Earth, Life & Social Sciences
Anna van Buerenplein 1
2595 DA Den Haag
P.O. Box 96800
2509 JE The Hague
The Netherlands

www.tno.nl

T +31 88 866 90 00

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Digital platforms: an analytical framework for identifying and evaluating policy options

Date	9 November 2015
Author(s)	Nico van Eijk (IViR) Ronan Fahy (IViR) Harry van Til (Ecorys) Pieter Nooren (TNO) Hans Stokking (TNO) Hugo Gelevert (TNO)
Review committee	Jorna Leenheer (Avans Hogeschool) Nicolai van Gorp (e-Conomics) Paul de Bijl (Radicand Economics)
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Management Summary

An analytical framework to analyse policy options regarding digital platforms
At the request of the Ministry of Economic Affairs, a project consortium of TNO, Ecorys and IViR have developed a framework to analyse policy questions regarding 'digital platforms'. This framework enables the government to take advantage of the opportunities these platforms offer and to appreciate and mitigate potential risks related to these platforms.

In this study a digital platform is defined as 'a (technological) basis for delivering or aggregating services/content from service/content providers to end-users'. Examples of digital platforms are Apple, Netflix, Bol.com (a Dutch e-commerce platform), Facebook and Thuisafgehaald (a Dutch platform where users can share meals). Case studies of these platforms have been used to develop the framework and are included in the annexes to this report.

The framework considers both opportunities and risks
The increasing economic and societal impact of digital platforms raises a number of questions for policy makers. On the one hand digital platforms offer considerable opportunities. Digital platforms lower transactions costs and enable users to express themselves and share information. On the other hand, there are also concerns raised in public debates about how platforms or users on digital platforms can and should comply with (existing) regulatory principles and frameworks.

The resulting analytical framework is a practical instrument that may support policy makers in identifying policy options and the impact thereof with respect to digital platforms. The framework consists of the following three pillars (see also Figure 1):

1. Platform type and platform characteristics – The framework starts with a detailed analysis of the characteristics of a specific platform. A list of characteristics is included in Figure 1. An important characteristic in the analysis of digital platforms is the way the platform exploits network effects. Due to network effects, a platform becomes more attractive to consumers and to other users of the platform (such as advertisers or developers) if the total number of consumers grows.

There is a large variety of digital platforms. In each case, the potential impact on public interests differs. Thus one needs a tailor-made approach. The framework distinguishes four types of platforms which is useful as a 'filter' and starting point for a more detailed analysis.

2. Public interests – Relevant public interests to be considered are listed in the analytical framework. Public interests refer to the interest of a country or community as a whole. The framework assists in clearly stating the public interests that are relevant in the consideration of policy options. Both platform characteristics that contribute to public interests and characteristics that harm public interests are addressed. The public interests included in the framework are based on earlier policy documents and should capture the most relevant interests linked to the phenomenon of digital platforms.

In general, government interventions in markets can be based on the economic concept of market failure (due to for example market power or information asymmetry). Interventions can also be based on a broader normative framework such as fundamental rights and freedoms. There may also be paternalistic reasons for legislation, for example, for the protection of minors or the protection of consumers. This study does not address underlying trade-offs between introducing public intervention to improve market outcomes, versus the risk of introducing government failure caused by such interventions.

3. Instruments and application – The analysis of policy options and their application takes a 360 degree approach and includes all available options: remove instruments that have lost their value/meaning, use available instruments or re-interpret them to make their application more tailor-made to fit digital platforms, stricter enforcement, and finally, adopting new instruments. A particular emphasis is put on exploring existing options, as they seem fit to deal with most of the characteristics of digital platforms. This report contains an overview of existing instruments. Some of them are of a more generic nature (competition law and consumer law). Others are more sector specific, such as the regulatory frameworks for communications and e-commerce. The choice between these instruments depends on various considerations. It is upon the policy makers to assess and weigh them. Table 1 on the next page contains an overview of some relevant considerations that can play a role in the selection of policy instruments.

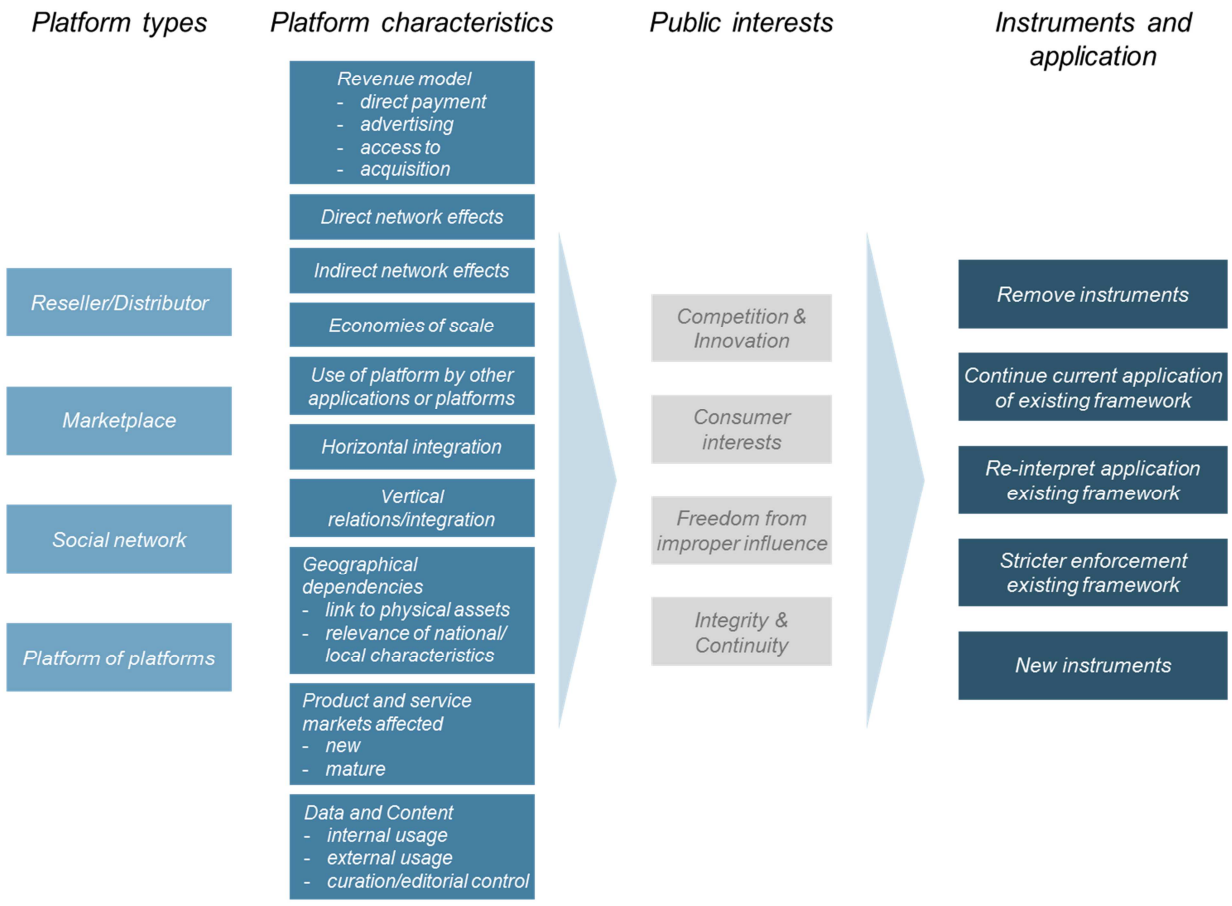

Figure 1. The analytical framework for digital platforms as developed in this study

Table 1 Preliminary considerations with respect to the adoption of instruments

Topic	Considerations
Existing/non-existing instruments	What generic or sector-specific regulation/instruments are already in place? Are areas – related to digital platforms – not covered (completeness of the tool box) and should they be covered?
Application and enforcement	Are regulatory frameworks implemented, and are regulators actively enforcing, or attempting to enforce, regulation to digital platforms?
Static/Dynamic	Digital platforms are in transition and require a more normative/functional approach instead of overly detailed regulation common to static markets.
Risk/harm Ex ante/ex post	Policy question on weight to be attached to certain public interests. I.e. higher risk of harm might suggest ex-ante regulation, while lower risk of harm might suggest ex-post regulation; risk/harm approach can be used to assess innovation opportunities.
Subsidiarity	How much space have (or should have) national governments to intervene with generic and sector-specific regulation, taking account of EU regulation? (Static versus dynamic.)

An analysis of the impact of policy instruments should include the impact of the instrument on platform characteristics

Besides the intended impact, instruments can also have an impact on other characteristics of digital platforms. The framework can also be used to analyse if there are any (unintended) side-effects. This includes how a platform may react in response to a policy option. Once the impact on the characteristics is determined, one is able to assess the net impact on public interests and thus the actual effect selected policy options can have.

Conclusions and recommendations

The result of this study is a framework to analyse policy options for digital platforms. It provides a structured approach that promotes completeness and consistency for the analysis of the government role and policies for digital platforms. As each digital platform is different, the relevant starting point consists of the specific platform under consideration. This approach reflects the heterogeneous nature of digital platforms and avoids forced attempts to put digital platforms into a single category.

Most of the platform characteristics that are included in the framework are also relevant in cases that do not involve digital platforms. Certain characteristics (such as network effects, economies of scale and use of data) are more pronounced and relevant in many platform cases, but this does not warrant a delineation of digital platforms through a specific definition.

In a similar way, the public interests identified in the context of digital platforms are known principles which are already embedded in existing policy instruments. These instruments may need fine-tuning, re-interpretation or just simple enforcement. It might also be that certain specific instruments have lost their relevance because more generic/normative frameworks can be used instead (such as applying generic competition or consumer regulation replacing detailed sector-specific rules). Furthermore, concepts such as a risk/harm approach (higher risk of harm might suggest ex-ante regulation, while lower risk of harm might suggest ex-post regulation) could provide a basis for effective application and enforcement.

Contents

Management Summary **2**

1 Introduction **6**
1.1 The emergence of the platform economy and its link to public interests 6
1.2 Digital platforms are important to policy makers 6
1.3 An analytical framework for policy questions on digital platforms 7
1.4 Development in close interaction with relevant stakeholders 7
1.5 Result: an analytical framework 8
1.6 Reading guide 9

2 Explaining the analytical framework **10**
2.1 Relating platform characteristics and public interests to policy instruments 10
2.2 No consensus on the definition of digital platforms 10
2.3 Platform characteristics are the starting point for analysis 11
2.4 Platform trends and developments 16
2.5 Typology of platforms as a 'filter' in the analysis 18
2.6 Typology of relevant public interests 19
2.7 The relation between the platform characteristics and public interests 23
2.8 Instruments and application 26
2.9 Instruments and enforcement 34
2.10 From platform characteristics to policy interventions in practice 38

3 A guide to the practical application of the framework **40**
3.1 The analysis starts with a policy question 41
3.2 Forward route: determining potential interventions 42
3.3 Return route: impact of interventions on platforms and public interests 44
3.4 Creation of an overall view 45

4 Conclusions **46**
4.1 A structured approach for the analysis of government roles and policies 46
4.2 Platform characteristics rather than a typology 46
4.3 Platform characteristics rather than a definition of digital platforms 46
4.4 Many existing instruments apply to digital platforms 47

Appendices
A Acknowledgements
B National and European regulatory activity targeting digital platforms
C Case study on Netflix
D Case study on Bol.com
E Case study on Thuisafgehaald
F Case study on Facebook
G Case study on Apple
H Illustration of return direction: impact of potential interventions on public interests and platforms

1 Introduction

1.1 The emergence of the platform economy and its link to public interests

Electronic communication has always been an important field of interest for policy makers. It is of vital importance for economic growth and enables people, businesses and governments to stay in close contact. At the same time the delivery of electronic communication services is characterised by economies of scale and network effects, which may lead to natural monopolies with all of the related negative side-effects like high prices, low quality and lack of innovation. Electronic communication services are closely related to other public interests too, like privacy.

For the media sector a more or less similar same story holds. An independent and pluralistic media landscape is crucial for a nation's economic development, democracy and freedom of press. Similar to telecommunications, but for somewhat different reasons, the media sector is characterised by a strong tendency towards concentration. This can undermine public interests related to the independence of news and diversity of broadcasted content. To mitigate risks and to enable economic growth to its fullest extent, both electronic communication services and media have therefore always been subjected to policy making and legal regulation.

The rise of the Internet shook the markets for media and electronic communication services and posed a challenge to the effectiveness of existing policy measures. The Internet caused markets to change, offering businesses and governments exiting opportunities for developing new, and improving existing, services for accessing and providing information and for serving their clients. At the same time, the Internet led to a strong growth of economies of scale and network effects. Moreover, numerous new (legal and illegal) business models have emerged that are based on gathering and exploiting personal user data – on a scale unthinkable of in the traditional 'physical world'.

The Internet also led to the development of the so-called 'platform economy'. Digital platforms provide a basis for delivering or aggregating services and content from service and content providers to end-users. Some of these platforms seem to develop themselves into conglomerates of interconnected platforms, of which several have become dominant market players in relatively short periods of time. Platform owners present themselves as bridge builders or gatekeepers, intermediating between parties on different sides of the platform. Their platforms offer new and attractively priced services to consumers, but at the same time affect the possibility for new players to enter the market. They also influence the way in which other market sectors function and operate, like the consumer electronics or services industry.

1.2 Digital platforms are important to policy makers

The development of the platform economy puts pressure on the effectiveness of existing government policy for stimulating innovation and economic development and for safeguarding public interests. For these reasons, digital platforms currently are of particular interest to policy makers. They wish to understand the positive and

negative impact these platforms may have on public interests in order to be able to determine if, how and when to intervene.

Digital platforms indeed give rise to many policy questions. Examples of such questions include what opportunities these platforms present for innovation, how they benefit the transparency of markets, how they may impact freedom of choice for consumers, how they affect freedom of speech and how they treat personal data of users. Policy is not only concerned about risks, but also about the opportunities and benefits of the platform economy. Examples of the latter are the impact on innovation, market growth, new opportunities in the markets for labour, goods and services, and creating value to consumers.[1]

1.3 An analytical framework for policy questions on digital platforms

Due to the Internet societal changes are occurring in quick succession, which requires an ever increasing responsiveness of policy making. As a result − and to prevent policy making from becoming an ad hoc process − policy makers want to be able to quickly and normatively analyse cases and to swiftly identify policy options. At the request of the Ministry of Economic Affairs, a project consortium of TNO, Ecorys and IViR has therefore developed an analytical framework for policy questions on Digital Platforms. In the project directive the Ministry of Economic Affairs defined the goal of the study as follows:

'Goal of this study is to construct a coherent analytical framework for policy questions concerning digital platforms. The framework should enable the government to take advantage of the opportunities these platforms offer, to appreciate and mitigate the connected risks and to get an overview of the instruments that can be applied for both purposes.'

The result of this study is a practical instrument that supports policy makers and others in identifying problems and policy options with respect to digital platforms. The analytical framework provides an overview of the relevant public interests at stake and their mutual relations, and allows policy makers to structurally analyse the relevant opportunities and risk.

1.4 Development in close interaction with relevant stakeholders

The foundation of the analytical framework is based upon desk research and previous work performed by the different consortium partners on related topics.[2] The resulting draft framework was tested in five case studies: Apple, Facebook, Thuisafgehaald, Bol.com and Netflix. These five cases have been selected to cover a wide variety of platform types and sectors. As such, the selection of cases provides a broad base for validation. The case studies indeed touch upon many

[1] An overview of arguments (the 'argument map') produced by the Ministry of Economic Affairs clearly displays the opportunities and risks. See: https://www.argumentenfabriek.nl/media/1980/argument-map-platform-economy.pdf, and https://www.argumentenfabriek.nl/media/1981/argument-map-platform-economy-stakeholders.pdf.

[2] See for example 'Regulation in the media-internet-telecom value web: Introducing the Damian method for systematic analysis of the interdependencies between services, organisations and regulation', http://publications.tno.nl/publication/34611843/NhocfJ/TNO-2014-R11482.pdf; 'Net neutrality and the value chain for video', Prof. dr. N.A.N.M. van Eijk P. Nooren & A. Leurdijk, Info, 2012-6, p. 45-58.

different characteristics and interests. At the same time, it is clear from the analysis that five cases can never completely capture the richness of the digital platforms of today and tomorrow.

The five cases are described in the annexes. Each case study is based on desk research and two or three interviews with relevant stakeholders (e.g. competitors and consumer interest groups) and − for some case studies − the company involved. The goal of the case studies was not to evaluate or conclude on whether there is a need for more (or less) government intervention. Instead, the cases served to validate and refine the analytical framework, in particular how it captures the platform characteristics and public interests.[3]

At request of the Ministry, a steering committee was formed for the study, comprising of members from the Ministry of Economic Affairs itself, the Netherlands Bureau for Economic Policy Analysis (CPB), the Authority for Consumers and Markets (ACM) and the Rathenau Institute. The study also actively involved stakeholders, including market players and other government bodies, through a series of interviews and two round table conferences. Finally, for quality assurance, a small team of experts was put together. Annex A lists the members of the steering committee and the quality assurance team.

1.5 Result: an analytical framework

The analytical framework developed in this study is a practical tool for quickly identifying the risks and/or opportunities involved with particular digital-platform-based businesses. Moreover, the framework allows policy makers to create an overview of the relevant considerations to take into account when deciding on policy instruments to be applied (or removed) in order to limit risks or to facilitate the opportunities that digital platforms offer. The framework focusses on aspects that differentiate digital platforms from regular businesses.

As illustrated in Figure 2, the framework consists of three pillars:

1. **Platform characteristics and platform type** – The framework begins with a detailed analysis of the characteristics of a specific platform.

2. **Public interests** – The framework lists the relevant public interests to take into account. The framework allows for identifying the link between public interests and platform characteristics that may harm, or alternatively, contribute to those public interests.

3. **Instruments and application** – The framework describes policy interventions in broad terms, from introducing new instruments to removing existing legislation. The framework highlights the considerations that should be taken into account when selecting policy instruments.

[3] For this reason, the case descriptions in the annexes do not cover the instruments part of the framework and the impact of potential instruments on public interests.

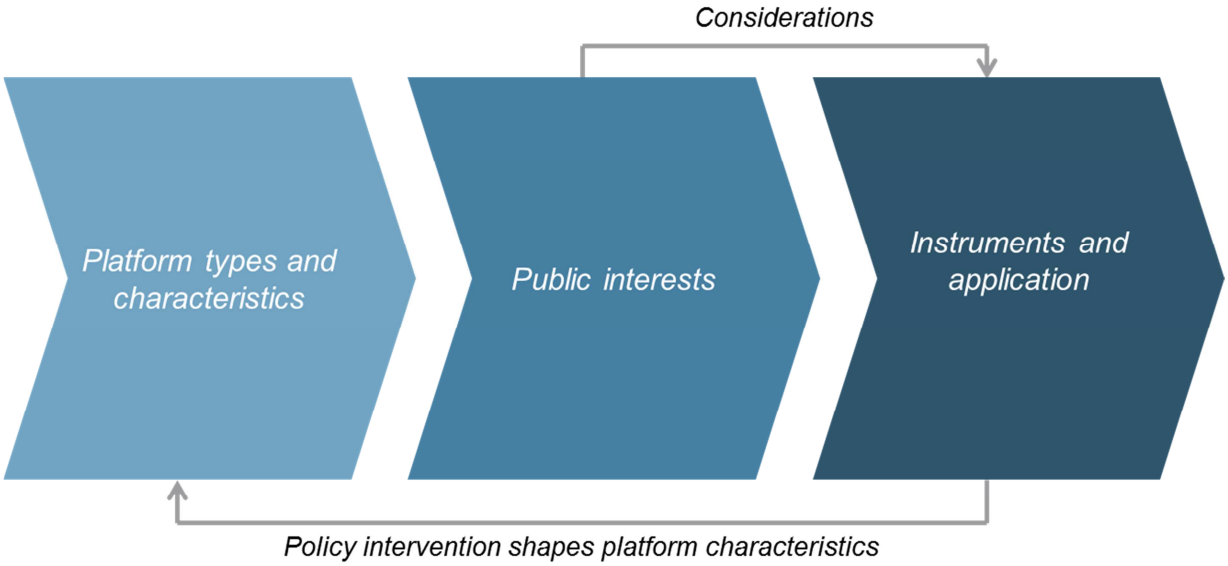

Figure 2: Analytical framework, from platform characteristics to instruments and application (and vice versa)

The framework can also be used to determine the possible impact a policy intervention may have on platform characteristics. It is important to include this step in the analysis, as policy interventions may impact platform characteristics, which in turn may impact other public interests. Policy makers and regulators should therefore be aware of the possible side-effects of interventions.

