically label certain facilities as bottleneck facilities, as was done under the former ONP approach and is still done under Article 6. Instead, the Access Directive evaluates the question of bottleneck control in the light of a concrete market situation, and makes the final assessment conditional upon the effect of an access denial on competition or end-users' interests.

It remains to be seen whether national NRAs will conclude that CA devices that do not fall under Article 6 of the Access Directive constitute bottleneck facilities in the sense of Article 8-13 of the Access Directive, that is, CA devices that provide access to interactive, personalised information services as well as to services that are distributed via a point-to-point transmission modus (notably IP-transported contents) and therefore do not fall under the traditional definition of broadcasting. Much will depend on whether the European Commission defines an own market for access-controlled non-broadcasting services.

4.2.2 Access obligation

Flexible approach

The new flexible approach stipulates that national NRAs are to impose specific *ex ante* access obligations if such is necessary to ensure adequate access and interoperability in a concrete market situation. The nature of the obligation will again depend on the requirements of the actual market situation. The final access obligation, thus, will be the result of a number of case-by-case decisions taken under the authority of the national NRAs, and that consider a number of factors of the concrete case, such as the anticipated effect of an access denial on the overall competition, the market position of the operator of that facility and the balance with the protection-worthy interests of the operator of the facility ("essential requirements").

Significant Market Power

The precondition for any *ex ante* obligation is that the enterprise in question must be designated

as having significant market power (SMP) for the market in question. [40] The definition of SMP used in the new communications framework is equivalent to the concept of dominance as defined in the case law of the European Court of Justice. The difference is that in the framework of the Access Directive, SMP will have to be identified from an *ex ante* perspective. In practice, often this will mean that the market analysis will have to be based on a purely prospective assessment, due to the lack of evidence or of records of past behaviour or conduct. The accuracy of the market analysis carried out by NRAs will thus be conditioned by information and data existing at the time of the adoption of the relevant decision. [41]

The concept of a market-power-oriented threshold is based on the assumption that bottleneck control is not per se harmful to competition: only enterprises with a particular degree of market power are able to efficiently influence competition to their own advantage. [42] Accordingly, national NRAs must justify their decisions on grounds of a preceding analysis of the state of competition on the market in question, and an assessment of the market position of the operator of any bottleneck facility.

For this purpose, NRAs are bound to observe a specific market analysis procedure and definitions as laid down in Articles 13, 14 and 15 of the Framework Directive. Accordingly, the Commission will regularly issue, after consultation with the NRAs, an updated 'Decision on Relevant Products and Service Markets' and guidelines on market analysis and the calculation of SMP that shall be the basis for the NRAs decisions. [43] The Commission's recommendation should identify markets "whose characteristics may be such as to justify *ex-ante* regulation". [44] Notably, those guidelines will also address the issue of newly emerging markets, where *de facto* the market leader is likely to have a substantial market share but should not be subject to inappropriate solutions. [45] Subsequently, NRAs are required to carry out an analysis of the relevant markets and whether they are prospectively and effectively competitive, taking "the utmost account" of the Commissions Guidelines (Article 15 (1) Framework Directive). Where a national authority determines that the relevant market is not effectively competitive, it shall identify enterprises with SMP on that market in accordance with Article 13 of the Framework Directive and impose appropriate obligations from a catalogue of possible initiatives as provided by Articles -13 of the Access Directive. However, where NRAs conclude that the market is effectively competitive, they should refrain from imposing sector-specific initiatives and withdraw any existing obligations (Article 14 (4) Framework Directive).

Vertical integration

SMP at the facility level is not the only motive for NRA intervention: in response to an actual trend in information markets, NRAs can also interfere if they find that the specific position of an enterprise in a related market poses a particular threat to functioning competition (Article 8-13 Access Directive, Article 13 (3) Framework Directive). Also in this case, NRAs may impose access obligations in any form and/or accompanying measures that provide for greater transparency and controllability, such as obligations concerning non-discrimination, price control and cost accounting. For example, NRAs may require a vertically integrated enterprise to make transparent its wholesale prices and its internal transfer prices to, *inter alia*, ensure compliance with the non-discrimination requirement or to prevent unfair cross-subsidy. [46]

The new communications framework, therefore, might also give NRAs an important and effective means to meet the challenges of strongly vertically integrated markets and to prevent enterprises from abusing their economic strength by levering market power from one market into another.

Essential requirements

Even in a situation where NRAs have clearly identified the anti-competitive effect of potential access denials, the legal consequence is not necessarily an access or similar obligation. The Access Directive continues the proportionality approach ("essential requirement") of the ONP framework and limits access obligations explicitly to what is practically and technically possible and economically feasible. [47] The obligation to grant access does not apply to situations where a third party's access might cause technical or economic damages. According to Article 12 (2) of the Access Directive, when imposing access obligations on case-by-case basis, NRAs must balance all interests involved and take into consideration not only such technical aspects as systems integrity and security, interoperability and capacities, but also competition policy aspects, such as the need to recoup initial investments, the long-term effects on competition of access denial, the economic risks involved in setting up certain facilities and any property interests of the provider of the facility (Article 12 (2)).

Flexible set of ex ante obligations

Once an NRA has identified a possible bottleneck and a provider of communications networks or facilities has been designated a party with SMP, the NRA can choose from a list of possible options the initiative that is most likely to restore market balance ("tool-box" approach). [48] Initiatives can be either (a) duties related to the provision of access and/or interconnection (see below) or (b) accompanying measures that are supposed to prepare the ground for a sufficiently competitive and transparent environment, so that market participants themselves can negotiate access agreements on fair, reasonable and non-discriminatory terms (principle of negotiated access). The latter provisions on transparency, non-discrimination, accounting separation and price control are meant to facilitate negotiations and control.

As to the actual access obligation, Article 12 of the Access Directive leaves it to the NRAs to determine what initiatives are actually needed to ensure the openness of a particular facility. Different situations may require different initiatives to realise open access or interoperability. This applies particularly to the more software-oriented elements of the communications network, where accessibility depends on a complex interaction between different standards and interfaces. The set of optional initiatives clearly exceeds the scope of Article 6 of the Access Directive, as it is not restricted to the access to the facility itself, but also covers access to technical interfaces or operational support systems and initiatives that actively promote the interoperability of competing facilities and services.

4.2.3 Interoperability

The ability to interconnect competing network services has been considered from the very beginning as an important precondition for the formation of competition in communications markets. [49] The principle of interconnection could be described as the equivalent to interoperability in digital broadcasting. Unlike CA regulations, telecommunications law has been two-tier from the very beginning: it addresses (a) the vertical relation between network operators and telecommunication services providers (rules on fair, non-discriminatory access) and (b) the horizontal relation between competing network providers (rules on interconnection). The principles of open, non-discriminatory treatment apply to both levels. [50]

The Access Directive continued the approach of the former ONP Framework and modernised it in order to correspond with the increased intelligence and complexity of communications networks and associated facilities. Correspondingly, it extends to other aspects such access to

technical interfaces, protocols and other key technologies, compatibility of services with middleware or software elements, and the provision of information and specification needed to run an application or use a facility. In this context, compatibility obligations work at the interface between the infrastructure and the service level, as they guarantee that those services provided by means of a particular infrastructure element are compatible with the facility itself as well as with other services using the same technical platform. The importance of compatibility obligations is accentuated where network effects come into play, as consumers are likely to favour services that are compatible with the most popular platform.

4.2.4 Terms and conditions

Where terms and conditions of access and interconnection are not negotiated for an individual case, it is primarily the task of the national NRAs to determine what fair, reasonable and non-discriminatory terms and conditions are and impose adequate *ex ante* obligations. [51] The task of the NRAs is facilitated by the possibility to impose various transparency obligations. Particular emphasis is laid on the aspect of price discrimination. Facility operators are faced with the prospects of tight price control, including possible obligations regarding cost orientation and accounting systems. Notably, the burden of proof that charges are derived from costs, including a reasonable rate of return on investment, lies with the facility operator.

Overview of the different concepts

Article 6 (access to CA)	**Articles 8-13 (access to communications networks and associated facilities)**
Absolute access obligation	Flexible approach, maximum list of obligations an NRA can impose, including access and interconnection; criteria for regulatory invention
To all operators of CA who produce and market access services for digital television	Only to operators with considerable market power (exception: Article 8 (2))
Limits: ?	Limits: Essential requirements
	Provisions to promote and facilitate interoperability of networks and services
Accompanying measures: • obligations of accounting separation	Accompanying measures such as: • obligation of accounting separation • rules on transparency • price control • cost accounting obligations

4.3 Two conflicting access regimes

4.3.1 Ex ante/ex post control

Both approaches could well result in very different outcomes for the information market. The flexible access concept under Articles 8-13 approaches the issue of bottleneck control in the light of actual market structures. Consequently, Articles 8-13 establish a system of *ex ante* market control in which national NRAs regularly monitor market developments and identify actual sector-specific bottleneck situations. The flexible concept necessarily involves an element of legal uncertainty and subjective assessment, due to the uncertainties of any *ex ante* definition of market power as well as the fact that operators cannot necessarily foresee future obligations that might be imposed on them. This also means that in the future the legal situation on national communications markets could be relatively fast-changing, corresponding to the changes of the economic structure of respective markets. As communications markets will differ from Member State to Member State, it is also likely that the concept generates Member State-specific differences in the legal situation for the different national markets. Operators of CA facilities that fall under Article 6 will find a less dynamic and, at the first glance, a more continuous legal environment. The price for continuity and stability, however, will be that it is far less possible to react in time to newly emerging bottleneck situations before lasting harm is done to competition. Upon closer scrutiny, also this approach gives rise to some legal uncertainty, although of another kind than under the flexible approach, due to the reference to the somewhat outdated definition of broadcasting, due to the split supervision by NRAs, competition authorities and courts, and – finally – due to the impossibility to predict the outcome of judgements in access conflicts. The accuracy of the absolute approach and whether it is effective in guaranteeing fair access to the CA facility will depend to a large extent on whether it succeeds in defining the relevant bottlenecks and whether the responsible instances possess sufficient competence and access to the necessary information to judge (in time) [52] the fairness and adequacy of access conditions.