1.6 Reading guide

This report contains a detailed description of the analytical framework that was developed by the consortium. Chapter 2 describes the framework and the considerations behind it from a theoretical perspective. Chapter 3 approaches the matter from a practical point of view and contains a manual for applying the framework. Chapter 4 contains the conclusions the project team derived from developing and testing the framework. Finally, the annexes present the five case studies.

2 Explaining the analytical framework

2.1 Relating platform characteristics and public interests to policy instruments

This chapter introduces the analytical framework developed in this study, shown in Figure 3. The three main components of the framework are the platform characteristics, the public interests and the instruments. The description starts with the characteristics of platforms. Thereafter the relevant public interests and possible policy instruments are described in general terms. An important element of the framework is the set of considerations to be applied when considering policy interventions. These considerations are discussed at the end of this chapter.

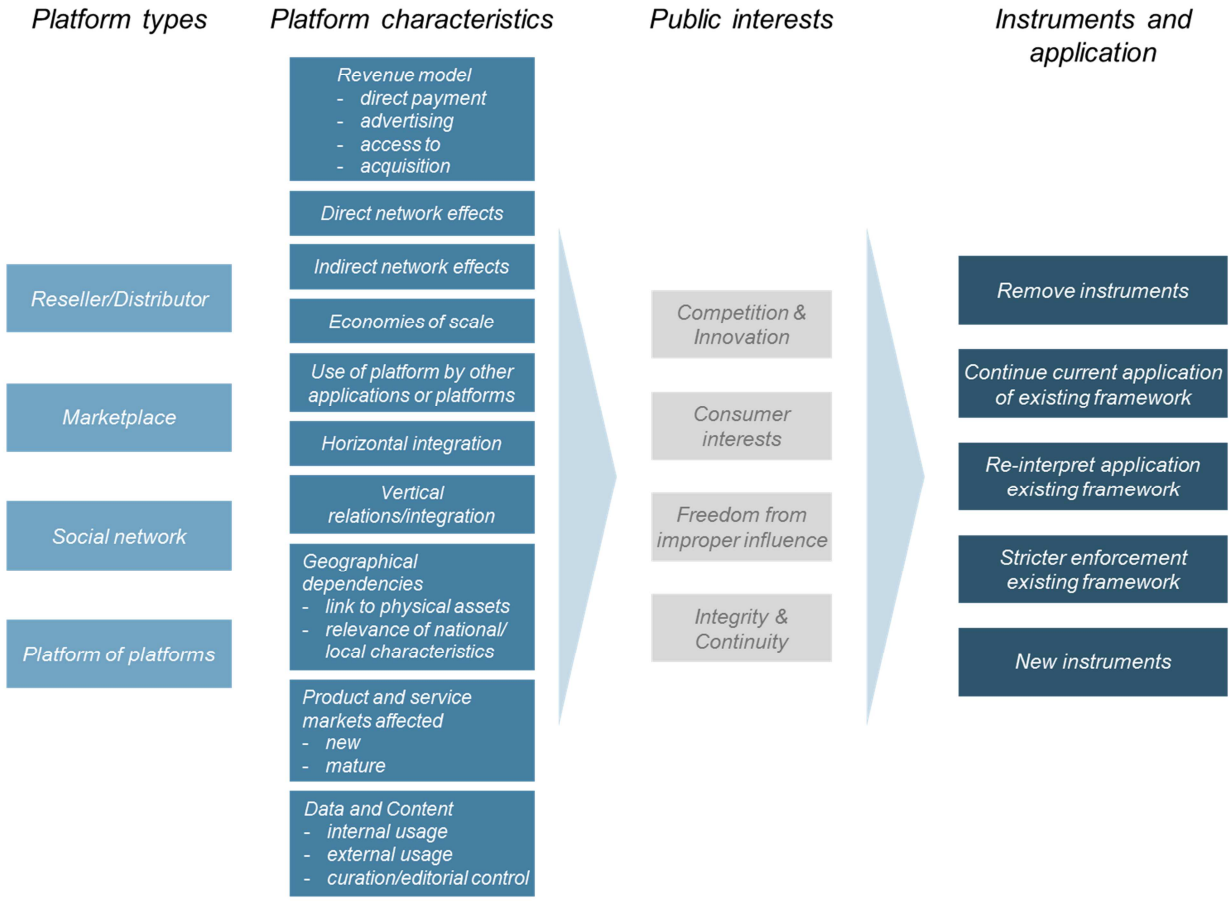

Figure 3. The analytical framework for digital platforms as developed in this study

2.2 No consensus on the definition of digital platforms

The term ‘digital platforms’ is often loosely defined. Many studies on digital platforms do not provide a definition or the authors use examples to make clear what they refer to when they mention digital platforms. In the Digital Single Market Strategy, the European Commission mainly describes some characteristics of digital platforms and mentions a number of examples of platforms *(e.g. search engines, social media, e-commerce platforms, app stores and price comparison*

websites).[4] In a previous study for the Ministry of Economic Affairs on the role of the government in the Internet, Analyses Mason defined a platform as *'a service whose role it is to allow end users to access other providers located upstream in the value chain'.*[5] In a study for the European Parliament by Ecorys, a broader definition was presented, which is also used in this study[6]:

'A digital platform provides a (technological) basis for delivering or aggregating services/content from service/content providers to end-users.'

It is useful to use a broad definition as there is a wide variety of digital platforms which cannot easily be compared. In our view, it is necessary to analyse the specifics of each platform, as platforms compete via the characteristics of the platform. Contrary to the definition used by the European Commission in the consultation on platforms, this study does not limit the definition to two (or multi)-sided markets.[7] In a multi-sided market there are distinct user groups, if the number of users on one side of the platform increases that is beneficial to users on the other side of the platform. The reason is that there are firms with a technical basis for delivering content to end-users that cannot be considered multi-sided but are often considered digital platforms, with an example being Netflix (see the case study on Netflix in this report). Moreover, firms can make the strategic decision to move from a one-sided to a multi-sided platform and vice versa.

The study does not concern all platforms, but only *digital* platforms. A digital platform uses the Internet for communication between users on all the sides of the platform. There are other platforms which are not digital, for example newspapers. Owners of digital platforms can offer a variety of services. In this report, when reference is made to a platform of a firm, all the services of the firm are considered (i.e. no distinction is made between Apple Pay and the Apple App Store).The reason is that there is probably a business rationale to combine the services. Therefore, the business model of the integrated firm should be considered in the analysis of public interests and policy interventions.

Due to the great variety of digital platforms, it is not useful to analyse public interests and policy interventions for digital platforms as a group. Nevertheless, four categories of platforms are distinguished which can be used as a 'filter' for a more detailed analysis.

2.3 Platform characteristics are the starting point for analysis

This section explores the platform characteristics, which are the starting point in the analytical framework (see Figure 4).

[4] European Commission (2015), 'A Digital Single Market Strategy for Europe'.
[5] Analyses Mason (2013), 'The role of the government in the Internet'.
[6] Ecorys used the same definition in a study for the European Parliament (EP (2015), 'Challenges of competition policy in a digitalised economy'.
[7] European Commission (2015), 'Public consultation on the regulatory environment for platforms, online intermediaries, data and cloud computing and the collaborative economy'.

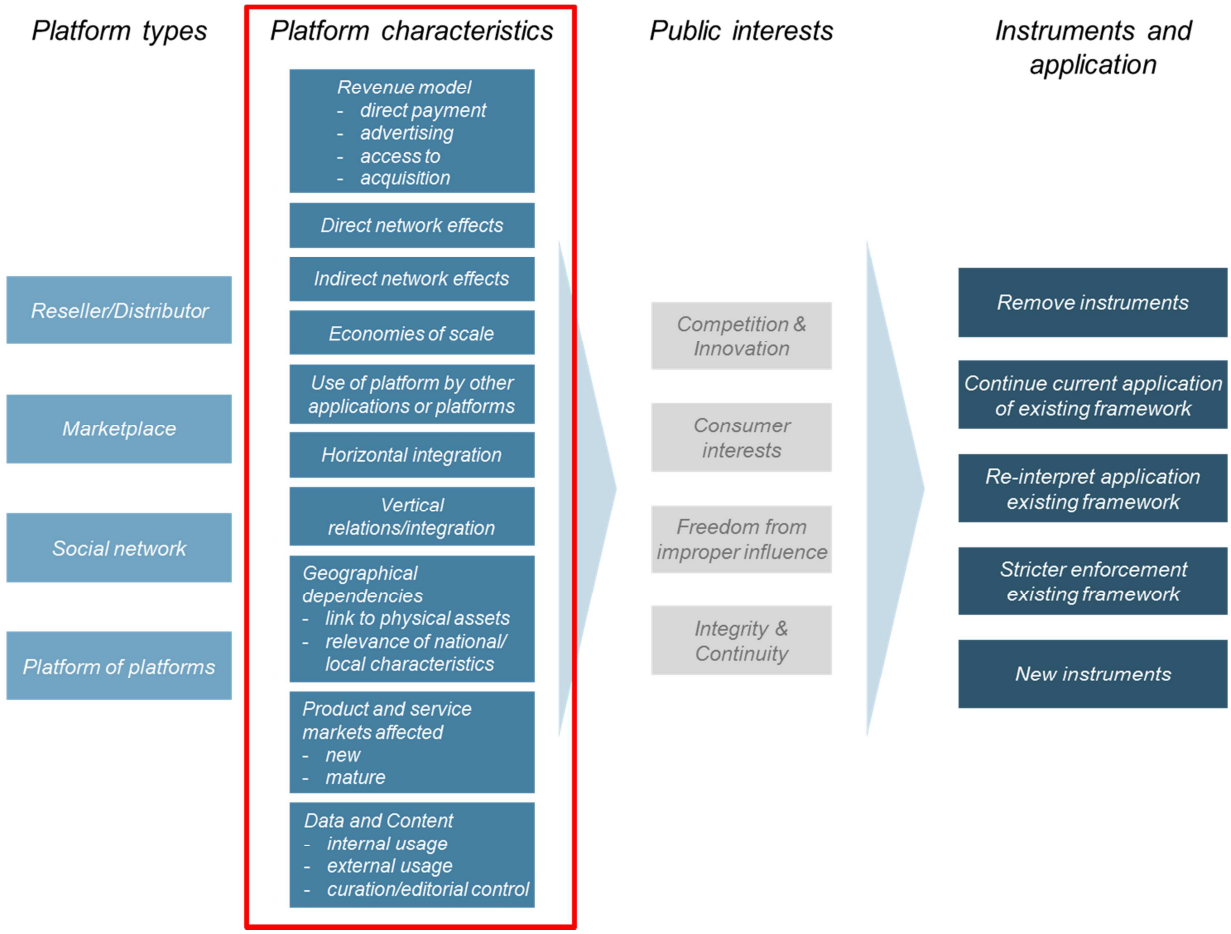

Figure 4. The platform characteristics are the starting point in the analytical framework

2.3.1 *Revenue models*

Peitz and Valletti (2014) identify three types of digital (platform-based) business or revenue models for online service providers.[8] Note that there are many examples of platforms that use a mix of these revenue models.

(a) **Direct payment –** Platforms that use the direct payment model offer services directly to users. There are no other parties involved. Typically, the platform charges users for its service (e.g. Netflix, e-commerce platforms such as Bol.com), although a different contractual solution could be that the Internet Service Provider (ISP) offers the service and charges users for this service (carrier billing). Others (e.g. Apple, Microsoft) sell hardware and software, as another form of 'direct payment'.

(b) **Advertisement model** – Platforms based on the advertisement model offer their services to consumers without direct payments. Platforms provide a service, and consumers indirectly provide revenues by being exposed to advertising. Moreover, by using personal data, the platform can improve the advertising effectiveness (e.g. Facebook).

[8] Peitz and Valletti (2014), 'Reassessing competition concerns in electronic communication markets', ZEW Discussion paper 14 (101).

(c) **Access model –** Platforms based on the access model connect app and content developers to users (e.g. Apple's App Store). Here, the platform may charge those app and content developers for selling their product or service to users. Similarly, the platform provider may charge users on behalf of the app and content developers. Thus, the platform mediates between suppliers and consumers.

A common phenomenon is that some (if not many) of the newly founded platforms do not seem to generate any revenue. It seems that their purpose is to experiment with a business model or a technology, try to build a mass of users, while postponing the goal of financial viability. The latter is realised at a later stage when the company has realised sufficient scale and has figured out which of the above mentioned business models is most profitable, or when they are purchased by another company offering complementary services. The take-over price often seems to be disproportionate when compared to current revenues (the take-over of WhatsApp by Facebook is a prime example). Because these kinds of acquisitions are common for digital platforms, a fourth revenue model is added to the typology of business models.

(d) **Acquisition or growth model –** platforms aiming to create future value for themselves, or for other businesses, by developing platform technology and by amassing users on the platform without a business model that generates a sustainable revenue stream. It is worthwhile to add this model as a fourth category because the mistake can be easily made that the impact of a platform is considered irrelevant due to the lack of revenues. This is not necessarily the case, as small platforms can grow rapidly and become challengers of other platforms.

2.3.2 Direct and indirect network effects

A common characteristic of many digital platforms is that they are based on exploiting network effects which may be direct or indirect.

- The **direct network effect** means that a platform becomes more attractive for users if the total number of users on the same side of that platform grows.

- The **indirect network effect** means that a platform becomes more attractive for one side of the platform (such as consumers) if the number of service/content providers on the other side of the platform grows.[9]

Netflix, one of the case studies in this report, has limited or no network effects. Users do not benefit as the number of consumers grows, and there is no direct interaction with sellers, other consumers or advertisers on another side of the platform. Note that in the economic and strategy literature, platforms without network effects are often not considered a platform, as there are no indirect network effects and platform providers do not mediate to enable distinct user types to interact with each other directly.[10] However, from a technological point of view, they are not very different from other platforms and they have the opportunity to become

[9] Direct network effects are sometimes referred to as a same-side effects and indirect effects as cross-side or cross-group effects.

[10] Evans, D.S. and Schmalensee, R., (2011), 'The industrial organization of markets with two-sided platforms, in Platform economics: Essays on multi-sided businesses'.

a platform, for example by allowing third parties on the network or by facilitating advertisers.[11]

The other platforms analysed in the case studies are two- or multi-sided. They allow users on both or multiple sides of the platform to interact. Bol.com, Thuisafgehaald, Apple and Facebook become more attractive for their users if the number of content providers grows, which is an indirect network effect. For example, if the number of app developers on the Apple platform increases, the platform becomes more valuable to the users. The direct network effect is most pronounced on Facebook as it is easier to communicate with others if they use the same platform.

2.3.3 Economies of scale

The cost for each additional user of a platform generally diminishes which results in economies of scale for the platform owner. This can be a result of the high share of upfront investments in infrastructure and software which do no increase proportionally when the user base expands. If the size of a platform increases, brand recognition will also increase and the platform will become more visible to consumers.

Economies of scale are not unique to digital platforms, and in many industries the cost per unit diminishes when output increases, but the effect is more pronounced for digital platforms as the marginal costs are often close to zero. The costs of an additional user for Facebook, for example, are low although it has to invest in data centres if the user base expands. For other platforms such as Netflix the economies of scale are lower as its cost base increases with the number of subscriptions due to license fees.

Economies of scale should not be confused with network effects. An economy of scale is a result of the cost structure. Network effects arise due to the value users place on an expansion of the network. However, it is often difficult to disentangle the effect of economies of scale and network effects as they can both result in a market with a few dominant players.

2.3.4 Use of platform by other platforms

There are a number of digital platforms or ecosystems that are vital to the functioning of other platforms. These platforms have assets that make them the backbone (or platform) of other digital platforms, and these assets can consist of an operating system (including application stores) or a user-base. Platforms that facilitate other platforms have the potential to act as a gatekeeper for users. By controlling the access to the end-user they have a powerful market position. Obvious examples of platforms that are used by other platforms are Google, Apple (one of the case studies in this report) and Microsoft (Windows). For other platforms with a large user base it is attractive to obtain a similar position in the market. Facebook for example has taken a number of steps to obtain a position as gatekeeper as the case study in this report shows.

[11] Haigu & Wright (2015) point out that it is a strategic choice for firms to position themselves to or further away form a multi-sided platform. They mention as example Amazon that started as a pure retailer but has moved closer to a multi-sided model over time by enabling third-party sellers to trade directly with consumers on its website (see also the case study on Bol.com in this report). Zappos, an online shoe retailer, went in the other direction, abandoning its initial model based on partnerships with shoe manufacturers that fulfilled customer orders directly.

2.3.5 Horizontal integration

In networked markets there are often opportunities to enter adjacent markets by changing (or adding to) a platform's functionality. Horizontal integration is not unique for digital platforms but for platforms with a large user base it is often relatively easy to do so.

Platforms frequently have overlapping user bases. This can make it easy for a platform to swallow or 'envelop' the network of another platform. An additional advantage of horizontal integration is that user data of multiple platform functionalities can be combined to optimise the experience for users and advertisers.

An example of horizontal integration is Bol.com. Similar to some other e-commerce websites (e.g. Amazon), Bol.com began in books and music but has expanded significantly to a large number of retail markets.

2.3.6 Vertical relations/integration

Digital platform differ in their degree of vertical integration. The costs of contracting services such as web development and data centres have decreased dramatically which makes it possible to launch a digital platform with very few resources. However, there are still platforms that make the strategic decision to control a larger part of the value chain. These platforms combine their digital platform with physical assets such as a distribution network, data servers, the manufacturing of computers and smart phones etc. The physical assets can form a competitive advantage in comparison with platforms that have to contract the goods and services.

An example of a platform with limited vertical integration in the case studies is Thuisafgehaald. This platform does not operate its own data centre and has outsourced web and application development. Bol.com is an example of a platform that has vertically integrated, as it was acquired by Ahold and now uses the 'Albert Heijn' supermarkets chain for distribution.

2.3.7 Geographical dependencies

For digital platforms it is generally relatively easy to act globally due to economies of scale and network effects, but some platforms choose to act in one or a limited number of geographic markets. For platforms that act as a market place, it is often important that users who offer services or goods on the platforms are in close proximity to users that want to use the services or goods. Cultural differences can be a reason to differentiate the characteristics of a platform between countries or regions.

2.3.8 Product and services market affected

(a) **New (digital) markets –** Some digital platforms have created new markets that did not exist before, for example the 'market for social networking'. Such digital platforms do not directly compete with traditional industries.

(b) **Mature markets** – Platforms that mediate between users often have an impact on traditional industries. For example, that is the case for e-commerce platforms and platforms that are active in the sharing (or collaborative) economy. In this category, the project team distinguishes regulated product and services markets and unregulated markets. In developed economies all

markets are regulated to a certain extent. However, in some markets government intervention is higher than in other markets. Examples of markets where there is substantial government intervention are the health care market, the labour market and financial markets.

Thuisafgehaald is a platform where users can share meals. Theoretically this can have an impact on the market for prepared food. This makes clear why it is important to take this characteristic into account, as the impact of the platform in that market should be considered.

2.3.9 Use and generation of user data and content

For all digital platforms the generation and analysis of data is an important element in their business model. This is not a unique characteristic for digital platforms, but together with network effects, the amount of data generated is one of the main characteristics that differentiate digital platforms from other business models.

Although all platforms use and generate data to a certain extent, there are differences in the way platforms use and treat data:

(a) **Internal or external –** Platforms can choose to keep all user data within the platform to personalise services and products, and not to share it with other companies (other platforms or advertisers). Other platforms use data generated by users externally as well, for example with advertisers. Apple for example is less dependent on advertising revenues than Google and does not share what it knows of its customers with other parties.

Personal data is of strategic value and large platforms are often not willing to share personal data with other platforms. Consequently, the interoperability of large platforms from different operators is low. For example, Facebook users cannot easily migrate the content they have generated on that platform to Google+, another social network.

(b) **Curation of content –** On platforms where content is generated by users, platforms can choose not to edit any of the content or edit ('curate') data to bring it into line with the specific policies of the platform. Curation of data is for example a relevant consideration for platforms that act as a platform for other platforms as they can, for instance, set conditions for access to an application store. Curation of data is also relevant for a social network such as Facebook, which has policies for content that is allowed or forbidden on the platform.