4.3.2 The power of NRAs

Undoubtedly, the new flexible concept gives NRAs considerable scope to evaluate the market situation and the necessary legal consequences, and particularly to identify bottleneck facilities, define markets and market power, and choose the corresponding legal consequences. In praxis, this might give NRAs the opportunity to shape future market structures and conditions of competition for all bottleneck facilities (except CA devices for broadcasting services). The sector that falls under Article 6 offers far less room for active market structure policy.

4.3.3 Stimulating/disciplining

It is along the same lines that Articles 8-13 do not predetermine concrete access obligations that may be imposed on operators: the choice of legal consequences depends upon the concrete case and the "the nature of the problem". [53] For facility operators that fall under the flexible approach, this means on the one hand that they are exposed to a certain level of uncertainty as to which obligations apply and what their scope is; on the other hand, NRAs are explicitly encouraged to take into account the valid economic interests of the facility operator itself, notably the investment made by the operator, the chance to gain a reasonable rate of return on adequate capital employed, taking into account the risks involved, as well as the technical, economic viability and feasibility of providing access/interconnection. Similarly, less economically powerful operators will not be burdened with any access/interconnection obligations at all (lack of SMP). If adequately exercised, the new concept could be a powerful tool to stimulate investment and innovation in the respective markets, as it leaves room for investment-friendly and market-policy-oriented choices. In contrast, Article 6 focuses in the first instance on the openness of the CA platform to protect the interests of competing broadcasters

and consumers, and here that access to services is not impeded by undue bottleneck control. The absolute access obligation is primarily a tool to discipline facility operators and to prosecute the abuse of market power. While there is no room for market political considerations or initiatives to mitigate the deterrent effect an absolute access obligation might have on the will to investment and innovation. The difference in orientation of both concepts is very likely to be reflected also in the outcome of decisions on access conflicts.

4.3.4 Negotiated access/mandated access

Another difference is that Articles 8-13 continue the tradition of the ONP framework in mandating a concept of "negotiated" access, instead of the "mandated access" obligation under Article 6. One consequence is that one of the objectives of the flexible approach is to create a transparent, negotiation-friendly environment. Accordingly, operators of facilities that fall under Articles 8-13 are very likely to experience additional transparency obligations regarding conditions of supply and the obligation to publish reference offers, and far more detailed obligations regarding accounting separation than those that apply to CA providers. Another important difference compared to the absolute access concept are the elaborate obligations concerning price control and pricing and accounting principles that go beyond the mere control of non-discriminatory and non-excessive pricing, but that influence the economic adequacy and reasonableness of prices.

4.3.5 Competition

Both concepts aim at opening facilities and markets to competition, and both pursue – though to varying degrees – the idea of deregulation. However, there is a major difference in the way they approach this goal. The strategy of the flexible approach is twofold. First of all, regulation aims at preventing anti-competitive use of market power in the form of bottleneck control by monitoring the behaviour of major players in a national market and intervening where necessary. The idea is to guarantee unprejudiced access to the service level by allowing access to the necessary technical platform as well as compatibility with it, in order to prevent facility operators from leveraging economic power from the facility level to the service level. Secondly, the flexible approach strongly mandates broad interoperability solutions to encourage competition at the facility level itself, and thereby further diminish the chances that a technical platform becomes a lasting bottleneck facility. Ideally, this concept will generate a number of alternative facilities that compete "within the [facility] market" itself rather than "for the market". [54] In other words, competition would occur on other dimensions – such as price, quality, product features and support services – rather than on the standard level. Service providers might benefit from this situation as they will probably be able to choose from alternative facilities that compete in terms of quality as well as supply conditions.

In contrast, Article 6 concentrates on opening up the service level by imposing behavioural rules on the CA operator and controlling *ex post* the adequacy of access conditions. Strictly speaking, from the point of view of broadcasters, principally there would be no need to establish a second CA system: the standard of the first-comer is encouraged instead and access to it is made mandatory. However, it is left free to the industry to develop and apply interoperability solutions for the CA level. If industry negotiations fail, competition at the CA level might be (in fact, already is) primarily a competition "for the market" in which combatants will strive to establish the dominant standard and thereby secure their market position. Presumably the first mover – or alternatively the operator of the most popular content platform (network effects) – will establish a *de facto* standard, although this may not necessarily be the technically most advanced one. The result might be the freezing of the European CA markets in different dominant proprietary CA

standards. Indirectly, this also might have consequences for the market for advanced, non-broadcasting services, as the digital platform operators are often the driving force behind this service segment, too, and will strive to establish own technical standards. As far as the structure of the content service market is concerned, the Article 6 concept primarily encourages the market entry of smaller broadcasting operators that cannot afford to operate an own system and are unlikely to challenge the dominant platform operator, with the effect that the operator of the dominant technical platform might also dominate the market for access-controlled services. However, the absolute concept might have a deterrent effect on larger platform operators, i.e. potential competitors at the platform level, who intend to operate an own CA, as the lack of mandatory interoperability solutions generates incalculable risks for launching an own system.

4.3.5 Inconsistencies and legal uncertainty

The existence of two so different approaches is likely to lead to considerable inconsistencies in the market structure for both the digital TV broadcasting and IS services market: conceptually, one system promotes full competition at both levels, while the other might have the opposite effect of consolidating the dominance of one technical platform, that is regularly associated with the dominant content platform. Both concepts will have very different effects on innovation, too. Only the approach under Articles 8-13 will actively stimulate innovation and investment in the bottleneck sectors themselves and also encourage smaller facility operators to enter the market. [55] The uncertainty culminates in areas where the two regulations overlap, as in the case of advanced CAs that provide access to both broadcasting and IS services, or which are at the borderline between both regulations. The conflicts in the current approach will therefore particularly affect the markets for advanced digital TV architecture and services on the borderline between the converging broadcasting and IS service sectors, and which do not clearly fall under Article 6 or Articles 8-13, or which suddenly fall under two – divergent and even contradictory – legal regimes. The result is that modern facility controllers in the field of access-controlled services will be left with considerable legal uncertainty if they have to open their facilities to third parties, and with uncertainty about under which conditions and subject to which supervisory regime and evaluation principles they should do so. At the same time, they will be the target of contradictory economic impulses, as one regulation aims at innovation and competition between alternative systems, while the other aims at stability and continuity with respect to existing systems. The resulting incoherence in markets structure and policy might seriously impede the development of the market for advanced access controlled services, such as interactive television. From the perspective of independent operators of advanced services/content services, similar concerns might arise vis-à-vis the incalculable risks as to the conditions of access to the technical platform and the legitimate way to realise access rights. By distinguishing between providers of access-controlled broadcasting and non-broadcasting services, the Access Directive creates artificial barriers between two kinds of services that are likely to converge in the not too distant future and submit them to very different legal regimes. The situation is not much different for operators of digital broadcasting services that depend on access to several facilities that fall under different legal regimes (e.g. access to the CA device and access to the cable networks). In all cases, service or facility providers are confronted with two extremely contradictory legal concepts and market conditions.

As a preliminary conclusion, despite the formal common frame, the way the new Access Directive approaches access questions is strikingly incoherent. The purpose of the following section, therefore, is to analyse the existing approach to CA and suggest ways to solve the present conflict.

Overview of the two concepts

Article 6 Access Directive	*Articles 8-13 Access Directive*
Mixed competencies of national legislators, courts, NRAs and competition authorities	Wide scope of judgement and interference for NRAs
Ex post control	*Ex ante* obligations
Predefined bottlenecks	Flexible definition of bottlenecks, dependent on actual market structure and subject to timely technological change
Absolute access obligation for all CA providers, in principal irrespective of degree of market power and level of vertical integration	Specific initiatives also with view to/as consequence of vertical concentrated structures
Principle of mandated access prevails	Principle of negotiated access prevails
Predefined access obligation, further definition of conditions left to interpretation of the general notion of "fair, reasonable and non-discriminatory"	Actual obligations depend on "nature of the problem"
Accompanying measures restricted to the obligation to keep separate financial accounts regarding activity as CA provider	Catalogue of possible *ex ante* obligations exceeds actual access provision and extends to initiatives with the intention to prepare the ground for fair access negotiations in a competitive environment (e.g. transparency obligations and price control)
Goals: • Competition at service level • Continuity and stability with respect to existing systems at the CA level • (Deregulation)	Goals: • Competition at service level • Competition at technical facility level • Innovation, investment at technical facility level • Deregulation
Questions of interoperability exclusively left to industry	Possibility of NRAs to impose obligations vis-à-vis interoperability and compatibility
Focus: open access to established CA system	Focus: overall competition

5. Analysis

The need for and character of economic-political initiatives depend to a large extent on the structure of the markets in question and on their openness. Obviously, there is a very fine line between the level where the overall advantages of an access obligation prevail and the level on which too strict rules would have an adverse effect on competition and investment. An "access-at-any-price approach" might not only be detrimental to its goals, but also from a constitutional point of view be more than questionable. To be legally justifiable and economically viable, any approach to access must be proportionate and balanced enough to consider adequately the interests of all parties involved, that is, the interests of the parties requesting access as well as those of the operator of the facilities.