2.4 Platform trends and developments

In the development of platforms, new key characteristics may appear and some of the characteristics above may become less important or change in scope. The analytical framework can incorporate such shifts as characteristics can be added or removed. The development of platforms can be expected to be driven by combinations of the characteristics listed above, including:

- Massive storage of **data and content**. The costs of data collection, storage and processing will continue to decrease. Combined with (and also enabling) further progress in 'Big Data' analytics and algorithms, this data-driven innovation will

bring new applications[12], both in existing digital domains but also in domains that affect traditionally **non-digital markets**. A substantial part of the data-driven innovation is linked to the growth of the Internet of Things (IoT) and Machine-to-Machine (M2M) communication.[13] In the analytical framework from this study, the massive use of data is also linked to the revenue side of platforms, in particular the various **advertising models** used by application providers and platforms. More data and analytics can further drive the revenues through more personalised and therefore more valuable ads. At the same time it obviously raises further concerns around privacy and security. The advertising revenue model is under constant development. More personalisation is one of the potential answers to user groups who find ads annoying. The recent attention for the role of ad blockers illustrates the dynamics around this revenue model.

- IT and network infrastructures become more flexible with the roll-out of cloud infrastructure and applications, and the introduction of Software-Defined Networking (SDN[14]). Application development is done faster than before, as developers use more existing components, for example software libraries available for large smartphone platforms and login and payment mechanisms. Reuse of existing components and options to flexibly lease cloud-based storage and processing remove much of the need for upfront investment in distribution[15] and allow smaller companies to grow fast and enjoy **network effects** in the roll-out of innovations to large groups of customers. This is a key factor driving the fast diffusion of applications in digital and increasingly also non-digital sectors. At the same time, the larger companies that own **platforms used by other applications** can obtain a more influential, and possibly even a gatekeeper, role, as they determine the specifications and the terms of use for their software libraries and app stores. Moreover, the technological development in IT and network infrastructure enable large companies to obtain larger network effects as well, thus raising the bar for smaller companies or potential start-ups that aim to be future industry leaders.

- The key role of devices in the context of digital platforms is illustrated by smart phones. Among other things, smart phones have enabled the extension of digital platforms into previously **non-digital domains** as users naturally carry these devices into contexts where digital services can bring benefits. Because of strong **network effects** in smartphone/app store platforms and building on mobile data networks, applications such as Uber can grow rapidly. New generations of devices can bring new applications to other sectors as well.

[12] OECD (2012), 'Machine-to-Machine Communications: Connecting Billions of Devices', OECD Digital Economy Papers, No. 192, OECD Publishing. http://dx.doi.org/10.1787/5k9gsh2gp043-en
[13] OECD (2012), 'Machine-to-Machine Communications: Connecting Billions of Devices', OECD Digital Economy Papers, No. 192, OECD Publishing. http://dx.doi.org/10.1787/5k9gsh2gp043-en
[14] SDN technology, in short, makes IP and Ethernet networks programmable and more flexible than today, by extracting important functions from routers and switches and implementing them in software that runs on standard IT hardware. In essence, SDN brings network infrastructure from the telecommunications way of working to the IT world.
[15] *Klaar voor de toekomst? Naar een brede strategie voor ICT*. AWTI (Adviesraad voor wetenschap, technologie en innovatie), September 2015 (in Dutch), http://awti.nl/publicaties/klaar-voor-de-toekomst/item774

2.5 Typology of platforms as a 'filter' in the analysis

In our view the specific characteristics of each digital platform should be the starting point of a policy analysis. Digital platforms cannot be analysed as a group considering their varying characteristics. Nevertheless, four categories of platforms can be distinguished which may serve as a 'filter' for a more detailed analysis, see Figure 5.

	Reseller / distributor	Marketplaces (peer-to-peer)	Social networks	Platform of platforms
Network effects	No (or limited) network effects	Indirect network effects	Direct and indirect network effects	Indirect network effects (in multiple directions)
Use of platform by other platforms	None	None	Limited	High, other platforms depend on the platform
Product and service markets affected	New/mature	Mature	New	New/mature
Case in this study:	NETFLIX	bol.com	Thuisafgehaald	facebook

Figure 5: A simple typology of digital platforms

The four types of digital platforms this study distinguishes are:

- **'Resellers'** distribute content which they have produced or acquired to end users. Netflix is an example of a reseller.
- **'Market places'** facilitate transactions between users and user groups on the platform. The transactions can concern any product or service and marketplaces can have an impact on a wide array of markets. This study includes a case study of Thuisafgehaald which is an example of a marketplace where users can offer a meal to other users. Bol.com, a Dutch e-commerce website, also has the characteristics of a marketplace as it offers other retailers the opportunity to use its infrastructure to reach consumers.
- **'Social networks'** enable social exchanges between users. On social platforms users generate and share content. The project team selected Facebook as a case study.
- **'Platforms of platforms'** are platforms or ecosystems on which other platforms work. Our final case study on Apple clearly has the characteristics of an ecosystem as it provides a platform to access other digital platforms. Facebook also has some of the characteristics of a gate keeper. For example, it offers the opportunity to application developers to build applications

specifically for the users of the social network and lets other websites and services make use of its login system.

This typology is based on three characteristics of digital platforms. The importance of network effects is one of the characteristics that are more pronounced for digital platforms than for regular businesses. The use of a platform by other platforms is a characteristic which highlights platforms with the biggest expected impact on public interests. Marketplaces, in particular, can have an impact on mature product and services markets. This characteristic is highlighted in the typology to make clear that public interests in the impacted market have to be considered. Note that some platforms can be a mix of the platform types above. Price comparison sites and search engines for example can be considered a mix of a 'reseller' and a market place.

2.6 Typology of relevant public interests

This study discusses a number of public interests related to digital platforms, including competition, innovation, consumer interests, freedom from improper influence, integrity and continuity. Public interests have a central position in the framework as Figure 6 below shows. This selection of public interests is based on earlier selections made by the Ministry of Economic Affairs, resulting in the policy document 'Vision on telecommunications, media and Internet: the next steps'.[16] The public interests discussed in this report are therefore primarily interests as defined in policy documents. Public interests refer to the interest of a country or community as a whole. Where a public interest is identified, that can be a justification for the intervention of governments in markets.

Based on the interviews and our research, these public interests have been slightly fine-tuned to better match the issues related to digital platforms. The four chosen categories reflect the interests of the key stakeholders (market players, consumers, government) and include integrity and continuity as overarching aspects. Other public interests might also be at stake and can be integrated into the analytical framework. Table 2 lists the public interests and their interpretation in this study.

Table 2 Public interests and their interpretation in this study

Public interest	Interpretation in this study
Sufficient competition and innovation	Ensuring increase of welfare and efficiency through competition and innovation.
Safeguarding consumer interests	Promoting consumer choice, offering sufficient levels of consumer protection and safeguarding fundamental rights.
Freedom from improper influence	Avoiding unnecessary restrictions by governments, while safeguarding societal interests through positive obligations.
Providing integrity and continuity	Market players, consumers and government need to be able to rely on safe and reliable digital communications provided by networks and services.

This report does not contain an analysis, as such, on the question of whether the public interests as defined can indeed be considered public interests. Public interest theory offers an economic perspective to analyse if there is a need for government

[16] https://www.government.nl/documents/reports/2014/02/07/vision-on-telecommunications-media-and-internet-the-next-steps.

intervention.[17] In public interest theory, market failure is the primary justification for such an intervention. A classic example of a market failure is the existence of external effects. External effects are costs or benefits that a private actor such as a consumer does not take into account, but which do have an effect on others or society as a whole. Other examples of market failure are market power[18], asymmetric information and economies of scale. If a market failure is identified the costs (including possible failure of the policies) and benefits of government interventions have to weighed against the costs (and benefits of doing nothing).

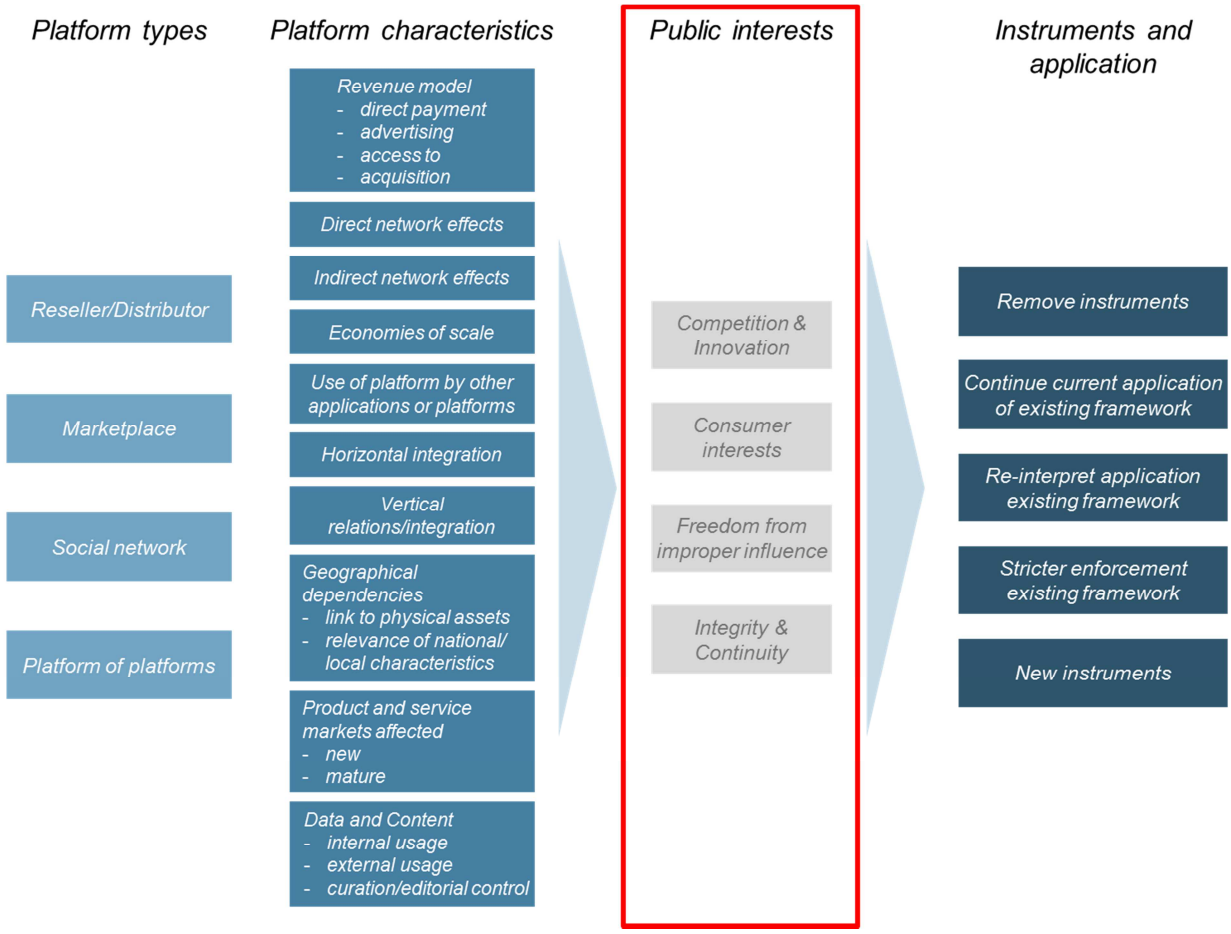

Figure 6: Public interests in the analytical framework

Another framework on which the notion of public interests is, or can be, based is the broader normative framework of fundamental rights and freedoms, which is based on ethical and legal norms.[19] There may also be paternalistic reasons to intervene in markets, for example to protect minors or to prevent consumers from taking actions or giving consent to terms and conditions that are not in their best interest.

[17] Richard A. Posner, Theories of Economic Regulation, The Bell Journal of Economics and Management Science, Vol. 5, No. 2 (Autumn, 1974), pp. 335-358.
[18] Note that sufficient competition is also included in the list of public interests.
[19] For example, in the EU Charter of Fundamental Rights, the right to property may be limited 'in the public interest'.

It is also important to recognise at the outset that digital platforms may have both positive and negatives effects on these public interests. Indeed, many digital platforms may have important positive effects on these public interests, such as increasing competition in markets, bringing innovation, increasing consumer choice, providing new methods for exercising fundamental rights, and increasing data security.

2.6.1 Sufficient competition and innovation

It is broadly accepted that competition in markets encourages efficiency, enhances innovation, and benefits consumers. However, when market players engage in certain practices, such as abusing a dominant position, entering into anti-competitive agreements, or carrying out certain mergers or acquisitions, this may hinder competition, harm consumers, and stifle innovation. Therefore, in order to ensure sufficient competition in markets, and promote innovation, governments may have to intervene in the following ways:

(a) **Prevent abuse of a dominant position:** abuse would include imposing unfair purchase or selling prices, unfair trading conditions, limiting production or technical developments, or making contracts subject to certain obligations.

(b) **Prevent anti-competitive agreements:** there is a public interest in preventing companies entering into anti-competitive agreements (also known as cartels), which include price fixing, limiting product or technical development, or market sharing.

(c) **Prevent mergers or acquisitions which negatively affect competition:** some mergers or acquisitions may negatively affect competition, and there is a public interest in ensuring markets are protected from such mergers, or conditions are imposed on such mergers.

Further, in order to stimulate markets and innovation, rules need not have negative effects. Fewer rules can be a way to promote innovation, but at least rulemaking and other types of regulatory intervention should be based on the principle that they are applied equally to market players. However, static rules (and static interpretation) can limit positive effects on innovation. Innovation can also include positive measures such as special support mechanisms (tax benefits, subsidies).

2.6.2 Safeguarding consumer interests

Besides the benefits from competition in markets, there are additional consumer interests that may need to be protected, such as freedom of choice, fair contractual terms, advertising rules, sufficient information, and the many rules on the sale of goods and services. Measures to protect these specific consumer interests may have a positive side effect on competition in markets.

(a) **Consumer choice:** consumers should have a freedom of choice in goods and services, which includes switching (at reasonable costs) to other suppliers. This implies consumers should not be locked-in to one service. It also implies a sufficient level of transparency, and a consumer’s data should be portable to another service.

(b) **Consumer protection:** there is a public interest in protecting certain consumer rights, such as preventing unfair contract terms, having rules on advertising, sales and guarantees. Moreover, consumers need to be sufficiently empowered to exercise these rights, including having adequate information on the exercise of these rights.

(c) **Fundamental rights:** the is a public interest in protecting specific fundamental rights, such as a consumer's freedom of expression, right to privacy and right to data protection. Consumers should be free to express themselves, have their privacy protected, and have their personal data protected, when using digital platforms. Certain activities of digital platforms may have a direct or indirect effect on the exercise of these rights.

2.6.3 Freedom from improper influence

The role of the government from a public interest perspective is twofold. Based on how this role is generally seen, and has been framed in jurisprudence and policy, the core elements consist of, on the one hand refraining from exercising improper[20] influence. On the other hand, government has a number of justifications (or even obligations) for interfering with digital platforms' and consumers' rights, including to protect national security, public order, health, morals, and the rights of others (such as reputation, intellectual property, privacy, and personal data). To give four examples:

(a) **Prevent improper influence by government:** governments need to refrain from improper interference with consumers' rights, and digital platforms' rights. At the same time governments need to carefully assess their positive role/obligations, for example relating to promoting diversity and protection of minors.

(b) **Prevent improper influence by digital platforms:** digital platforms should respect the individual rights of consumers. In addition, guarantees can be put into place to safeguard specific interests, such as pluralism and diversity.

(c) **Prevent improper influence by consumers:** consumers may use digital platforms to interfere with the rights of others, such as the right to reputation and privacy (defamation or unlawful types of naming and shaming) and intellectual property (copyright infringement).

(d) **Prevent improper influence on minors:** minors using digital platforms may need to be protected to a higher degree than adults, and the government may have rules to protect the interests of minors. Thus, it is generally accepted that minors need to be protected from certain products, services and content using digital platforms which might seriously impair a minor's physical, mental or moral development.

2.6.4 Integrity and continuity

The functioning of digital platforms and the trust consumers have in them, depends to a high extent on the integrity of the services and networks. The same can be said about the continuity in the provision of services and the underlying infrastructure.

[20] 'Improper' is not an open norm, but refers to how the role of government has been defined in jurisprudence and general policy making theories. Both set clear boundaries and limitations.

(a) **Integrity:** Integrity includes various aspects. Information exchange needs to be correct and secure in order to realise trustworthy transactions. Technical standards on safe transactions (certificates, encryption) are a way to secure integrity. Furthermore, the prevention of security breaches and a proper mechanism for security-breach notifications are also considered essential. Finally, another aspect of integrity relates to the unchanged transport of signals.

(b) **Continuity:** As digital platforms are highly dependent on telecommunications networks and services, the uninterrupted availability of the infrastructure is highly relevant. However, this infrastructure is complicated and involves a multitude of players depending on which element of the value chain is examined. Organisational structures for the delivery of services can be outside the scope of individual countries, because they depend on many international stakeholders. Local loop infrastructures seem much easier to be structured as they are provided by only a handful of market players.

2.7 The relation between the platform characteristics and public interests

The framework makes a connection between characteristics of platforms and public interests. It is not always possible to directly establish the impact of a specific characteristic on a public interest. This section briefly describes how platform characteristics can result in market failure. Note that there may be other reasons to intervene in a market which we do not consider in this section (market failure is only used as one of the ways to illustrate the link between characteristics and interests). Obviously, the analysis presented in this section is insufficient if specific policy interventions are considered. It does, however, offer an overview of the public interests that may be relevant based on the characteristics of a platform.

2.7.1 Relationship between platform characteristics and 'competition and innovation'

The first public interest in the framework is 'competition and innovation'. Competition refers to interaction among market players that is driven by rivalry in which every actor tries to maximise its long-run profits. Competition problems refer to rival interactions that are not based on merits, but on advantages that are not gained by competitive achievements. For example, a platform may abuse the fact that it has gained control over an essential input or may have been granted preferential treatment by a government.[21]

An important element in the analysis is the degree of market power of a platform which can result in market failure. If a firm has a dominant position in a market it is able to set terms and conditions (including prices) to a considerable extent independently of its competitors. This is also a relevant consideration in the analysis of the other public interests. For instance, without market power it is unlikely that firms can lock-in customers. The risk of violations of fundamental rights by a platform is also higher if there are insufficient alternatives for consumers.

For digital platforms, important sources of market power are the *direct* and *indirect network effects.* Other characteristics that influence market power are *economies of scale* and the level of *horizontal and vertical integration*. If a platform is *used by*

[21] European Parliament (2015), *Challenges of competition policy in a digitalised economy*, authored by N. van Gorp and O. Batura, IP/A/ECON/2014-12.

other platforms there is a risk that the platform obtains and abuses a dominant position. Note that the prospect of reaping the fruits of future market power can also result in intense competition in the early phases of an industry.[22] This explains why many digital platforms are willing to operate at a loss in their start-up phase: investors in these platforms hope to recover their initial investments in the future when the user base has expanded.

Traditionally, the market shares or profit margins of firms are used as a proxy for the degree of competition in a market. In traditional industries it is often not easy to interpret these metrics and that is even more the case in digital markets where competition is dynamic. Van Gorp and Batura[21] explain that there can be a number of mitigating factors that constrain the market power of a platform with a high market share or profit margins. Direct and indirect network effects can rapidly expand the reach of a platform but they can also work the other way around. Moreover, service providers often have multiple routes to deliver digital services to end users which can make a market contestable. There are for example many alternatives available to deliver video services to end-users. Consumers can use multiple devices (watch, phone, tablet, PC, or TV) via TV, websites and apps. This implies that all the different channels by which end users can effectively be reached have to be considered in a market analysis.

Van Gorp and Batura[21] suggest that a better indication for the degree of competition in such markets may be the risk that other players capture a share of the market with a slightly different business model. This requires much more focus on prospective analyses than on analysing actual revenues and market shares.[23] It also implies that competition policy enforcement in relation to digital platforms should focus more on the anti-competitive effects of horizontal and vertical mergers as the acquired platforms may be a potential market entrant posing a competitive threat for the acquiring firm. This is challenging because overly strict enforcement of merger control may undermine the 'acquisition model' as a business model for start-ups. As such, overly strict enforcement of merger control may have the adverse effect of preventing the birth of future potential competitors.

As in any industry, another relevant factor is the size of the geographical market (*geographical dependencies*). However, compared to traditional industries, platforms are generally less constrained to certain geographical areas.