An absolute, essential-facility-like obligation of all controllers of CA to grant access to their already established systems might compensate for the lack of openness at the CA level. It is probably a viable instrument to solve the problem of the high entrance risks and sunken costs that might deter competitors from entering the market. Newcomers are not under pressure to invest in new infrastructure facilities as they have access to existing facilities, whereas controllers of CA facilities are widely deprived of the possibility to respond to market entrance with countermeasures since they are legally obliged to suffer usage of their system. Above all, the absolute approach could discipline a dominant CA operator by simply not giving it the chance to deny access and thereby abuse its market power. As the access obligation is directed universally against all CA operators, it might even be a means to solve the specific problem of vertically integrated operators and the conflicts of interest resulting from vertical integration.

5.1 When is a bottleneck a bottleneck?

On the other hand, do the mere characteristics of a CA already constitute obstacles to market entry with the effect that each CA system is necessarily a bottleneck, access to which must be made mandatory? Probably the greatest difficulty with any *ex ante* access obligation is to identify the critical bottlenecks. The price for legal certainty is that any predefined access obligation can soon become outdated in a fast moving technological and economic environment, with the result that it fails to achieve its goal. This particularly applies to definitions that are still technology dependent, such as Article 6 of the Access Directive. Accordingly, an ultimate test for the viability of Article 6 will be the arrival of advanced CA systems that control access to both broadcasting and interactive services.

Principally, enterprises specialised in developing and installing CA systems have no incentive to discriminate against access requesters. Any economically thinking enterprise will strive to sell its technology to as many users as possible and profit from the resulting economies of scale. Where competitive interests in up- or downstream markets are absent, why should operators abuse control of the CA technology? [56] But even where operators of CA devices also function as content providers they might still have an economic interest in admitting competing providers not only to their CA infrastructure but also to the content platform behind the decoder and thereby realise economies of scale. A rich array of content would enhance the attraction of their own platform. Hence, apparently it is not the control over the CA facility itself which threatens to block market entry, but the existence of additional structural factors that accompany this control such as:

- the operator of the bottleneck facility has sufficient economic power either on the infrastructure/content or both level(s) to afford non-competitive behaviour, and/or

- the operator is vertically integrated into the downstream level and pursues own economic interests in the provision of access-controlled services.

From an economic point of view, it will be hardly effective (if not discouraging) to impose access obligations in any other case. But also from the legal point of view, the absolute access obligation raises concerns. Principally, only such measures are proportional and constitutional which are necessary and effective in achieving the goal of the initiative and where no other, less stringent measure is available to achieve the same goal. [57] In other words, if the probability of non-competitive behaviour is restricted to particular market constellations, it is neither proportionate nor adequate to adopt further reaching regulation.

This finding is not new. General unfair competition law came to the conclusion that no market conduct is per se abusive, but that it is the market position of the enterprise performing a market conduct which generates the potential to affect competition. [58] Similarly, in the communications sector the sector-specific flexible approach is restricted to operators with SMP. Also in this context it was argued that mere control over facilities does not justify limitations of individual rights as serious as an access obligation where this is not absolutely necessary to ensure functioning competition. [59] The absolute access concept fails to draw the necessary consequences from the fact that a considerable number of bottleneck conflicts are situation-dependent and not necessarily of a lasting nature. [60] This seems to be especially true for bottlenecks at the upper levels of the communications model (teleservice level, application level) that are less dependent upon physical ownership of resources than the economic strength of a particular standard. Hence, in order to adopt effective, innovation-friendly and proportionate regulations, it is necessary to further specify what the specific circumstances are that make it a bottleneck. It can be the fact that a particular facility is under the predominant control of an incumbent, as is still the case with a number of national transmission infrastructure networks. It can also be a natural or an artificial (i.e. strategic) lack of resources or investment, or the control over a proprietary standard.

5.2 It's all about standards

In the case of CA facilities (but not only here), it is often not so much the control over the CA facility itself as the control over a proprietary *de facto* standard together with a lack of adequate interoperability solutions that impedes the economic activities of competitors. To be more precise, the interoperability problem probably concerns not so much the standard of the security function itself as the associated facilities to implement the encryption modus, such as the smartcard, the set-top box, the API, EPG, etc. [61] This has much to do with the existence of strong network effects in this sector: the reception of Pay-TV services requires that consumers subscribe to a program platform and make some form of investment to acquire the necessary equipment associated with the technical platform (CA). Consumers as well as content providers generally will favour the most popular standard that promises widest coverage. Where a newcomer arrives and plans to offer services to the same consumer base, his offer must be sufficiently attractive to justify the often high switching costs (investment in additional consumer equipment, long-period subscription contracts with the first providers and prospects of double subscription etc.). The second obstacle is the possible loss of network benefits, if the new technical platform is incompatible and not yet popular with the result that still less applications/programs for this platform exist. If network effects are strong, consumers might be reluctant to subscribe to a new, incompatible technology, unless it offers very clear improvement and it can be expected that others soon will follow and thus creating the critical mass for the new service. [62] The exclusive control over the dominant standard is thus also an important means to bind subscribers to a particular service and to exclude other programme operators from

gaining access to the consumer. The consequence is that once an operator of a particular CA system has succeeded in establishing a dominant decoder standard, (a) operators of access-controlled services will depend upon compatibility with the dominant standard to reach a wide audience, and (b) the success and acceptance of a competing CA facility depends to a considerable extent on whether it is interoperable with the existing system. In other words, it is the proprietary control over a dominant CA standard which provides enterprises with sufficient market power to effectively exclude third parties from access to a technical platform or to the content platform behind it. [63]

Mandatory access to the established system is a cure for the symptoms rather than the cause. The European framework for CA control neither commands an acceptable open standard for CA systems nor mandates interoperability between competing standards. The access obligation does not stimulate competition at the CA level, nor does it facilitate the conditions of entry at this level. Upon closer inspection, the concept is more likely to have a detrimental effect: it will "freeze" the standard of the first mover to the market by encouraging broadcasters to access the established system rather than to demand alternative and – ideally – technically better solutions (assuming that the first standard to arrive at a market is not necessarily the technologically most advanced standard).

From a medium-term perspective, to effectively and lastingly prevent abuse of CA dominance, initiatives are needed which directly focus on the problem of dominant standards and proprietary control: sufficient competition at the infrastructure (CA) level would discipline the market behaviour of single CA operators. [64] When the market for access-control services is principally open to competition, established CA providers must constantly take into account the possibility of being replaced by more efficient or advantageous competing CA systems. This would considerably diminish the possibility of particularly vertically integrated operators to use their market power at the CA level to block access to the content level behind the decoder. Where several systems exist on one market, the potential of a single, dominant operator of CA to discriminate against providers of access-controlled services would fade away.

Opening the CA market means stimulating competition and abolishing obstacles to market entry. [65] In this context, two options deserve particular attention.

5.3 Openness for the CA level

5.3.1 Structural separation

One possible approach to stimulate competition at the level of both CA services and access-controlled services would be structural separation, as for example exercised in the USA. [66] Notably, the merger decisions of the European Commission for the pay-TV sector pointed in a similar direction. [67] The concept of structural separation is actually heavily debated in context with competition law, not at least as a response to the Microsoft Case. The idea behind structural separation is to structurally separate critical joint control over different steps in the distribution chain, and thereby dissolve anti-competitive structures and eliminate the substratum for abusive bottleneck control.

In practice, this could mean that CA controllers and platform operators (in most cases, they are the same entity) would no longer be able to lease to consumers fully integrated equipment, such as set-top boxes incorporating a range of additional functions that have nothing to do with the security function of the CA facility, for example, the EPG, API, operating system, etc. This could be done by, for instance, embedding the security function in a smartcard or a PMCIA card

or implementing software-based decoding solutions. Instead, operators would be obliged to structurally separate the security function and leave the development, marketing and maintenance of the technical platform to independent operators. A general requirement could be imposed on the latter to design consumer equipment in such a way as to connect through widely accepted or open standards or a common interface. That is to say, control over the CA facility would not be left to providers of access-controlled services, but to a fully competitive market. The result might be that competing broadcasters would no longer depend upon access to an established system, since set-top boxes would be freely available and fully interoperable. Secondly, this approach would eliminate the factor of vertical integration which otherwise might be the cause for conflicts of interests and prejudiced access decisions.

5.3.2 Ex ante interoperability solution

An alternative approach would be a concept of an *ex ante* interoperability obligation, complementary to the access obligation, modelled on the flexible approach under Articles 8-13 of the Access Directive. In practice, this would mean that operators of CA facilities would be obliged to either negotiate interoperability solutions, implement a common interface, or adhere to a common or open standard. Accompanying measures could include an obligation to make public technical specifications, interface characteristics and possibly also source codes and protocols, etc. that are indispensable for the interoperability of broadcasting services/applications, respective competing CA systems and the technical platform in question.

It would clearly exceed the scope of this presentation to provide a profound economic and legal analysis of both, the concept of structural separation and the concept of ex ante obligations and to discuss the merits and drawbacks of the two approaches. Further research should be done to examine which one deserves preference.

5.4 Limits of an unlimited access obligation

Another aspect is the access obligation itself. With the increasing sophistication and variety of the service market in general and the underlying transmission processes in particular, the question what is necessary to enable broadcasters services to be received is becoming increasingly difficult to answer. It could be the use of particular CA components (encryption system, SMS, SAS, etc.) or – more hardware-oriented – the joint use of one set-top box. However, the more advanced CA systems also require compatibility with the operating system and the API of the set-top box, and the provisions of the necessary technical information are at stake.

Correspondingly, the realisation of open access to and compatibility of facilities is rendered increasingly complex. It is questionable whether predefined access obligations still meet the requirements of a modern, technologically advanced environment, or whether a more flexible, open framework is better suited to respond to the actual market situation and technological change. The advanced structure of CA infrastructures seems to suggest that an adequate CA obligation would have to be flexible enough to leave room for the obligation of CA operators to ensure that it is technically possible to offer CA systems in terms of capacity, security features, implementation of the necessary interfaces and interoperable software, definition of transmission protocols, standards, etc. as well as providing the necessary information to make the system work. Otherwise the argument of lack of technical facilities or denial of access to necessary information could be used to effectively block access. [68]

5.5 Reasons to maintain the absolute access obligation

Why maintain the absolute access obligation?