The users of 'marketplaces' (e.g. platforms in the 'sharing/collaboration economy') are often active in *mature product markets*. In this study, the interpretation of the public interest 'competition' includes that 'rules are applied equally to market players'. This is especially relevant for platforms that act as intermediaries between sellers and because users that offer their products or services via such digital platforms compete with traditional suppliers. An example is the platform Thuisafgehaald (one of the case studies). Users of Thuisafgehaald offer meals to other users and they (indirectly) compete with suppliers in the prepared-food

[22] An example is the competition between search engines such as Lycos, AltaVista, Yahoo and Ask Jeeves before Google captured the largest share of the market.

[23] These analyses could for example be based on the number of (potential) users and the size of the network effect. The German Monopolkommission argues that the importance of data for the commercial success of a company should be taken into account (*Competition policy: The challenge of digital markets*, Monopolkommission (2015)). Clearly, these metrics need further development before they can be applied successfully in competition proceedings.

market. Those suppliers face, for example, regulation on food safety and taxes. If users that are active on Thuisafgehaald are comparable to traditional players (including scale) it would be unfair to apply a different set of rules.

Innovative activities can be divided into product innovations and process (including marketing and organisational) innovations. Many characteristics of digital platforms enable new ways to organise value chains which result in process innovations. *Platforms that are used by other platforms* have a vital role in this innovative process. In this way they have some of the characteristics of a 'general purpose technology', which is a technology that leads to productivity growth in a wide range of sectors through spill-overs.

The market failures that limit competition can also constrain innovation. However, the relationship between platform characteristics and innovation is not always clear cut. The same is true for the relationship between competition and innovation. There is a huge empirical and theoretical literature on that topic which suggests an 'inverted U-shaped relationship' between competition and innovation where innovation is low with low and high levels of competition and peaks in between. In practice is it difficult to analyse where a specific industry is on this curve. Moreover, the literature is still not conclusive.[24] However, for companies that operate primarily online and which do not own any or few physical resources the ability of other firms to enter the market and steal away part of the profits seem to be an important catalyst for innovation.

2.7.2 Relationship between platform characteristics and 'consumer interests'

Consumer choice is closely related to 'competition', as discussed above. If a platform has a dominant position in a market and abuses that position it is often detrimental to consumers' interests. Consumer choice can be particularly restrained if the consumer is locked-in. This can be the result of *direct network effects* which make it difficult to switch to a competing platform if there is a lack of inter-platform operability. This is especially the case for *platforms that are used by other platforms* and act as a 'gatekeeper'.

Consumers often do not have the same information regarding the quality and safety of a platform as the platform itself, and there is information asymmetry. Information asymmetry can, similar to market power, result in market failure. None of the platform characteristics does in itself result in information asymmetry but consumer protection becomes more important the more *user data is gathered* by a platform. As such, the *revenue model* may also be a relevant characteristic to consider. Especially in the 'advertising model' the interests of the users on a platform are not always aligned with the interests of the platform.

The previous section discussed the risks of information asymmetries on digital platforms, but platforms can also reduce information asymmetries as they bring buyers and sellers together and offer transparency on prices. The quality of a service or product can also become more transparent as many platforms use reviews submitted by users which can reduce information asymmetries.

[24] Aghion et al., QJE (May 2005), 'Competition and Innovation: an Inverted-U Relationship'.

Note that even if a platform does provide information to consumers they may not act in their best interest (this is also known as bounded rationality). An example is the provision of elaborate descriptions on the terms and conditions for using a platform. The information is often so elaborate that end-users simply accept without reading[25]. This can also be a justification for government intervention in the market to protect consumer interests.

2.7.3 Relationship between characteristics and 'freedom from improper influence'

In order to have any proper or improper influence a platform has to have a certain amount of (market) power. For this reason all of the platform characteristics mentioned in the discussion of competition and innovation (see section 2.7.1) are to a certain extent relevant for the public interest 'freedom from improper influence' as well. The characteristic '*use of platform by other platforms'* has a relation with the public interest 'freedom from improper influence' as by acting as a gate keeper, platforms that are used by other platforms can set conditions for access to platforms which may result in improper influence.

The way *data is used* is an important characteristic for the risk on improper influence. Digital platforms provide a powerful medium to express opinions and to share information. In this way, platforms can also contribute to pluralism and diversity. The downside of this fundamentally positive characteristic is that there is also a risk that the platform itself or others (i.e. governments) that have access to the data use it improperly.

Obviously, there are big differences in how 'freedom from improper influence' is interpreted between countries. Therefore, geographical dependencies (difference in tastes and customs) may have to be considered.

2.7.4 Relationship between platform characteristics and 'Integrity and continuity'

For individual users it is difficult to obtain information about the integrity and safety of a platform: there is information asymmetry between users and platform owners. The more *user data* is used by a digital platform the more important the public interest 'integrity' becomes. Continuity is especially important for platforms that enable the functioning of other platforms *(platforms that are used by other platforms)*. For the same reason continuity risks increase with the level of *horizontal integration* of a platform.

2.8 Instruments and application

The third and last component of the analytical framework covers the government instruments and their application, see Figure 7 on the next page. Before considering what policy instruments the government may/or may not adopt to protect public interests, a number of preliminary considerations need to be taken into account. These include taking account of regulation already in force, whether this regulation is sufficient to protect public interests, and whether national and European regulators are actively enforcing this regulation in digital platform markets. Table 3 sets out these considerations, which are further elaborated below the table.

[25] The F-Secure's 'Herod clause' experiment in London where a handful of Londoners unwittingly agreed to give up their eldest child in return for free public Wi-Fi use illustrated this perfectly.

Table 3 Preliminary considerations with respect to the adoption of instruments

Topic	Considerations
Existing/non-existing instruments	What generic or sector specific regulation/instruments are already in place? Are areas – related to digital platforms – not covered (completeness of the tool box) and should they be covered?
Application and enforcement	Are regulatory frameworks implemented, and are regulators actively enforcing, or attempting to enforce, regulation to digital platforms?
Static/Dynamic	Digital platforms are in transition and require a more normative/functional approach instead of overly detailed regulation common to static markets.
Risk/harm Ex ante/ex post	Policy question on weight to be attached to certain public interests. i.e. higher risk of harm might suggest ex-ante regulation, while lower risk of harm might suggest ex-post regulation; risk/harm approach can be used to assess innovation opportunities.
Subsidiarity	How much space have (or should have) national governments to intervene with generic and sector-specific regulation, taking account of EU regulation? (Static versus dynamic.)

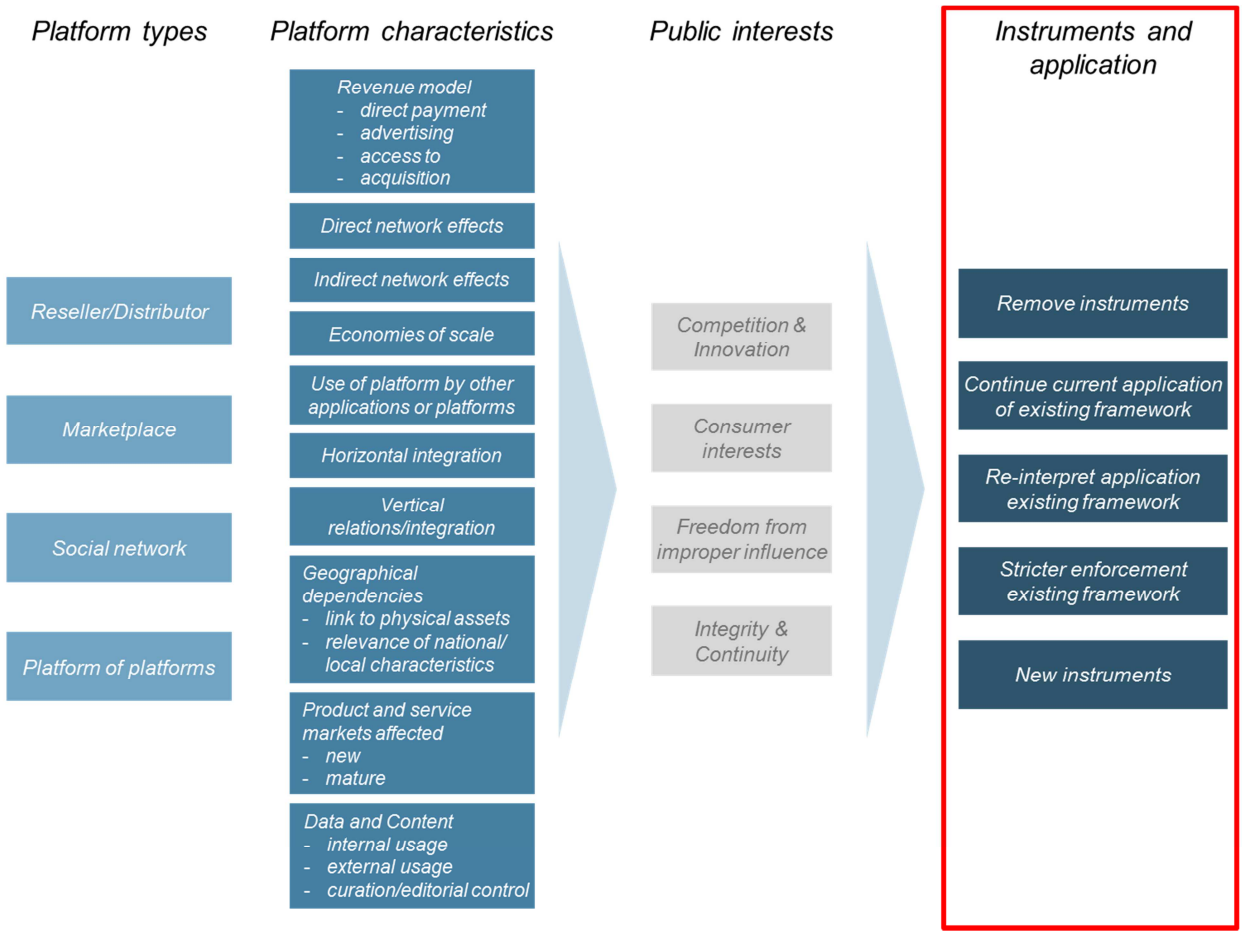

Figure 7. In the analytical framework, the government instruments and applications are considered after the public interests

2.8.1 *Existing instruments at an EU level*

First, it seems appropriate to consider the EU instruments which are already is force, and whether these instruments already provide or can provide sufficient protect for these public interests. Notably, there is a particular focus on EU instruments, given the extent of the EU's competence in many areas of regulation related to digital platforms. The project team distinguishes at least seven categories

of existing instruments which are more specifically related to digital platforms and represent public interests. Some of them are of a more generic nature, including competition law, consumer law, copyright law and privacy law. They have a substantial relevance for digital platforms as a market and are often of a more dynamic nature. Others are more sector specific, such as the e-Commerce Directive and the Audiovisual Media Services Directive and the e-piracy directive. These instruments represent a more detailed set of rules often linked to the more general frameworks (offering more specific guidance, but with the risk of being to static). Certain generic instruments might also deal with more sector-specific issues (e.g. Consumer Rights Directive or the framework for the electronic communications sector).[26] The overview has an indicative nature and is not intended to provide an exhaustive list of relevant existing instruments.

Finally, existing instruments are particularly relevant when digital platforms 'meet' the offline world. Health and safety regulation is relevant when platforms facilitate the delivery of food, for example in a shared economy mode. Public safety and housing rules continue to apply to renting apartments. Labour law is applicable when offering services and transactions are subject to various tax regulations.

Competition law

(a) **Abuse of dominant position:** EU competition law prohibits abusive conduct by companies that have a dominant position in a particular market and the rules are contained Article 102 of the main EU treaty. It basically prohibits unfair pricing, unfair trading conditions, limiting production or technical development, applying conditions to transactions which place others at a competitive disadvantage, or making contracts subject to certain obligations. Notably, the current European Commission allegations against Google are being made under Article 102, alleging Google's abused a dominant market position by the positioning of its shopping service results. It should also be noted that the previous case taken against Microsoft over interoperability and choice of web browser tied to Windows, were taken under Article 102.

(b) **Anti-competitive agreements:** EU competition law also prohibits anti-competitive agreements which affect trade between member states, such as price-fixing or market-sharing cartels.

(c) **Mergers and acquisitions:** in addition, EU law contains rules on mergers and acquisitions, including the Regulation on the control of concentrations between undertakings. Examples would be the European Commission's approval of Microsoft's acquisition of Yahoo, Google's acquisition of DoubleClick and the merger between Ziggo and Liberty.

Consumer protection

(a) **Consumer Rights Directive:** the Consumer Rights Directive applies to contracts between a trader and a consumer, including contracts concluded on

[26] Note that there is often also specific regulation in the markets where users of 'marketplaces' are active. Examples are the taxi market and the market for prepared food.

the Internet. The directive includes rules on price transparency, pre-ticked website boxes, withdrawal rights, and refund rights.[27]

(b) **Digital content:** notably, the Consumer Rights Directive also has distinct rules on contracts for digital content, such as applications, music, videos or texts. These rules include withdrawal rights and information obligations, including information on functionality (such as region coding), and interoperability (compatibility with certain hardware and software).

(c) **Unfair Commercial Practices Directive:** The Unfair Commercial Practices Directive has many rules designed to protect consumers, including rules on untruthful information, aggressive marketing, misleading advertising and price indication.[28]

E-commerce Directive

The E-commerce directive contains rules on issues such as the transparency and information requirements for online service providers, commercial communications, electronic contracts and limitations on the liability of intermediary service providers.[29] Certain provisions relating to liability would include the following:

(a) **Mere Conduit Defence:** under article 12, 'information society service providers' are provided an exemption from liability for the information transmitted, where they (a) do not initiate the transmission, (b) do not select the receiver, and (c) do not select or modify the information transmitted.

(b) **Caching Defence:** under article 13, 'information society service providers' are provided an exemption from liability for removal or disabling of access to information, or the automatic, intermediate and temporary storage thereof.

(c) **Hosting Defence:** under article 14, 'information society service providers' are provided an exemption from liability for 'information stored' by users, if the provider does not have actual knowledge of illegal activity or information, and upon obtaining such knowledge, acts expeditiously to remove that information**.** Most digital platform providers are likely to fall outside the scope of article 14.

Audiovisual Media Services Directive

The Audiovisual Media Services Directive sets out the rules for broadcasting, and also for on-demand audiovisual media services, such as online streaming services.[30]

[27] Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights, amending Council Directive 93/13/EEC and Directive 1999/44/EC of the European Parliament and of the Council and repealing Council Directive 85/577/EEC and Directive 97/7/EC of the European Parliament and of the Council [2011] OJL 304/64.
[28] http://ec.europa.eu/consumers/consumer_rights/unfair-trade/unfair-practices/index_en.htm
[29] Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market [2000] OJL 178/1.
[30] Directive 2010/13/EU of the European Parliament and of the Council of 10 March 2010 on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audio-visual media services [2010] OJL 95/1.

(a) **Protection of minors:** member states are required to ensure on-demand services only provide audiovisual media in such a way that minors are protected from inappropriate material.

(b) **Promotion of European works:** the directive requires member states to ensure on-demand providers, 'where practicable and by appropriate means', promote the production of and access to European works.

(c) **Incitement to hatred:** audiovisual media containing incitement to hatred, such as based on race, sex, religion or nationality is prohibited.

(d) **Accessibility:** member states must 'encourage' media service providers to 'gradually' make their services accessible to people with a visual or hearing disability.

(e) **Advertising and sponsorship:** there are a number of rules on advertising, including bans on tobacco products and prescription medicines, the non-targeting of minors with alcohol advertising, rules on product placement, and sponsorship.

Data protection and privacy

(a) **Data protection generally:** the Data Protection Directive requires that certain obligations be placed on companies that process personal data, including that processing must be legal and fair, must be collected for legitimate purposes, and individuals can rectify, remove or block incorrect data about themselves.[31]

(b) **Cookies:** the E-privacy Directive requires that member states ensure websites have a user's consent before placing or accessing certain cookies on a user's equipment.[32]

(c) **Data security:** the Data Protection Directive requires member states to ensure data controllers have appropriate measures in place to protect personal data from accidental loss, unlawful destruction, or unauthorised disclosures or access.[33]

Copyright law

The Copyright Directive harmonises aspects of copyright regulation in the European Union, including reproduction rights, exceptions to copyright, and remedies against

[31] Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data [1995] OJL 281/31.
[32] Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws [2009] L 337/11, article 2(5).
[33] Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data [1995] OJL 281/31, article 17.

intermediaries for third party copyright infringement.[34]

Electronic communications

(a) **Competition:** Under Electronic Communications Framework, national regulators may impose specific regulatory obligations on companies who have 'significant market power'.[35]

(b) **Access:** Under the Access Directive, national regulators may impose obligations on companies with 'significant market power', including interconnecting their networks, and providing access on fair, reasonable and non-discriminatory terms.[36] Additional rules deal with conditional access systems and electronic programme guides.

(c) **Must-carry obligations:** Under the Universal Service Directive, member states may impose must-carry obligations on electronic communications providers 'where a significant number of end-users of such networks use them as their principal means' to receive radio and television.[37]

(d) **Net neutrality:** the rules on net neutrality are intended to safeguard the access to services.[38]

(e) **Consumer protection:** the Universal Service Directive imposes a number of obligations on electronic communication providers, including rules on specific contractual terms for consumers, withdrawal rights for consumers, and provision of information on service.[39]

2.8.2 Application and enforcement

A second consideration is whether instruments currently in force are being adequately implemented, and whether regulators are actively enforcing, or attempting to enforce, regulation that may apply to digital platforms. In this context, it is also important to include the role of jurisprudence.

Sufficient implementation addresses the role of government. European regulatory frameworks can offer substantial opportunities to fill in these frameworks with

[34] Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society [2001] OJL 167/10.
[35] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services [2002] OJL 108/33.
[36] Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities [2002] OJL 108/7.
[37] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services [2002] OJL 108/51.
[38] Draft regulation of the European Parliament and of the Council laying down measures concerning open internet and amending Regulation (EU) No 531/2012 of the European Parliament and of the Council of 13 June 2012 on roaming on public mobile communications networks within the Union.
[39] Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services [2002] OJL 108/51, article 20.

complementary national regulation. Where rules are unclear, bylaws and guidelines can support and strengthen enforcement.

The main bodies with responsibility for monitoring the operation of digital platforms are (independent) competition authorities, sector-specific regulators, consumer protection authorities, and data protection authorities. These bodies have a vast array of tools available, including competition law, sector-specific laws, consumer protection law, and data protection law, and there are powerful sanctions available. Indeed, the strong potential of national regulators to protect the public interests, and to bring about behavioural change by digital platforms, is readily evident from a quick survey of recent enforcement action against digital platforms below (a more comprehensive overview of national and European regulatory activity is contained in Annex 1). Notably, proper enforcement inevitably depends upon questions of prioritisation, and sufficient resources.

The application and enforcement system is complemented by court decisions. Jurisprudence – although sometimes a lengthy process – can contribute to the interpretation of rules, and to the legitimacy of regulatory activity by the authorities. For example, courts have provided guidance on the applicability of the e-commerce directive and on the relevance of proper protection of privacy.

Competition law

First, in the area of competition law, national competition authorities can bring about major changes in how digital platforms operate. Take for example Booking.com and Expedia, when the UK's Competition and Markets Authority opened an investigation into the online hotel booking sector. The investigation had focused on restrictions in agreements between InterContinental Group and Booking.com and Expedia.com, which prevented online travel agents from discounting the prices of room-only hotel accommodation. Both Booking.com and Expedia.com introduced Europe-wide changes to remove restrictions from their contracts with hotels which prevented hotels from offering cheaper room rates on competing websites.[40]

A second example would be Amazon, when the UK's Office of Fair Trading opened an investigation into suspected anti-competitive arrangements by Amazon relating to online retail. This resulted in Amazon ending its Marketplace price parity policy on Amazon.co.uk and more widely in the European Union.[41]

Consumer protection law

Second, in the area of consumer protection law, national regulators have large toolkits available to target digital platforms engaging in unfair commercial practices, breaching rules on the supply of good and services, providing inadequate consumer information, and breaching other consumer protection rules. For instance, in July 2015, the Netherlands' Authority for Consumers and Markets announced that hundreds of online fashion stores had adjusted the information on their websites regarding refunds in cases of cancellation. This followed an investigation which had been opened in 2014. The ACM gave two organisations − Thuiswinkel Organisatie

[40] https://www.gov.uk/government/news/cma-closes-hotel-online-booking-investigation.
[41] https://www.gov.uk/cma-cases/amazon-online-retailer-investigation-into-anti-competitive-practices.

and Stichting Webshop Keurmerk − the opportunity to work with their members to improve compliance with consumer protection rules. The ACM also announced that it will take action against online stores that still inform consumers incorrectly about refunds, or stores that fail to comply with the rules in practice.[42]

Data protection law

Third, in the area of data protection law, national authorities can bring about behavioural changes in how digital platforms operate and use personal data. Some major examples would be: in July 2015, the Dutch Data Protection Authority – following/leading other national data protection authorities − announced that Google had adapted the information in its privacy policy following the demands of the Authority, and will end a remaining data protection infringement by informing people about the use of their personal data and by asking them for their informed consent. This followed an investigation by the Authority which found that Google was combining personal data of users without Google adequately informing users in advance, and without obtaining consent.

The Authority has the ability to impose incremental fines on Google, up to a 5 million euro penalty.[43] Notably, the *Google Spain* case is an example where the EU Court of Justice has held that search engine operators are personal data 'controllers', and individuals may, under certain circumstances, request that certain search results be removed based on a search for an individual's name.[44] In addition, both the role of independent regulators and the restrictions on trans-border data processing were at the core of CJEU's decision in the *Schrems* case.[45]

2.8.3 Static/dynamic market regulation

Digital platforms are in permanent transition, as the analysis of the business models shows. This conflicts with a traditional regulatory approach dealing with more static situations. Due to this characteristic a more normative/functional approach is required instead of overly-detailed regulation common to static markets. Therefore, it may be considered necessary to move towards 'principles-based regulation', as opposed to 'rules-based regulation'.

On the one hand, principles-based regulation relies upon substantive standards or objectives imposed on industry members to achieve legislative purposes. It imposes a general standard for conduct − leaving it to the discretion of regulators to decide if particular conduct should trigger a sanction. On the other hand, rules-based regulation relies upon detailed, prescriptive requirements, specifying in advance what specific actions will be penalised. It specifies the trigger for a sanction and, at times, the specific sanction to be imposed.

2.8.4 Ex ante and ex post regulation

A further consideration is the policy question on the weight to be attached to certain public interests, and how this will impact upon the regulatory approach. Depending on this assessment, there might be a choice to be made between ex ante and ex

[42] https://www.acm.nl/en/publications/publication/14462/ACM-reminding-online-fashion-stores-of-refund-rules-has-produced-a-positive-result/.
[43] https://cbpweb.nl/en/news/privacy-campaign-google-following-possible-sanction-dutch-dpa
[44] Case C-131/12, Google Spain SL v. Agencia Española de Protección de Datos, 13 May 2014.
[45] Case C-362/14, Maximilian Schrems v. Data Protection Commissioner, 6 October 2015.

post intervention. If consequences cannot be undone, the need for ex ante regulation might be greater. A similar approach could be used to set minimum/maximum requirements (although this might conflict with the need for sufficient flexibility). In the context of digital platforms, assessments about ex ante or ex post interventions could be based on using a risk/harm analysis.

2.8.5 Subsidiarity

Subsidiarity is an important concept in EU regulation and can be looked at from several perspectives. No European intervention, or European intervention with (substantial) space for national implementation, can guarantee sufficient space for national governments to act quickly and to take into account differences between member states. This would potentially benefit dynamic sectors such as digital platforms. However, subsidiarity can represent an obstacle for harmonisation, while harmonisation might represent the risk of creating an overly static situation.

The subsidiarity question is gaining new momentum as (a) existing European instruments are in the process of being replaced or updated, (b) new instruments are being discussed and (c) others are subject of consultation (see Annex B).

2.9 Instruments and enforcement

Having applied the considerations above, a number of possible policy instruments would seem to arise, which are reflected in the graph and elaborated below.

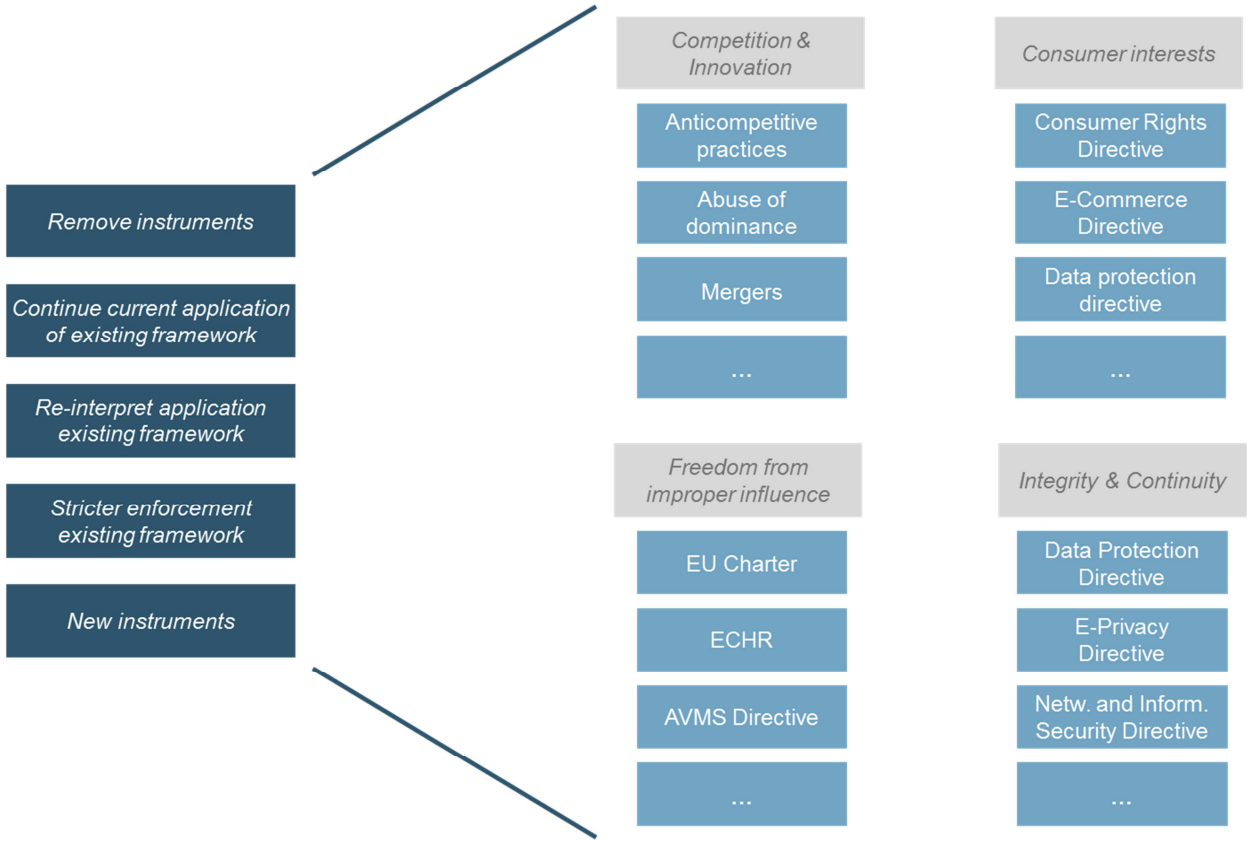

Figure 8: Policy instruments and enforcement

2.9.1 Remove instruments

A first policy option would be to remove existing regulation. The existence and innovation of digital platforms may remove the need for current regulations, as the original rationale for such regulations may no longer apply. An example would be the continued need for a regulation requiring taxi metering, when digital platforms offering taxi services decide price and route before journeys.[46] The relevant interest – transparent pricing – is still safeguarded with a more normative/functional approach.

2.9.2 Continue current application of existing framework

Given the breadth of current European Union regulation, and further proposed European Union regulation, rely on the application of existing frameworks. Competition law is a clear example in this context, because it offers a flexible approach able to deal with digital platforms.

2.9.3 Re-interpret application of existing framework

In many instances, whether a current regulation applies to a digital platform is a matter of interpretation, and it is the competence of courts to decide upon this interpretation. One of the most well-known examples is the *Google Spain* judgment issued by the EU Court of Justice, holding that search engine operators are personal data 'controllers', and individuals may, under certain circumstances, request that certain search results be removed based on a search for an individual's name.[47] In a similar vein, the EU Court of Justice will soon give its interpretation on whether Uber is a transport service or an 'information society service' under the Services Directive.[48] Moreover, reinterpretation avoids 'white spots' in regulation which would take years to become regulated. Finally, legislatures may also provide new interpretations of existing regulation, taking account of new insights based on market developments or technological innovation. This can contribute to a more granular approach. Issues such as access to platforms, platform neutrality and platform interoperability could be dealt with by re-interpretation of existing frameworks.

2.9.4 Stricter enforcement of existing framework

Targeted enforcement by national authorities: following an evaluation of current regulation and enforcement, it may be that national regulators need to adopt a more targeted enforcement of certain digital platform markets. A short account of national regulatory action targeting digital platforms is contained in annex B.

Targeted enforcement by European authorities: it may be that European authorities are best placed to engage in targeted enforcement in certain digital platform markets (such as cross border). An account of European regulatory action is contained in Annex 1; however, the most relevant example of targeted

[46] https://www.rijksoverheid.nl/actueel/nieuws/2015/05/06/mansveld-versoepelt-taxiwetgeving-uberpop-blijft-verboden

[47] Case C-131/12, Google Spain SL v. Agencia Española de Protección de Datos, 13 May 2014.

[48] See preliminary reference question in Spanish: http://www.poderjudicial.es/cgpj/es/Poder-Judicial/Tribunales-Superiores-de-Justicia/TSJ-Cataluna/Noticias-Judiciales-TSJ-Cataluna/El-Juzgado-Mercantil-3-de-Barcelona-plantea-cuestion-prejudicial-al-Tribunal-de-la-UE-en-relacion-al-conflicto-de-UBER (English translation: http://www.poderjudicial.es/cgpj/es/Poder-Judicial/Tribunales-Superiores-de-Justicia/TSJ-Cataluna/Noticias-Judiciales-TSJ-Cataluna/El-Juzgado-Mercantil-3-de-Barcelona-plantea-cuestion-prejudicial-al-Tribunal-de-la-UE-en-relacion-al-conflicto-de-UBER).

enforcement would be the European Commission announcing on 6 May 2015 that it was launching an antitrust investigation into the e-commerce sector.[49] It should be noted that applying general EU competition law may result in lengthy procedures with the risk of not matching the urgency of the case.

Cross-border regulatory enforcement: regulators from a number of jurisdictions may be best placed to properly enforce the current regulatory framework. Two examples would include the Global Privacy Enforcement Network (GPEN) Privacy Sweep, which involved 29 data protection regulators investigating children's apps and websites to ensure compliance with data protection and privacy laws. This is the third annual sweep, and national regulators will now decide on whether regulatory actions should be taken against certain digital platforms.[50] Or take the example of the Dutch Data Protection Authority and the Canadian Office of the Privacy Commissioner launching a collaborative investigation into the communications app WhatsApp, which resulted in behavioural changes, and better protection of data and privacy by WhatsApp.[51]

Increased funding for national and European regulators: given the increased activity of digital platforms in certain markets, it may be that national regulators do not have the resources to adequately enforce current regulation. In this regard, increased funding may be the most appropriate response, such as the Irish government doubling the funding made available to the Irish Data Protection Commissioner, given the operations of many large digital platforms in its jurisdiction. Additional funding is not the only relevant aspect. Regulators also need to build the right attitude towards enforcement ('no guts, no glory'). Another obstacle for effective enforcement could include the lack of sufficiently tailor-made procedures, including redress and access to courts.

2.9.5 New instruments

A final policy option would be to develop 'new' instruments. This need not be the blunt instrument of legislation, but could include soft instruments such as self-regulation and co-regulation.

(a) **Self-regulation** would include digital platforms adopting amongst themselves, and for themselves, common guidelines (such as codes of practice or sectoral agreements).[52] Self-regulation needs to be carefully assessed as an instrument because in general it lacks effective enforcement.

(b) **Co-regulation** would include a framework of overall objectives, basic rights, enforcement and appeal mechanisms, and conditions for monitoring compliance which is set in legislation. Co-regulation combines binding legislative and regulatory action with actions taken by the actors most concerned, drawing on their practical expertise. The result is wider ownership of the policies in question by involving those most affected by implementing rules in their preparation and enforcement. This often achieves better

[49] http://europa.eu/rapid/press-release_IP-15-4921_en.htm
[50] https://www.dataprotection.ie/docs/04-09-2015-Concerns-over-childrens-apps-and-websites-/1485.htm
[51] https://cbpweb.nl/en/news/canadian-and-dutch-data-privacy-guardians-release-findings-investigation-popular-mobile-app
[52] European Parliament et al., Interinstitutional Agreement on better law-making (2003/C 321/01), para. 18.

compliance compared to self-regulation, even where the detailed rules are non-binding.[53]

Two examples worth mentioning are in the area of protection of children, where digital platforms have joined self-regulatory schemes. The first is Netflix in the Netherlands, where it voluntarily subjects itself to a video-rating system, not required by the Dutch media act. Netflix voluntarily joined the Kijkwijzer and displays ratings icons in its video on-demand service. This followed discussion between the Dutch media authority, Netflix and NICAM (the self-regulatory body Netherlands Institute for the Classification of Audio-visual Media).[54]

The second example is YouTube, Vevo, Sony Music UK, Universal Music UK and Warner Music UK, agreeing with the UK government and the British Board of Film Classification (BBFC) (a statutorily-recognised independent body) to voluntarily introduce a ratings systems for online music videos.[55]

The use of reputation mechanisms – as self or co-regulation − is another way to deal with information asymmetries and to optimise the relationship between services and consumers in a digital platform environment. The way sellers are ranked within eBay is an example of such a reputation mechanism. The use of interaction with users to correct inappropriate behaviour is another example.

On the other hand, it may be considered necessary to adopt or optimise legislation, and a range of instruments is available:

(a) **Generic non-sector-specific regulation:** enact generic regulation, which is not sector specific. An example of existing regulation would be European Union competition law.

(b) **Generic digital platform regulation:** enact generic regulation, which is sector specific. An example of existing regulation would be the E-Commerce Directive.

(c) **Sector-specific regulation:** enact sector-specific regulation. An example of existing regulation would be the Audiovisual Media Services Directive.

(d) **Specific digital platform regulation**: enact specific digital platform regulation. Not (yet) existent.

Figure 9 shows these four possible inroads for regulation. The figure models regulation and intervention based on a) whether regulation is generic or specific and b) whether it is digital platform related or not. In the bottom left corner generic instruments are positioned which do affect digital platforms but without being specifically aimed at them. General competition or consumer law fall into this category. These instruments have the advantages of being broad and flexible, but need to be further framed in order to be useful.

[53] European Commission, 'European Governance − A White Paper' (2001/C 287/01), p. 17.
[54] http://www.cvdm.nl/nieuws/commissariaat-voor-de-media-toezichthouder-op-netflix-europa/
[55] https://www.gov.uk/government/news/action-to-protect-children-from-viewing-age-inappropriate-music-videos-online

These non-specific general instruments are complemented by a) instruments that are also generic, but sector specific (such as the Audiovisual Media Services Directive) or certain parts of the telecommunications framework and b) instruments that have a direct effect on digital platforms but are still of a generic nature: the e-commerce directive falls clearly into this category. Finally, the upper right corner deals with specific digital platform instruments. At the moment this type of regulation does not exist. Notably, the European Commission has opened a consultation on the regulatory environment for platforms, online intermediaries, data and cloud computing and the collaborative economy.[56]

Generic/Specific Digital/Non-Digital	Generic regulation / intervention	Specific regulation / intervention
Digital platform	Generic digital platform (e.g. e-commerce directive)	Specific digital platform (non-existent (yet))
Non-digital platform	Generic, not sector specific (e.g. competition law)	Generic, sector specific (e.g. AVMS directive)

Figure 9: Four possible inroads for legislation

The typology helps to determine what the available options are for intervention. The dynamic character of digital platforms implies that specific regulation for digital platforms has fewer possibilities to deal with quickly changing environments. On the other hand generic, non-sector specific instruments can provide great flexibility, but can only be effective if they are sufficiently framed by lower regulatory instruments or guidelines.

2.10 From platform characteristics to policy interventions in practice

In the discussion of policy instruments, this study provides a set of relevant considerations in the application of public policy. These considerations are focused on the choice between policy instruments. In practice, digital platforms can also change the way in which specific instruments can be applied. An example is tax policy. On digital platforms that have the characteristics of a marketplace there is a risk that users who operate as businesses do not pay corporate taxes. The surveillance methodologies that tax authorities use on digital platforms are different from surveillance in traditional industries.

Another example is competition policy. Traditionally, the market power of a firm is assessed based on the market share and profit margins. This is often challenging in traditional industries but it is even more so for digital platforms as firms do not have any revenues at all (using the acquisition model) or charge users on one side of the

[56] https://ec.europa.eu/digital-agenda/en/news/public-consultation-regulatory-environment-platforms-online-intermediaries-data-and-cloud

platform but not on others. This means that competition authorities have to continually revise their toolkit and have to apply new methodologies in competition policy in digital platform markets.

This chapter described how the framework connects specific characteristics of digital platforms to policy interventions. The chapter ended with a list of relevant considerations in the application of policy instruments. Ultimately, the decision to apply a specific instrument should be based on all the relevant (monetary and non-monetary) costs and benefits in what economists call a cost-benefit or regulatory impact analysis.[57] These costs and benefits for all affected parties (including but not limited to suppliers and customers) depend on the impact of the platform on public interests (section 2.7) and the considerations in applying policy instruments (section 2.8).

The cost-benefit analysis should also consider the risk that there is imperfection in the application of policy instruments (government failure). One of the main factors that have to be considered in the welfare analysis is the effect of policy interventions on platform characteristics. Due to legislation or other measures platforms may have to change their business models. This in turn can affect public interests. Chapter 3 describes how the framework can be applied in practice and explains in more detail how feedback effects can be considered.

[57] Of course, the level of detail of such an analysis depends on the level of expected costs and benefits. A regulatory impact analysis is a standardised step in the legislative process in the Netherlands and the European Union.

3 A guide to the practical application of the framework

This chapter describes a structured approach for using the framework. The approach is presented in Figure 10 and essentially is made up of two main parts. The first part or forward route, shown in the top half of the figure, is about determining the relevant platform characteristics and selecting the platform type. Next the impact of these characteristics is determined for each public interest. From that analysis the need for intervention and potential interventions are deducted. Multiple potential interventions may be considered.

The second part or return route, shown in the bottom half of the figure, is about analysing the effects of the potential interventions based on the considerations presented in the previous chapter. For each potential intervention, the impact on the characteristics of the platform concerned is determined, taking into account second order effects as the digital platform itself will respond to an intervention as well. The impact of an intervention on other public interests is also determined, using the adjusted platform characteristics as a starting point.

It is important to keep in mind that the analytical framework is not a straightforward decision tree. First, as Figure 10 clearly shows, there is a return route that provides a feed-back loop in the analysis. Second, and more importantly, the framework involves a policy or political weighing of different options for the promotion of public interests or the applications of instruments. The framework does not attempt to capture this weighing process.