5.5.1 Differences in industry structure

One main argument that was made concerned the substantial industry structure differences between broadcasting and telecommunications which would justify the current distinctive regulatory approach to CA systems. [69] However, access both to the CA facility and to other elements of the infrastructure raises similar questions and concerns

- In both situations, the control over infrastructure or parts thereof needed by a third party to transmit signals to the end-user. Also the European Commission concluded: "A common feature of most of [access] disputes is that the access requester seeks some form of access in order to generate revenues from customers of the access provider." [70]
- Monopolistic use of and, particularly, refusal to grant access to the facility – be it the public telecommunications network or a CA system – can block access to downstream markets and hinder potential competition and new market entry.
- Both regulatory frameworks aim at market openness and deregulation
- The centrepiece of each is the obligation to grant access to networks and facilities on fair, reasonable and non-discriminatory terms
- Simultaneously, both concepts have to deal with arguments of scarcity and the balance of conflicting economic interests. [71]

5.5.2 Legal certainty

Although the absolute access obligation grants a level of legal certainty that, at first glance, outweighs the flexible access concept, this form of certainty is unreliable as it is based on parameters which tomorrow may cease to be crucial. The most obvious example is the technology-dependent bottleneck definition in a time where it becomes increasingly difficult to identify what broadcasting is. Other factors that are a possible cause for legal uncertainty are the unsuitability to timely respond to changes in market structure or technology as well as the unpredictable outcome of court decisions in concrete access conflicts.

It is probably true that the process of determining market power *ex ante* brings with it an element of uncertainty, especially for the sector of digital broadcasting with its strong vertical integration and spread via several different technological platforms. However, ease of application should not be at the expense of an appropriate and proportionate solution. Where the problem is less the control over the technical facility itself rather than the surrounding market structure, it is appropriate to make the market structure the test for the existence of bottlenecks, and not the facility itself, especially as the new framework offers adequate choices to specifically respond to critical vertical integrated structures.

5.5.3 Consumer interests

Another argument that could be made focuses on consumer interests. First of all, this is the need to protect consumers from so called "decoder towers", i.e., the need to install more than one distinct set-top boxes in order to be able to receive broadcasting program from competing providers. The obligation of the established Pay-TV provider to also grant access to its technical platform also to other broadcasters might clear the way for joint use of one and the same settop box. Consumers could then choose from competing offers, without having to face high switching costs (e.g. investment in a new set-top box). Ideally, the absolute access obligation

would generate a plural offer of various competing broadcasting programmes that can be received via the same technical platform. It is, however, already questionable to what extent this concept is indeed suitable for achieving genuine plurality, and to what extent it leaves CA operators free to exercise editorial control over the type and content of broadcasts that are finally admitted to the technical platform. Another concern is whether the leading CA operator can (ab)use his position to impose monopoly prices for consumers on access to the technical platform, bearing in mind that Article 6 does not provide for any kind of *ex ante* price control. Arguably, a regulation that encourages competition at both the CA and the content level would be equally if not more suitable to obviate abuse of monopoly power and encourage a plural service offer, while the presence of adequate interoperability solutions would equally banish the problem of decoder towers.

5.5.4 Media-political considerations

This leaves the question whether there are any other significant arguments to maintain the two approaches. One argument could be principal reasons in the particular nature of broadcasting services. Traditionally, the regulation of broadcasting-related issues is linked to media-political considerations and decisions which also can affect the infrastructure level. For example, it was argued that public broadcasters should have a right of access to all technical platforms. It is, however, already questionable whether communications law is the appropriate frame to discuss these questions. It would be going beyond the scope of this paper to discuss this topic in depth; however, it should be noted that in principle the concept of a strict distinction between content and infrastructure questions involves that principally all electronic communications services are treated in the same way and irrespective of the content of the so transported signals. In other words, it makes no difference whether a service consists in routing broadcasting or any other signals via electronic communications networks. The overall goal is to ensure the broad availability of whatsoever services for consumers and open access to the market for providers.

There are some indications that the application of a more market-power-oriented and flexible approach would not even involve a loss of rights for broadcasters. In so far, the key difference between the two approaches is the flexible, SMP-oriented approach, as opposed to an absolute access obligation. However, as explained, operators that do not have either horizontal or vertical SMP have strong incentives (in the form of economies of scale and network effects) to offer third parties access to their technical platform. In other words, the change to a market-power-oriented approach may prove to be inconsequential. [72] One reason more to be consequent

6. Conclusions

The new Access Directive distinguishes between conditional access facilities for digital broadcasting services and those for other technical facilities in the communications sector. For both categories of bottlenecks, the Directive has adopted two divergent access regimes: an absolute, facility-oriented approach that works with predefined bottlenecks and obligations, and a flexible, market-structure-oriented approach which hands the management of bottleneck problems over to the *ex ante* supervision of national NRAs.