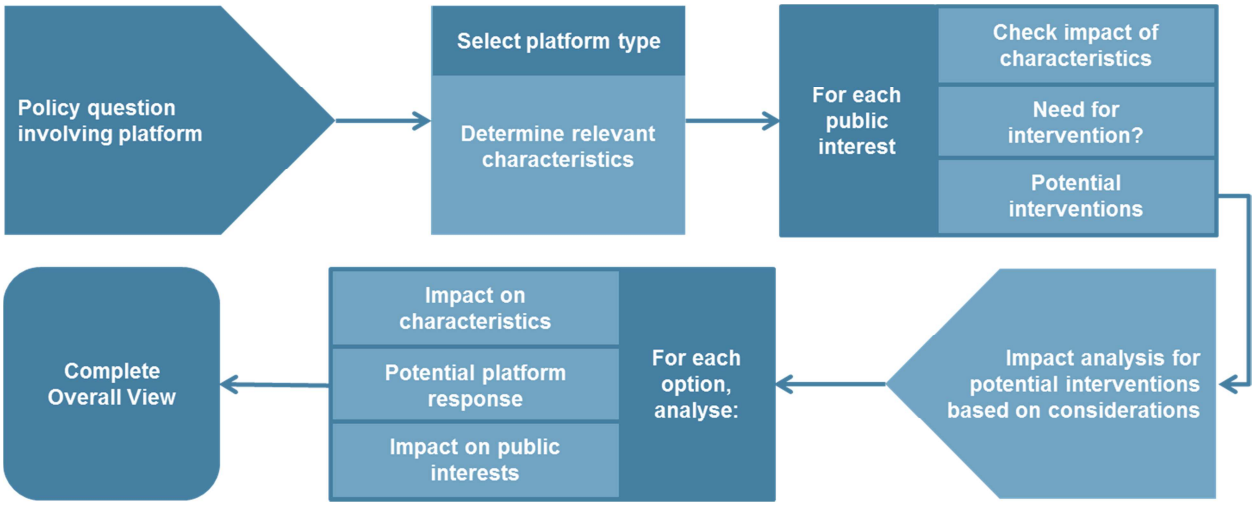

Figure 10 A structured approach to using the framework: forward route (top half) and return route (bottom half)

Stakeholders can be involved in both parts of the analysis approach. Important questions that may be answered best by involving the stakeholders of the digital platform that is considered, include how the digital platform impacts the public interests and, subsequently, how potential interventions impact the digital platform. These questions reflect the direct impact of the digital platform on public interests and the direct impact of potential interventions on the digital platform. As usual when involving stakeholders, be aware of the interests of these stakeholders,

particularly the digital platform under study itself, and weigh their input accordingly. To prevent too much single-sided input, various stakeholders reflecting various interests in the case at hand can be invited, e.g. not only the platform itself but also competitors, sector experts, consumer organisations, trade associations, etc.

Determining the potential interventions themselves is up to the policy makers and politicians. The impact of interventions on (other) public interests also is more a concern for policy makers and politicians, and less for the digital platform itself. To involve stakeholders for dealing with these aspects of the analysis therefore seems less relevant.

3.1 The analysis starts with a policy question

There may be different situations in which policymakers decide to use the analytical framework. The framework in principle covers both situations in which a specific platform is concerned and situations in which a general development with respect to digital platforms is to be analysed. For both the specific as the general situation some examples are given below.

Examples of platform-specific situations:

- A digital platform seems to impact certain public interests. For example, consumers are becoming worried about their online privacy which may be the trigger for having a closer look at the digital platform involved.
- A new type of digital platform is launched, with unknown implications for public interests, and is rapidly becoming dominant / popular. Hence the impact of this platform is potentially large, thereby justifying further analysis. Note that this new platform may negatively, as well as positively, impact certain public interests – it may for example stimulate new innovation or enable freedom of speech.
- A digital platform changes one or more of its characteristics. For example: the existing business model is altered by the introduction of an advertisement model, or a single-sided platform becomes multi-sided, or the end-user licence agreement is changed significantly. These developments may impact the public interests involved and may be therefore constitute a trigger for (re-) applying the analytical framework.

Examples of general ‘motives’ for applying the framework are:

- Policy makers may feel a need to have a thorough understanding of a certain type of digital platform, e.g. they want to better understand the implications of the sharing economy, the impact of a new breed of large multi-national and multi-sided B2B marketplaces or of the impact of large foreign platforms of platforms.
- Policy makers may have questions about the uptake of services offered by digital platforms. The general question here would be whether existing policy is impacting the platform characteristics and its uptake, and how interventions may stimulate (or possibly hinder) opportunities digital platforms have to offer.

For reasons of bringing focus to the analysis, it is advised to always start the analysis from a concrete policy question. The benefit of this approach is that it leads to an articulation of the public interests that are relevant (for instance, because they are thought to be in jeopardy) in the case at hand. Just analysing a type of digital

platform can become a very broad and extensive exercise leading to a general discussion without any concrete outcomes. Instead, focusing the analysis on a specific policy question will help to direct discussions towards a constructive outcome. In case stakeholders are being involved, this can be further promoted by first sharing the goal of the analysis with these stakeholders.

3.2 Forward route: determining potential interventions

After determining the policy question from which to start the analysis, first the 'forward direction' is taken as shown in Figure 11. From determining the relevant characteristics of platform the platform type is derived. Next, the possible impact of the characteristics on the various public interests is analysed. From this, the possible need for interventions and potential interventions are determined.

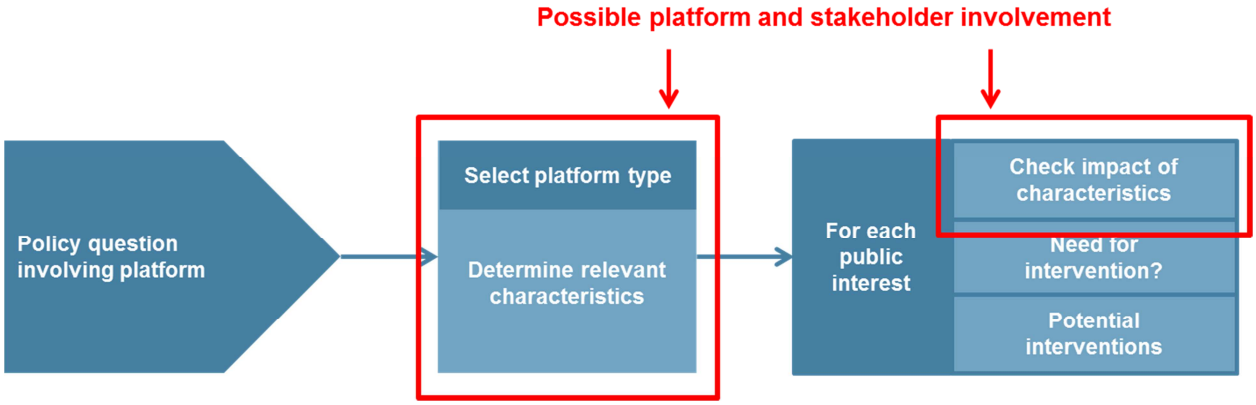

Figure 11 Forward route in the framework: going from platform characteristics to potential interventions

It is recommended to involve the digital platform and the other relevant stakeholders in determining the relevant characteristics of the platform and the impact of these on the public interests. This allows for creating a shared view on the platform and its impact on public interests, which is at the core of deciding if and what policy action may be needed. Consulting the stakeholders early on helps to create a shared view on the situation at hand, which will help to reduce possible resistance to any outcome of the analysis later on. Also, by addressing the relevant stakeholders in these first steps, the reason for the analysis can be explained. This will help in keeping the stakeholders connected throughout the process.

3.2.1 *Determine the platform characteristics and derive the platform type*

An important step in determining the platform characteristics is to determine the business and revenue model of the platform involved. It is this business model that is key to understanding the digital platform, in seeing how the various platform characteristics add up to form a consistent overall picture. Basically, the business model will determine the strategy of the platform owner and will thus determine how the platform will evolve over time.

After the business model has been determined, the next step is to go through the list of characteristics presented in section 2.3. All relevant characteristics for the digital platform or kind of platform (e.g. 'sharing economy' in general) concerned should be addressed. Figure 4 from that section can be used as a graphical tool to

assist in this work, especially when doing the analysis by means of a group exercise. By drawing arrows between the various boxes and by adding descriptive text to the relationships, the complete picture of the platform becomes visible. The case studies in the annexes serve as an example and illustration.

The platform type can be determined either beforehand, based on common knowledge of the platform, or further along the process and once the various characteristics have been determined. Determining the platform type will help in getting a general feeling for the complexity to be expected in the analysis. Note that for the considerations on public interests and instruments later on, the platform characteristics are used rather than the platform type.

Sources for information for this step are:

- Standard Internet search and relevant academic papers;
- Interviews with stakeholders and representatives from the digital platform itself; these interviews can be more formal, but also off-the-record interviews can provide input during this phase;
- Stakeholder sessions, in which stakeholders and policy makers sit together to jointly do the framework analysis. By creating a shared understanding of the platform and its characteristics, a good basis is created for gaining acceptance for the method and the outcome of the analysis.

3.2.2 Determine the impact of the platform on public interests

As a next step, the relation(s) between the platform characteristics and public interests are to be determined (these relations and their possible impact are described in section 2.7). This is done by going through the list of public interests from section 2.3 one by one, assessing the possible impact of every relevant platform characteristic (from the previous step) on each of the public interests at stake. A relevant question here is to assess whether the platform is capable of having an impact on the public interests, and if it is in the interest of the platform to do so. Figure 4 can be used as a graphical aid to create an overview of all platform impacts on public interests.

Based on the overview of possible impacts that has been constructed, policy makers need to assess whether an intervention is called for at all (see section 2.7 for a more theoretical consideration on how this can be done). For each public interest impacted by the platform, policy makers will need to determine if the impact requires and justifies an intervention. Note that not only a ‘negative’ impact may warrant intervention, but that a lack of or insufficient ‘positive’ impact may also be a reason to intervene.

3.2.3 Determine potential interventions

If as a result of the above exercise a need to intervene has been identified, the potential policy instruments are to be determined. Here, the list of instruments presented in section 2.9 can be used to help selecting potential instruments.

In summary, the various options to intervene are:

- Removal of an existing instrument. In particular, to provide a platform room to innovate, or to make it possible for a platform to enter the market at all.

- Application of an existing instrument. If a platform has a potential impact on certain public interests, but dealing with this is already covered by existing instruments, no further action is needed.
- As a further step, an existing instrument may be re-interpreted to also be applied in this specific case. While digital platforms may seem new, and may seem to be in need of new instruments, in many cases existing instruments can probably be applied.
- Alternatively, existing instruments may be enforced more strictly. In many cases it is probably not the instrument that is missing, but the application thereof.
- Finally, if none of the previous options is sufficient to achieve the foreseen goal, the development of a 'new' instrument may be required.

3.3 Return route: impact of interventions on platforms and public interests

After the potential interventions are selected, the broader impact they might have on the digital platform itself and on (other) public interests has to be analysed. This analysis starts from determining the impact the selected potential interventions have on the platform characteristics. When they give rise to the platform characteristics changing, so does the impact the platform has on the public interests. Figure 12 shows this 'return route' in the analytical framework.

Be aware that this return route is an impact analysis, and will contain assumptions and estimations necessary to arrive at the estimated impact. Especially for the potential platform response, a good prediction may be difficult to achieve. To deal with this, various 'what if' scenarios may be defined, to investigate the impact of various platform responses. Still, an eventual (policy) decision will, as with any decision, be based on incomplete information, as it is impossible to actually predict the future.

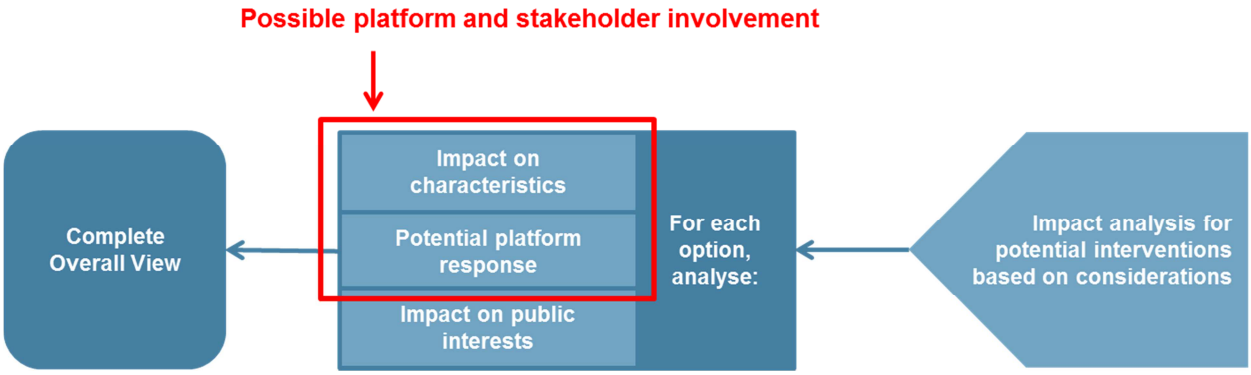

Figure 12 The return route in the analytical framework

As a first step in analysing the impact of a selected potential intervention, the impact it has on the platform characteristics is to be assessed. This is done by going through the list of platform characteristics as presented in section 2.3. As a visual aid, Figure 4 can be used, creating an overview for each potential intervention that is being analysed. Annex H contains a fictitious example of this process. Depending on the interventions that are analysed, it may be necessary to consider the impact on characteristics of other platforms as well, as these can also be affected by the interventions.

Next, the platform response (or responses, in the case of multiple platforms) to the intervention needs to be estimated. Most likely, the digital platform will respond to interventions in a certain way thereby potentially changing the effect the selected instrument would have on other characteristics. Just like before, the business model is a key characteristic, because any impact on this will severely impact the various other characteristics as well. Also in this step, stakeholders can be involved. Stakeholders will able to present their view on the impact an intervention may have, and any suggestions or objections stakeholders may have can be collected while consulting them. Again, be aware of the interests of the various stakeholders consulted, as they will provide input based on them.

Next is the analysis of the impact of the changing platform characteristics on the public interests, which is very similar to the analysis on the forward route in the framework, which was described in the previous section. Only where changes are expected in the platform characteristics, do these need to be analysed anew. From this exercise, it can be seen if the intervention actually achieves what it was intended to achieve, namely to impact a certain public interest in a certain manner. Moreover, from this exercise it will also become clear if there is an impact on other public interests, be it directly or indirectly.

It is stressed that the return route is as important as the forward route. It closes the loop: is the policy question adequately addressed? Is the situation that was the cause for doing the analysis sufficiently dealt with? Has the analysis discovered relevant new policy questions, perhaps even of greater importance than the original question that started the analysis?

3.4 Creation of an overall view

Once the above steps have all been carried out, a complete view has been created of the digital platform and its impact on public interests, and of the impact of potential interventions. Based on this overall view, decisions can be made to actually carry out certain interventions or not.

In theory, the framework as presented in this report could be used in an iterative way. As potential interventions change the platform characteristics, and the impact thereof on the public interests, new interventions could be thought of to counteract these new effects. Even though such iterative use is certainly possible, it is not recommended as it makes using the framework overly complex and less certain. The analysis leans on estimations of effects, and doing this in an iterative fashion will lead to introducing more uncertainty about the outcomes of the framework analysis, as estimation errors will multiply in each iteration circle.

4 Conclusions

4.1 A structured approach for the analysis of government roles and policies

The framework presented in the previous chapters provides a structured approach that promotes completeness and consistency for the analysis of the government role and policies for digital platforms. The sets of platform characteristics and public interests in the framework can be expected to cover the relevant key points for such an analysis. The platform characteristics are a core starting point for the analysis and − combined with the set of public interests − take the central role, both in the forward direction (from platform characteristics to public interests to instruments) and in the backward direction (from policy interventions to a platform's response, which may affect its characteristics). Through this approach, a consistent overall view is created.

The framework may be shared with stakeholders to provide transparency on policy development and also to obtain their perspectives on platform characteristics, public interests and instruments as input for the analysis. Note that the analytical framework presented in this report is not a straightforward decision tree − for two reasons. First, there is a return route that provides a feed-back loop in the analysis (similar to an impact assessment). Second, and highly important, the framework allows for weighing different policy options. The framework does not attempt to capture this weighing process as such, but does recognise the importance of it and urges policy makers to explicitly include it in the policy analysis.

The analytical framework is the main deliverable of this study. Its development is determined by a number of selected key observations and conclusions on digital platforms that are summarised in the following sections.

4.2 Platform characteristics rather than a typology

Each digital platform is different and sometimes acclaimed to be unique; therefore the analysis of the set of platform characteristics is the only relevant starting point for the analysis. This approach is more useful than trying to match specific platforms to a category in a predefined, generic typology of platforms: this is more typical for a bureaucratic approach, ignoring the dynamic aspects of the sector. The analysis at the level of the characteristics clearly does more right to the dynamics and richness of digital platform features than a stable, but necessarily limited, typology.

4.3 Platform characteristics rather than a definition of digital platforms

Most of the characteristics that are of particular relevance in digital platforms are also relevant in cases that do not involve digital platforms, but the dynamics might differ substantially. In fact, this study has not identified economic or technical characteristics that are unique to digital platforms. Certain characteristics (such as network effects and use of data) are more pronounced and relevant in many platform cases, but this does not warrant a delineation of digital platforms through a specific definition. On the contrary, our analysis assumes that governments and

regulators can explore even more characteristics within the boundaries of their authority.

4.4 Many existing instruments apply to digital platforms

Many of the characteristics of digital platforms and their potential impact on public interests are known from other contexts. In those contexts, instruments have already been set in place. It's the law makers' and supervisory authorities' challenge to update and interpret the available instruments in order to better promote efficiencies and innovations offered by digital platforms or to better protect public interests. At the same time, there is also substantial scope for optimising the applicability and enforcement of existing instruments, based on the same – existing − normative perspective. This removes the need to put new instruments in place which is often a lengthy and cumbersome process. However, it requires a substantial commitment to interpret existing instruments and focus on effective normative methodologies for application and enforcement, such as more risk/harm centred approaches.

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B National and European regulatory activity targeting digital platforms

The purpose of this section is to provide a snapshot of national and European regulatory activity targeting digital platform markets. It is not intended to be exhaustive, nor representative of regulatory activity, but serves to merely demonstrate the type of regulatory activity that may take place.

1. NATIONAL REGULATORY ACTIVITY

Competition law: Booking.com, Expedia, Amazon, KPN, Vodafone and T-Mobile

In the area of competition law, national competition regulators can bring about major changes in how digital platforms operate. Take for example Booking.com and Expedia, when the UK's Competition and Markets Authority opened an investigation into the online hotel booking sector. The investigation had focused on restrictions in agreements between InterContinental Group and Booking.com and Expedia.com, which prevented online travel agents from discounting the prices of room-only hotel accommodation. Both Booking.com and Expedia.com introduced Europe-wide changes to remove restrictions from their contracts with hotels which prevented hotels from offering cheaper room rates on competing websites.[58] A second example would be Amazon, when the UK's Office of Fair Trading opened an investigation into suspected anti-competitive arrangements by Amazon relating to online retail. This resulted in Amazon ending its Marketplace price parity policy on Amazon.co.uk and more widely in the European Union.[59] A third example would be the Netherlands' Authority for Consumers and Markets receiving commitments from a number of telecommunications companies, KPN, Vodafone and T-Mobile, that senior management will not make any announcements about future prices and other commercial conditions in the Dutch market that would leave consumers worse off, before the internal decision-making about such future prices and commercial conditions has been finalized and laid down in writing.[60]

Consumer protection law: app-based games, online fashion stores, online retailers

In the area of consumer protection law, national regulators have large toolkits available to target digital platforms engaging in unfair commercial practices, rules on supply of good and services, inadequate consumer information, and many other consumer protection rules. For instance, in June 2015, the UK's Competition and Markets Authority closed its investigation into the app-based games market, in particular where children were encouraged to make purchases. This included whether app-based games were complying with consumer protection law, and

[58] https://www.gov.uk/government/news/cma-closes-hotel-online-booking-investigation
[59] https://www.gov.uk/cma-cases/amazon-online-retailer-investigation-into-anti-competitive-practices
[60] https://www.acm.nl/en/publications/publication/14326/Commitment-decision-regarding-mobile-operators/

engaging in unfair commercial practices (such as misleading or aggressive practices).[61] The Office of Fair Trading drew up industry Principles for online and app-based games, in order to provide guidance to industry on how the law is likely to be applied to the industry.[62] Other examples include:

- **Online fashion stores**: in July 2015, the Netherlands' Authority for Consumers and Markets announced that hundreds of online fashion stores had adjusted the information on their websites regarding refunds in cases of cancellation. This followed an investigation which had been opened in 2014. The ACM gave two organisations − Thuiswinkel Organisatie and Stichting Webshop Keurmerk − the opportunity to work with their members to improve compliance with consumer protection rules. The ACM also announced that it will take action against online stores that still inform consumers incorrectly about refunds, or stores that fail to comply with the rules in practice.[63]

- **Online pawnshop 24Cash**: in June 2015, the Netherlands Authority for Consumers and Markets announced that the online pawnshop 24Cash had signed a binding agreement with the authority to bring its interest rates and loan terms in line with current rules on pawnshops. This followed an investigation, and the Authority may fine 24Cash should it breach the agreement.[64]

- **The Online Shopping Company**: in May 2012 the UK's Office of Fair Trading opened an investigation into the operator of several websites who failed to supply goods or refunds. Following this consultation the main director of the company operating the websites signed undertakings to comply with the law. These included an undertaking to refund the affected consumers and ensure that future orders are delivered on time.[65]

- **Bellio.nl**: in February 2014, the Netherlands Authority for Consumers and Markets issued a warning about Dutch online shop Bellio.nl, which sells design furniture. The Authority takes action against online stores that inform consumers incorrectly or that fail to pay back money to consumers on time or fail to do so at all.[66]

- **Groupon**: in 2013, the Netherlands Authority for Consumers and Markets announced that the discount-coupon store Groupon was adjusting its

[61] https://www.gov.uk/cma-cases/children-s-online-games
[62] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/288360/oft1519.pdf
[63] https://www.acm.nl/en/publications/publication/14462/ACM-reminding-online-fashion-stores-of-refund-rules-has-produced-a-positive-result/
[64] https://www.acm.nl/en/publications/publication/14376/ACM-deals-with-high-interest-rate-of-online-pawnshop-24Cash/
[65] https://www.gov.uk/cma-cases/the-online-shopping-company-non-delivery-of-orders-and-failure-to-provide-refunds
[66] https://www.acm.nl/en/publications/publication/12626/ACM-issues-warning-about-online-shop-Bellio/

procedures to ensure consumers are fully informed of their purchases, and about whom they can turn to in case of questions or complaints.[67]

- **Vodafone and HBO app**: in 2015, the Netherlands' Authority for Consumers and Markets imposed fines on Vodafone for violating the rules on net neutrality. Vodafone did not charge users data for using the pay-tv channel HBO app, thus influencing consumer behaviour, in violation of the net neutrality rules.[68]

- **KPN and access to apps**: in 2015, the Netherlands' Authority for Consumers and Markets imposed fines on KPN for blocking certain services and apps when consumers accessed KPN Wi-Fi hotspots. This violated the net neutrality rules.[69]

Data protection law: Google, Facebook, KPN, Tele2, T-Mobile, Vodafone and WhatsApp

In the area of data protection law, national regulators can bring about behavioural changes in how digital platforms operate and use personal data. Some major examples would be: in July 2015, the Dutch Data Protection Authority announced that Google had adapted the information in its privacy policy following the demands of the Authority, and will end a remaining data protection infringement by informing people about the use of their personal data and by asking them for their informed consent. This followed an investigation by the Authority which found that Google was combing personal data of users without Google adequately informing users in advance, and without obtaining consent. The Authority has the ability to impose incremental fines on Google, including up to a 5 million euro penalty.[70] Similarly, following an investigation by the Irish Data Protection Commissioner, Facebook agreed with the Commissioner to allow users to opt-out of Internet-based advertising using a new control setting. Importantly, this change will apply internationally.[71] Other examples include:

- **KPN, Tele2, T-Mobile and Vodafone**: in 2013, the Dutch Data Protection Authority found that a number of mobile operators, including PN, Tele2, T-Mobile and Vodafone, had stored data on a detailed level about visited websites and apps used, in violation of data protection law. The companies had also not, or incorrectly, informed users, about the fact that the telecom operators collect this detailed information about them and what they do with it. This investigation lead to the violations being stopped.[72]

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[67] https://www.acm.nl/en/publications/publication/11180/Groupon-to-give-consumers-clearer-information/
[68] https://www.acm.nl/en/publications/publication/14310/Fine-on-Vodafone-for-violation-of-net-neutrality-rules/
[69] https://www.acm.nl/en/publications/publication/14311/Fine-on-KPN-for-violation-of-net-neutrality-rules/
[70] https://cbpweb.nl/en/news/privacy-campaign-google-following-possible-sanction-dutch-dpa
[71] http://www.independent.ie/business/technology/irish-data-commissioner-gets-facebook-to-introduce-new-privacy-controls-31530850.html
[72] https://cbpweb.nl/en/news/dutch-mobile-operators-modify-data-analysis-after-investigation-dutch-dpa-results-investigation

- **WhatsApp**: in 2013, the Dutch Data Protection Authority and the Canadian Privacy Commissioner's Office, released their finding of a joint investigation into the communications app WhatsApp. Following the investigation, WhatsApp took steps to implement the recommendations both data protection authorities had made. These included; a finding that WhatsApp did not delete non-users' mobile numbers once a user's phone contacts were transmitted to WhatsApp, which violated Dutch data protection law. Also, in partial response to the investigation, WhatsApp began to encrypt its messages, as messages had been vulnerable to interception.[73]

- **TomTom**: in 2012, the Dutch Data Protection Authority found that the navigations systems TomTom had violated data protection law as users' consent to process geolocation data was insufficiently specific. TomTom agreed to adjust consumer information to meet the requirements of the data protection law. The Authority also investigated whether TomTom provided data to third parties, and concluded that this data was stripped of its identifying features and only provided at an aggregated level.[74]

- **Cloud computing**: in 2012, the Dutch Data Protection Authority published an opinion on the data protection laws applicable to cloud computing, in response to a query. This included a requirement that Dutch companies or organisations that decide to use cloud computing services provided by US providers remain fully responsible for compliance with Dutch data protection laws.[75]

2. EUROPEAN REGULATORY ACTIVITY

- **Google Search**: in April 2015, the European Commission sent a Statement of Objections to Google outlining the Commission's preliminary view that the company is abusing a dominant position, in breach of EU competition rules, by systematically favouring its own comparison shopping product in its general search results pages.[76] This follows an investigation initiated by the Commission in 2010.

- **Google Android**: in April 2015, the European Commissions opened formal proceedings against Google to investigate if the company's conduct in relation to its Android mobile operating system, as well as applications and services for smartphones and tablets, has breached EU competition rules. This includes whether Google has hindered market access by tying or bundling certain Google apps and services.[77]

- **Geo-blocking**: in September 2015, the European Commission sent a statement of objections to Sky UK and six major film studios alleging clauses in licensing agreements between the six film studios and Sky UK which require Sky UK to block access to films through its online pay-tv services (so-called

[73] https://cbpweb.nl/en/news/canadian-and-dutch-data-privacy-guardians-release-findings-investigation-popular-mobile-app
[74] https://cbpweb.nl/en/news/following-report-dutch-dpa-tomtom-provides-user-better-information
[75] https://cbpweb.nl/en/news/dutch-dpa-publishes-written-opinion-cloud-computing
[76] http://europa.eu/rapid/press-release_MEMO-15-4781_en.htm
[77] http://europa.eu/rapid/press-release_MEMO-15-4782_en.htm

'geo-blocking') or through its satellite pay-tv services to consumers outside its licensed territory (UK and Ireland).[78]

- **E-commerce sector**: in May 2015, the European Commission announced that it was launching an antitrust investigation into the e-commerce sector.[79]

- **Internet Explorer**: in 2009, the Commission had made legally binding on Microsoft commitments offered by the US software company to address competition concerns related to the tying of Microsoft's web browser, Internet Explorer, to its dominant client PC operating system Windows.[80]

3. CROSS-BORDER REGULATORY ACTION

- **Children's apps and websites**: in 2015, the Global Privacy Enforcement Network (GPEN) Privacy Sweep was again initiated, which involved 29 data protection regulators investigating children's apps and websites to ensure compliance with data protection and privacy laws. This is the third annual sweep, and national regulators will now decide on whether regulatory actions should be taken against certain digital platforms.[81]

- **WhatsApp**: in 2012, the Dutch Data Protection Authority and the Canadian Office of the Privacy Commissioner launched a collaborative investigation into the communications app WhatsApp, which resulted in behavioural changes, and better protection of data and privacy by WhatsApp.[82]

Planned review of EU instruments

Network and Information Security
In 2013, the European Commission published its proposed Network and Information Security Directive.[83] There seems to be a current debate on whether the directive should apply to essential 'digital service platforms'

AVMS Directive
In July 2015, the European Commission launched a public consultation on the revision of the Audio-visual Media Services Directive. This consultation will end on 30 September 2015.[84]

Satellite and Cable Transmission
In August 2015, the European Commission launched a public consultation on the review of the EU Satellite and Cable Directive, which coordinates rules on copyright

[78] http://europa.eu/rapid/press-release_IP-15-5432_en.htm
[79] http://europa.eu/rapid/press-release_IP-15-4921_en.htm
[80] http://europa.eu/rapid/press-release_IP-13-196_en.htm
[81] https://www.dataprotection.ie/docs/04-09-2015-Concerns-over-childrens-apps-and-websites-/1485.htm
[82] https://cbpweb.nl/en/news/canadian-and-dutch-data-privacy-guardians-release-findings-investigation-popular-mobile-app
[83] http://ec.europa.eu/digital-agenda/en/news/eu-cybersecurity-plan-protect-open-Internet-and-online-freedom-and-opportunity-cyber-security
[84] https://ec.europa.eu/digital-agenda/en/news/public-consultation-directive-201013eu-audiovisual-media-services-avmsd-media-framework-21st

in satellite broadcasting and cable retransmission. The Commission is considering a possible extension of the Directive in light of market and technological developments, with the objective of contributing to the Digital Single Market Strategy. This consultation will end on 16 November 2015.[85]

Telecommunications
In September 2015, the European Commission launched a public consultation on the revision of the regulatory framework for electronic communications networks and services.[86] This consultation will end on 7 December 2015, and submissions will be published in January 2016.

Online Platforms
In September 2015, the European Commission's started a consultation on the regulatory environment for platforms, online intermediaries, data and cloud computing and the collaborative economy.[87]

Digital Single Market
In May 2015, the European Commission published its Digital Single Market Strategy for Europe, setting out how the Commission intends to 'better access for consumers and businesses to online goods and services across Europe'.[88] The Commission is planning of number of policies, including making legislative proposals to prevent unjustified geo-blocking (2016), making portability of legally acquired content easier (2015), overhaul telecoms regulations, and review the AVMS Directive, in particular the 'scope' of rules on promotion of European works, protection of minors rules, and advertising rules. Further, in relation to the role of 'online platforms', the Commissioner sets out additional policy reviews, including transparency in search results, platforms' usage of information they collect, relations between platforms and suppliers, constraints on ability to move from one platform to another, how best to tackle illegal content on the Internet, security, and the issues of interoperability and standardisation.

Data Protection
In 2012, the European Parliament and Council published its draft General Data Protection Regulation.[89] The reform of the Data Protection Directive is a 'policy priority for 2015'.[90] The regulation includes the following proposals: a right to rectification, a right to be forgotten and erasure; a right to data portability, a right to object to personal data processing, a right to object to personal data processing for direct marketing, and a right not to be subject to profiling.

[85] https://ec.europa.eu/digital-agenda/en/news/consultation-review-eu-satellite-and-cable-directive
[86] https://ec.europa.eu/digital-agenda/en/news/public-consultation-evaluation-and-review-regulatory-framework-electronic-communications
[87] https://ec.europa.eu/digital-agenda/en/news/public-consultation-regulatory-environment-platforms-online-intermediaries-data-and-cloud
[88] http://ec.europa.eu/priorities/digital-single-market/docs/dsm-communication_en.pdf
[89] http://ec.europa.eu/justice/newsroom/data-protection/news/120125_en.htm
[90] http://ec.europa.eu/justice/data-protection/

C Case study on Netflix

Summary of Netflix' business and activities
Netflix is a provider of a Video on Demand (VoD) service. In September 2015, Netflix had 65 million customers in over 50 countries[91], including a range of European countries including The Netherlands, Belgium, Sweden, UK, France and Germany. For a fixed monthly subscription fee, customers have unlimited access to the TV shows and movies in the Netflix catalogue. Netflix acquires content from studios and also produces original content itself. For the distribution of its service, Netflix relies on a combination of its own[92] (or hired[93]) content delivery infrastructure and the Internet. A more detailed description of Netflix' activities in content aggregation and distribution is given in a separate white paper.[94]

Platform characteristics and relation to public interests
Figure 13 depicts the Netflix platform characteristics and their link to public interests. The individual entries in the figure are explained in the table on the following pages. Based on its characteristics, Netflix best matches the Reseller/Distributor platform type. There is no complete match though, as Netflix' original content production sets it apart from pure resellers.

General remark on the case studies
The goal of the case studies was not to evaluate or conclude on whether there is a need for more (or less) government intervention. Instead, the cases served to validate and refine the analytical framework, in particular how it captures the platform characteristics and public values. For this reason, the case descriptions in the annexes do not cover the instruments part of the framework and the impact of potential instruments on public values. For the same reason, the cases focus on the key characteristics of the platforms that have the strongest effects on public values. If the framework is applied to a case with the goal to analyse specific issues or questions, further detail is likely to be added to the figures and tables.

For each case, desk research and two or three interviews with the company involved and/or relevant stakeholders (competitors, consumer interest groups) have been used to build a view of the key platform characteristics and public values. The set of five cases has been selected to cover a wide variety of platform types and sectors, so that they can provide a broad base for validation. In the analyses, it is seen that the cases indeed touch upon many different characteristics and interests. At the same time, it is clear that five cases can never completely capture the richness of today's and tomorrow's digital platforms.

[91] Netflix company overview, September 2015, available from pr.netflix.com.
[92] Netflix Open Connect, available at openconnect.netflix.com
[93] Amazon Web Services Case Study: Netflix, available at https://aws.amazon.com/solutions/case-studies/netflix/
[94] Regulation in the converged media-internet-telecom value web, TNO Report R11428, October 2014, available at publications.tno.nl/publication/34611843/NhocfJ/TNO-2014-R11482.pdf

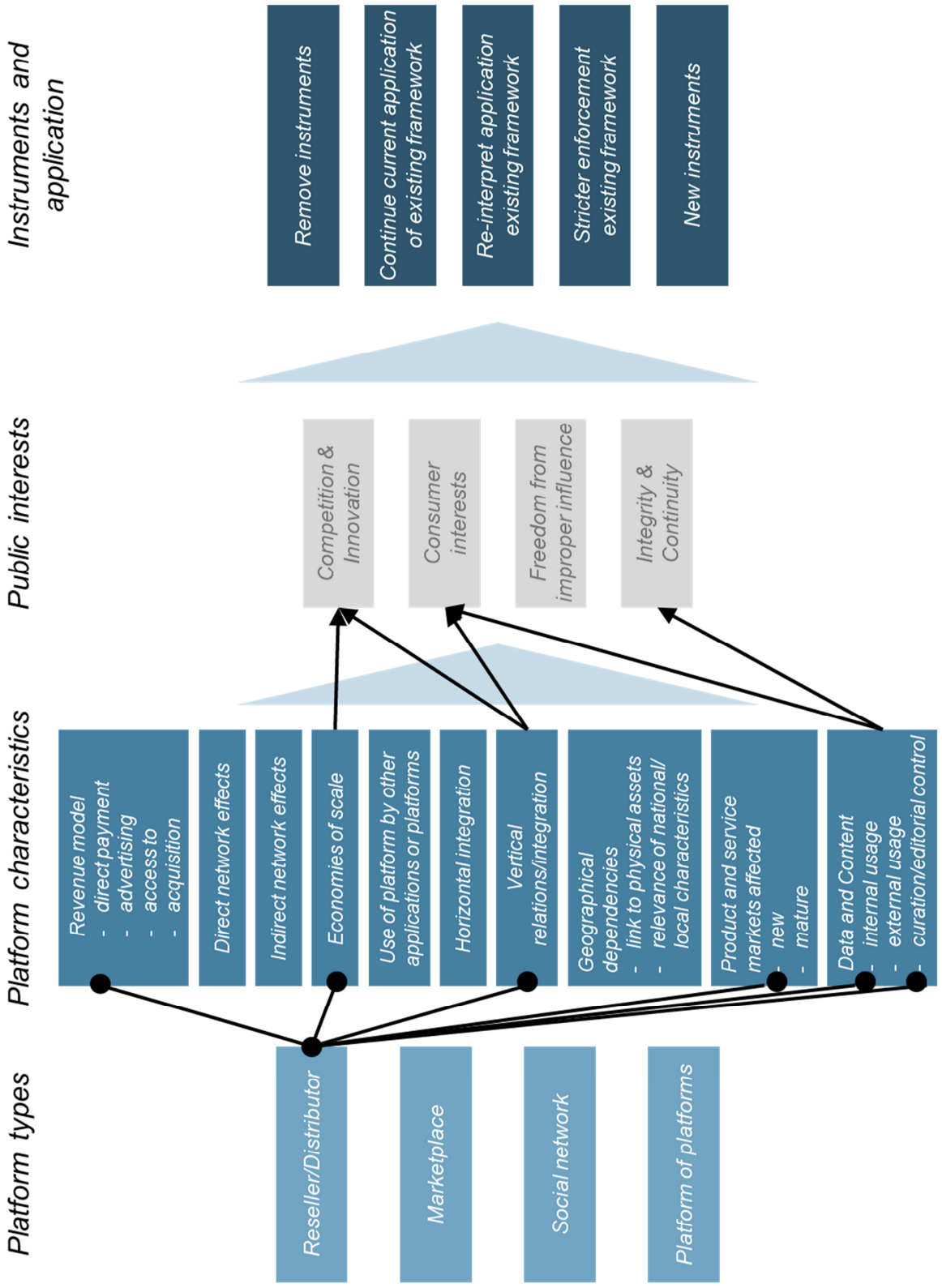

Figure 13. Overview of Netflix platform characteristics and their relation to public interests.

Evaluation of case study on Netflix

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Revenue model	Direct payment	Monthly subscription		
Direct network effects	Limited	• No direct interaction between customers • Individual customers benefit from better recommendations when other customers are added in their country as body of data on which recommendations are based grows		
Indirect network effects	None	There is no relation between the customers and the content providers from which Netflix acquires content.		
Economies of scale	Substantial	Its scale enables Netflix to • Develop and maintain the Netflix apps on 200+ devices Roll-out and maintain an own content delivery infrastructure and a high level recommendation system. • Negotiate multi-country packages with content providers, as Netflix has customer groups in multiple countries.	Competition & Innovation	Economies of scale make it harder for competitors to match Netflix' service and cost levels. At the same time, it enables Netflix to bring a new viewing proposition to many customers.
Use by other platforms or applications	None			

Evaluation of case study on Netflix (continued)

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Horizontal integration	None	Netflix is a pure VoD provider		
Vertical relations / integration	Substantial	• Netflix produces own original content as a complement to the content it acquires • Netflix maintains a substantial content delivery infrastructure	Competition Consumer interests	Similar to some of its competitors, Netflix has moved into content production to build a distinctive offering. The trend towards exclusive offerings means that consumers need multiple subscriptions to access the content they like (multi-homing). For delivery, Netflix combines its own infrastructure with capacity hired on third parties infrastructures (e.g. Amazon) that is also available to others.
Geographical dependencies	Substantial	• Netflix rolls out and promotes its offerings country-by-country • Audio-visual content offerings are dependent on language and local culture. • Content rights are acquired per country.		
Product and service markets affected	Audio-visual	Netflix is subject to the stipulations for non-linear services from the European Audio-visual Media Services (AVMS) Directive. Netflix competes with various other VoD providers, public service broadcasters and commercial broadcasters.		
Data and content	Internal editorial control	Netflix collects data on its customers' viewing and search behaviour to feed its recommendation system and to support its content acquisition policies. As the provider of the VoD service, Netflix decides on its content catalogue and provides personalised recommendations to end users.	Integrity & continuity Consumer interests	Through its recommendations based on individual customers' viewing behaviour, Netflix steers the content that its customers view. As Netflix restricts itself to providing entertainment, it will not recommend news or educational content to users. Viewers can use other services or apps for those content types (multi-homing).

D Case study on Bol.com

Summary of Bol.com's business and activities
Bol.com is an online retailer with a large market share in the Netherlands and Belgium. Other retailers can use the platform of Bol.com ('Bol Plaza'). This is an attractive proposition for retailers due to Bol.com's large user base. This is a similar service to what Amazon offers to retailers. Although users use the Bol.com website for orders, they transact with the retailers on the platform.

Platform characteristics and relation to public interests
Figure 14 depicts the Bol.com platform characteristics and to the relevant public interests. The individual entries in the figure are explained in the table on the following pages. We have classified Bol.com as a market place as we focus on the case study on Bol Plaza. However, the retailing activities are still the most substantial part of the business for Bol.com (c. 84% of revenues in 2014).[95]

General remark on the case studies
The goal of the case studies was not to evaluate or conclude on whether there is a need for more (or less) government intervention. Instead, the cases served to validate and refine the analytical framework, in particular how it captures the platform characteristics and public values. For this reason, the case descriptions in the annexes do not cover the instruments part of the framework and the impact of potential instruments on public values. For the same reason, the cases focus on the key characteristics of the platforms that have the strongest effects on public values. If the framework is applied to a case with the goal to analyse specific issues or questions, further detail is likely to be added to the figures and tables.