However, the use of CA techniques is no longer (and probably never was) restricted to the distribution of digital broadcasting contents. The arrival of advanced set-top boxes will spell the end of this distinction. Access control is no longer restricted to the transmission of broadcasting contents but can equally be used to convey non-broadcasting services, point-to-point services routed via communication networks and enhanced telecommunications services. Going even further, CA techniques are and will continue to be applied by, for example, telecommunications

services and networks as well as cable operators, and as such will become part of the communications network. [73] But also technical transmission platforms are increasingly interchangeable: broadcasting services – not to mention the advanced digital services – can be transmitted via telephone lines and vice versa, communications services via for example satellite transmission networks. In short, it is difficult to see why the use of CA techniques for broadcasting services and by broadcasters should fall under a legal regime other than the use of CA or CA-like techniques for communications services and providers of such. [74] Moreover, maintaining both concepts might discourage investment and progress initiatives in prosperous sectors as the markets for access-controlled broadcasting and IS services, because it exposes market players to an incoherent legal and economic environment, particular in sectors that are at the borderline between the two approaches or where both regulations overlap. [75]

But also the concept of an absolute access obligation as such raises concerns. A closer analysis reveals that the alleged superior level of legal certainty turns out to be a fallacy. Doubts arise as to whether the concept is indeed effective in protecting consumers and media political interests. The absolute access obligation, however, also meets more fundamental concerns: the control of a technical facility does not, of itself, necessarily gives it a bottleneck character. This seems to be especially true for such facilities that owe their economic impact less to the physical ownership of non-duplicable resources (as was e.g. the case with the former telecommunications networks) than to the economic strength of the facility operator or of an embedded particular standard.

The control over a proprietary standard is often what gives a CA facility its particular economic impact. Presently, competition on the markets for access-controlled services (pay-TV) is often a question of who manages to convince the largest consumer base to subscribe to its service and install its CA system (set-top box) at home. Network effects strongly work in favour of the first mover (or the most popular content platform) and make it the more difficult for competitors to launch competing services via different technical platforms. In such a situation, an absolute right to use the dominant technical platform solves the problem only partly, as it might have undesired economic side-effects. Practically, it might reinforce the result of network effects and promote the standard of the most popular platform by encouraging broadcasters to access this CA rather than install or demand alternative technical platforms. The presumable results are low incentives to invest in alternative, innovative techniques, possible restrictions on the economic freedom of service and facility providers, and dominance of the established system. From the point of view of consumers, this might mean a technological lock-in with a technical platform that is not necessarily the most advanced or economically advantageous, even if it is a continuous solution and the prospects of less choice, if the legal and economic situations deters potential competitors from market entry. Apart from that, the ability of an absolute access obligation to guarantee functioning competition depends to large extent on the way it is drafted and whether it is able to define the critical bottlenecks, the obligations needed to open/reopen access to facilities and markets and to achieve a fair and productive balance between the economic interests of all parties concerned. The previous analysis raised serious doubts as to whether Article 6 complies with these requirements.

Where market policy pursues a more competitive, innovation- and investment-friendly environment, a more flexible concept is probably the better choice. Three possible regulation concepts that seem better suited to respond to the particular problems of CA control have been proposed. The first solution would be to structurally separate the security functions from the other components of the CA, with the effect that those parts of the CA that are installed in the consumer's home (set-top box, EPG, API) are exposed to competition and not subject to proprietary control. The alternative approach would be to adhere to a flexible access concept. This could mean picking up the thread of the AD and adopting a unified access regime for

communication and associated facilities, including CA facilities. The third solution would be a combination of both.

Notably, the Access Directive itself cautiously took the first steps towards a more flexible approach for *ex ante* CA regulation [76] , while some national NRAs have already come to a similar conclusion and approximated the regulation of CA to the concept of bottleneck regulation under telecommunications law. [77] It remains to be seen and indeed is still subject to discussion whether the flexible access concept would be the optimal solution and would prove to be effective in practice. One conclusion of this paper, however, is that the application of a more coherent and consistent approach towards access questions would considerably enhance legal certainty and consistency. A flexible access concept may enable NRAs not only to impose access and similar obligations where such is really necessary in individual cases, but also to monitor negotiations and ensure proper co-operation between CA operators and broadcasters. Abandoning a technology-dependent fraction in the legal regime would enhance legal certainty, clarity and coherence. A more transparent environment would be less dependent on the vague notion of "fair, non-discriminatory and reasonable" terms to identify discriminations, in particular as regards indirect but no less effective anti-competitive strategies, such as the withholding of information, cross-subsidisation, excessive pricing and control over proprietary standards. It would allow greater flexibility to deal with new, previously undefined bottlenecks and market structures in the whole field of digital services. A two-tier approach to stimulate competition not only at the service but also at the facility level would correspond with the general objective of the new framework to gradually let competition replace *ex ante* regulation. Finally, a single common framework for CA would avoid the present curious situation that logically related matters are dealt under different legal regimes.