For each case, desk research and two or three interviews with the company involved and/or relevant stakeholders (competitors, consumer interest groups) have been used to build a view of the key platform characteristics and public values. The set of five cases has been selected to cover a wide variety of platform types and sectors, so that they can provide a broad base for validation. In the analyses, it is seen that the cases indeed touch upon many different characteristics and interests. At the same time, it is clear that five cases can never completely capture the richness of today's and tomorrow's digital platforms.

[95] Source: presentation Bol.com

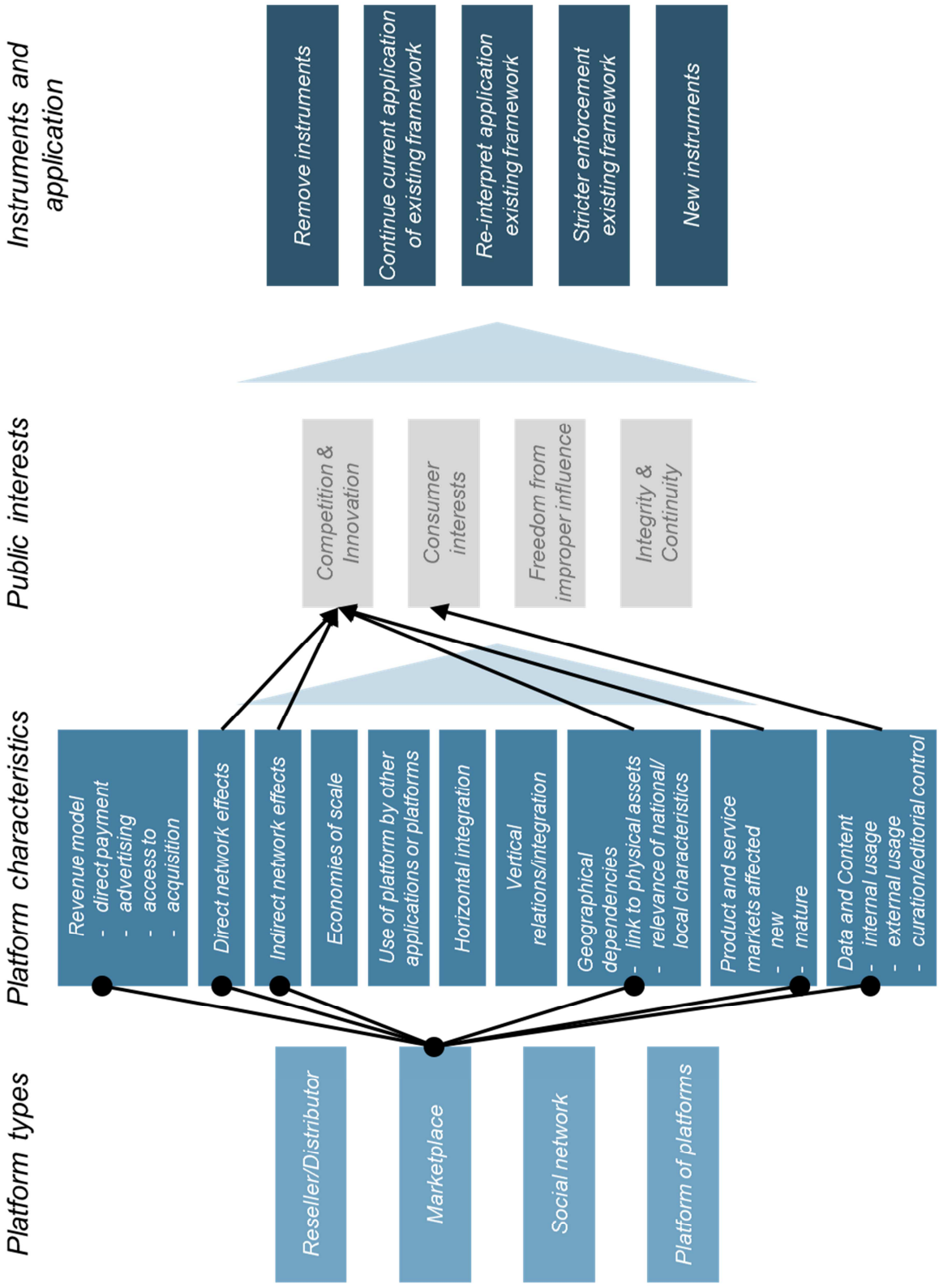

Figure 14. Overview of Bol.com platform characteristics and their relation to public interests.

Evaluation of case study on Bol.com

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Revenue model	Direct payment	Retailers pay a fee for each transaction.		
Direct network effects	Limited	If the number of users on the same side of the platform increases the quantity of user reviews increases.	Competition & Innovation	
Indirect network effects	Large	The value of Bol.com for users increases if the number of retailers on the platform increases and vice versa.	Competition & Innovation	Other retailers (and consumers) can benefit from the network effects generated by the platform (process innovation). For new entrants (platforms) in the market it will be more difficult to enter the market if the number of suppliers products on the platform increases.
Economies of scale	Moderate	There are substantial economies of scale to the logistical network of Bol.com.		
Use by other platforms or applications	None			

Evaluation of case study on Bol.com (continued)

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Horizontal integration	Moderate	Bol.com's activities are limited to retailing but in a wide variety of consumer products.		
Vertical relations / integration	Strong	Bol.com has its own fulfilment centre and distribution network. Bol.com is fully owned by Ahold, a Dutch retailer.	Competition & Innovation	Vertical integration may improve coordination within the value chain (process innovations). For new entrants (competing platforms) it is difficult to replicate the distribution network of Bol.com. This can limit competition on the market.
Geographical dependencies	Moderate	Although it is possible to order from Bol.com from any location, there are benefits of choosing a local retailer due to the distribution network.	Competition & Innovation	
Product and service markets affected	Retail market	The Bol.com platform affects all retailing markets on which it is active.	Competition & Innovation	
Data and content	Internal use	Bol.com uses the data generated by users internally.	Consumer interests	As with any market place privacy protection is an issue.

E Case study on Thuisafgehaald

Summary of Thuisafgehaald's business and activities
Thuisafgehaald is a Dutch sharing economy platform on which users can share meals. On the platform home cooks can offer meals or order meals from other users. Thuisafgehaald charges a fee for each transaction. Although the platform operates in a number of countries and languages, the main activities are in the Netherlands and Belgium. The platform acts from the social enterprise philosophy, a substantial part of the activities are funded by charities and municipalities, with the aim to increase social participation and exchange.

Platform characteristics and relation to public interests
Figure 15 depicts the Thuisafgehaald platform characteristics and to the relevant public interests. The individual entries in the figure are explained in the table on the following pages.

General remark on the case studies
The goal of the case studies was not to evaluate or conclude on whether there is a need for more (or less) government intervention. Instead, the cases served to validate and refine the analytical framework, in particular how it captures the platform characteristics and public values. For this reason, the case descriptions in the annexes do not cover the instruments part of the framework and the impact of potential instruments on public values. For the same reason, the cases focus on the key characteristics of the platforms that have the strongest effects on public values. If the framework is applied to a case with the goal to analyse specific issues or questions, further detail is likely to be added to the figures and tables.

For each case, desk research and two or three interviews with the company involved and/or relevant stakeholders (competitors, consumer interest groups) have been used to build a view of the key platform characteristics and public values. The set of five cases has been selected to cover a wide variety of platform types and sectors, so that they can provide a broad base for validation. In the analyses, it is seen that the cases indeed touch upon many different characteristics and interests. At the same time, it is clear that five cases can never completely capture the richness of today's and tomorrow's digital platforms.

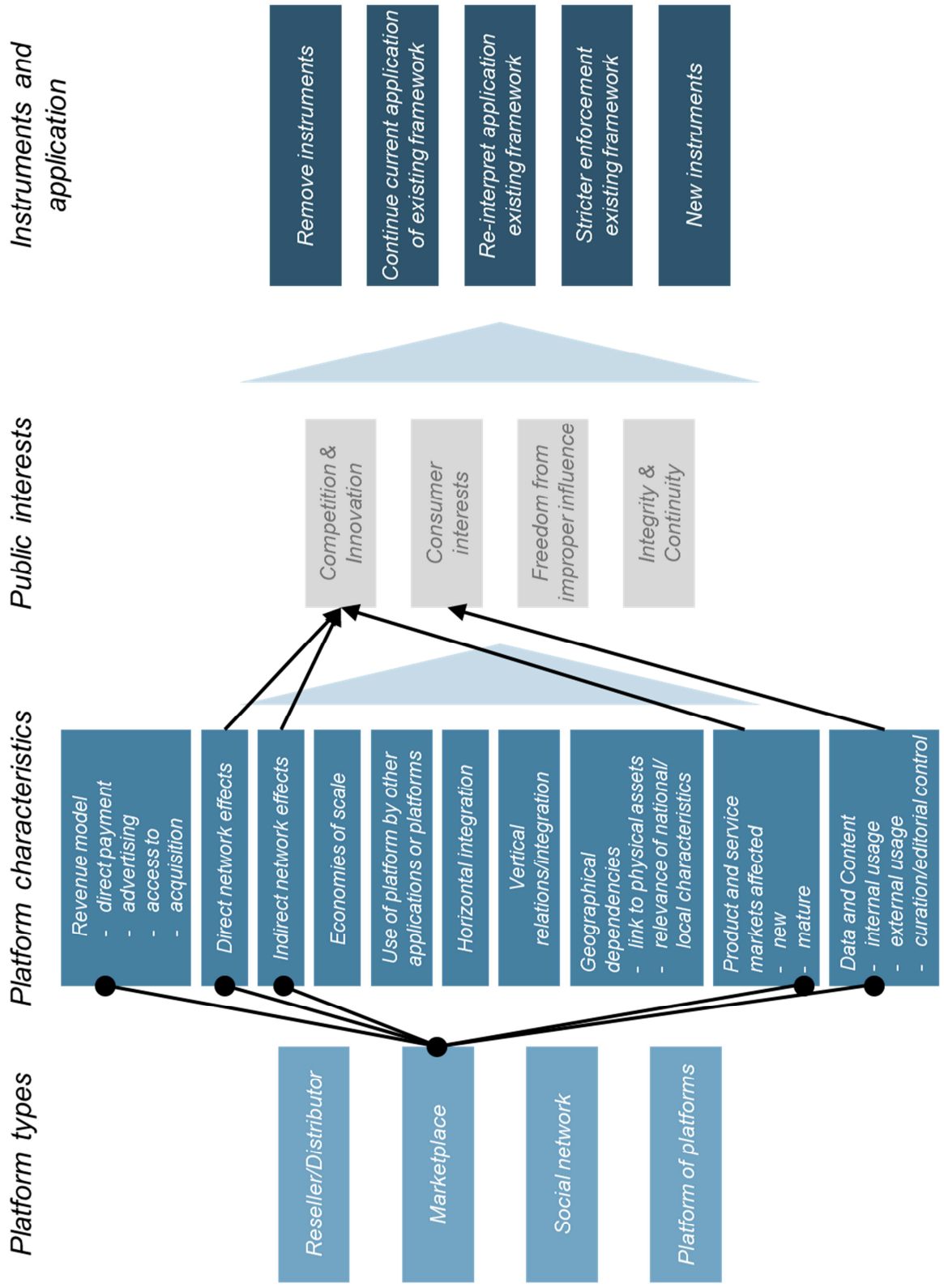

Figure 15. Overview of Thuisafgehaald platform characteristics and their relation to public interests

Evaluation of case study on Thuisafgehaald

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Revenue model	Direct payment, advertising	• Users pay a small fee for each transaction. • Advertising and campaigns. • Charities and municipalities fund the activities of Thuisafgehaald to use the platform as a tool for social participation.		
Direct network effects	Limited	If the number of users on the same side of the platform increases the quantity of user reviews increases.	Competition & Innovation	
Indirect network effects	Moderate	The value of Thuisafgehaald for users increases if the number of users that offer meals on the platform increases.	Competition & Innovation	If the user base of Thuisafgehaald increases it will be difficult to enter the market for competing platforms.
Economies of scale	Moderate	As with any digital platform, a substantial part of costs are upfront.		
Use by other platforms or applications	None			
Horizontal integration	None			
Vertical relations / integration	None			
Geographical dependencies	Moderate	Users of Thuisafgehaald are looking for meals nearby. This implies that the geographical market is limited to places where there are users who offer meals on the platform.	Competition & Innovation	

Evaluation of case on Thuisafgehaald (continued)

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Product and service markets affected	Existing (non-digital markets	Home cooks that offer meals on the platform are active in the market for prepared food.	Competition & Innovation	Thuisafgehaald increases the supply in the market for prepared food and lowers the cost for new entrants to enter that market (this effect is still small due to the limited size of the user base of the platform). As with other platforms in the sharing economy there is a concern that rules are not applied equally to all market players. • Existing players in the prepared food market face regulation regarding hygiene and food safety. If a user generates substantial income from the platform it has to comply with food safety regulations for businesses. The Netherlands Food and Consumer Product Safety Authority is the regulator in the market. • Users that offer meals on the platform do not pay corporate taxes if sales volumes are limited. Formally, if offering meals can be considered as business activities users do have to pay corporate taxes.
Data and content	Internal use	Thuisafgehaald uses the data generated by users internally.	Consumer interests	As with any market place privacy protection is a relevant issue.

F Case study on Facebook

Summary of Facebook's business and activities

With around 1.5 billion users[96], Facebook is the world's largest social network today. Facebook has integrated a number of related applications, such as video, messaging and photos in its main social networking app[97]. Facebook has made a number of substantial acquisitions, such as WhatsApp[98] and Oculus[99]. At the time of writing of this report, the WhatsApp messenger and the Oculus devices are offered separate from Facebook's main social networking applications. Facebook's primary revenue model is advertising: it offers targeted advertising based on the information it has available on its social network user.

Platform characteristics and relation to public interests

Figure 16 depicts the Facebook platform characteristics and their link to public interests. The individual entries in the figure are explained in the table on the following pages. Facebook best matches the Social Network platform type, although it also qualifies to some degree as a Platform of Platforms given the dependence of various other applications on Facebook.

General remark on the case studies

The goal of the case studies was not to evaluate or conclude on whether there is a need for more (or less) government intervention. Instead, the cases served to validate and refine the analytical framework, in particular how it captures the platform characteristics and public values. For this reason, the case descriptions in the annexes do not cover the instruments part of the framework and the impact of potential instruments on public values. For the same reason, the cases focus on the key characteristics of the platforms that have the strongest effects on public values. If the framework is applied to a case with the goal to analyse specific issues or questions, further detail is likely to be added to the figures and tables.

[96] Facebook had 1.49 billion monthly active users in June 2015. Data from newsroom.fb.com/company-info

[97] Facebook products, available at newsroom.fb.com/products/

[98] Facebook to Acquire WhatsApp, newsroom.fb.com/news/2014/02/Facebook-to-acquire-WhatsApp

[99] Facebook to Acquire Oculus, available at newsroom.fb.com/news/2014/03/Facebook-to-acquire-oculus/

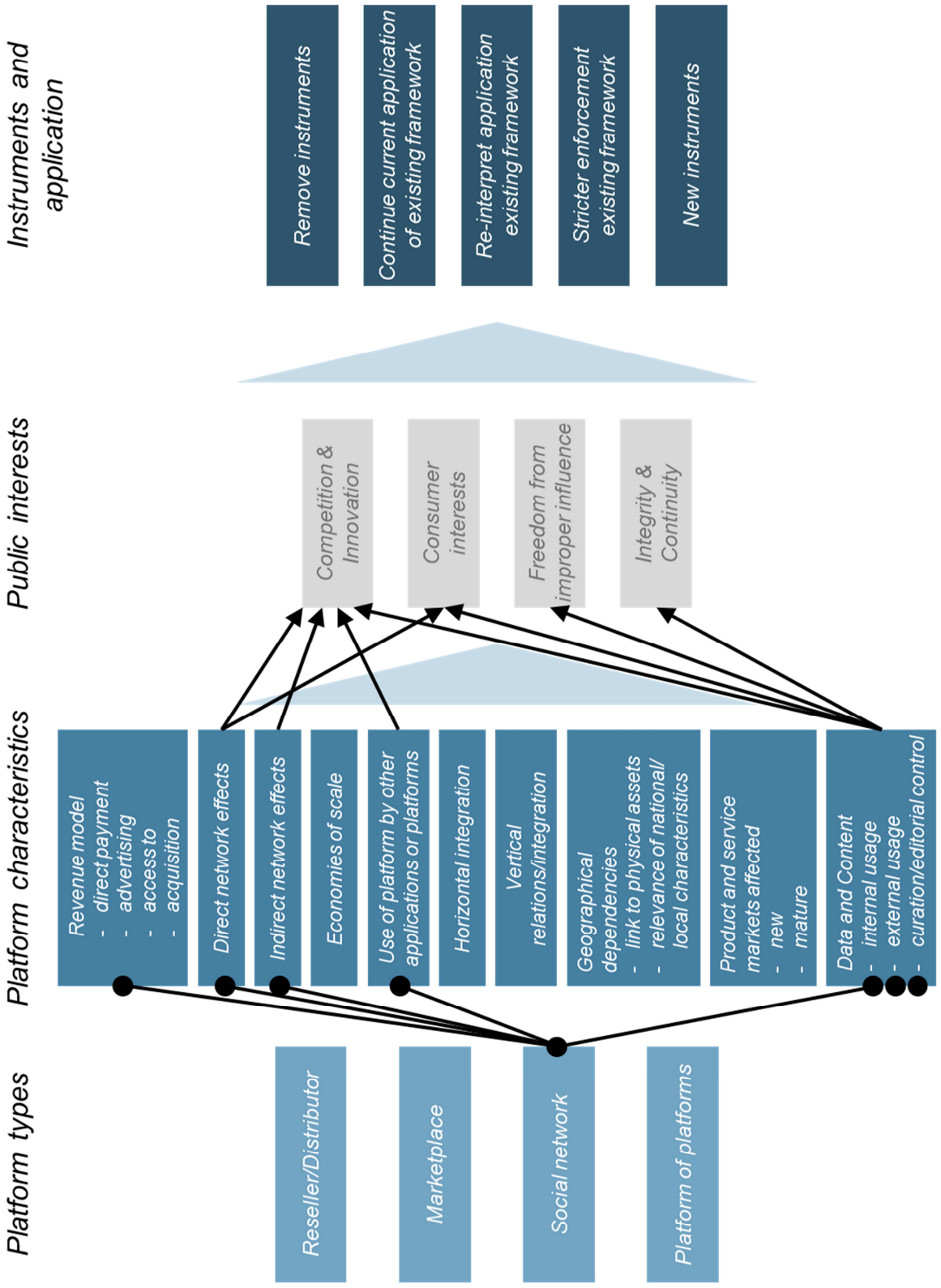

Figure 16. Overview of Facebook platform characteristics and their relation to public interests

Evaluation of case study on Facebook

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Revenue model	Advertising	Advertising accounts for 95% of Facebook revenues[100].		
Direct network effects	Strong	The value of Facebook for its users strongly depends on the number of other users and friends.	Competition & Innovation Consumer interests	The direct network effects introduce a substantial entry barrier for potential competing social networks. At the same time, the direct network effect brings the value and scale to the Facebook innovations. From the consumer perspective, the direct network created by a large group of Facebook friends make it hard to switch from Facebook to another social network. Multi-homing, i.e. using multiple social networks in parallel is common.
Indirect network effects	Strong	The value of Facebook for advertisers strongly depends on the number of users.	Competition & Innovation	The strong indirect network effect make it difficult for potential competitors to offer a targeted advertising offer that matches Facebook's. Also, for large companies and SMEs, Facebook cannot be missed as an interaction channel with their customers.
Economies of scale	Moderate	Its global brand and scale enables Facebook to attract mobile operators in many developing countries to the internet.org project		
Use by other platforms or applications	Moderate	• Facebook plays an important role in the distribution of many (casual) games. • Major other applications (e.g., Airbnb) use the Facebook login mechanism, typically as an alternative to their own mechanism. • Many websites use Facebook's Like button and comment fields	Competition & Innovation	For application providers that use Facebook's platform (such as the games section or the login mechanism), the platform is important because of the indirect network effect, but there are alternatives (such as app stores with a similar large end user base)

[100] Derived from data in Facebook Q2 2015 Earnings, available from investor.fb.com

Evaluation of case study on Facebook (continued)

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Horizontal integration	Moderate	The additional products that Facebook offers (such as Messenger, Video and Photos) stay close to the main social networking product.		
Vertical relations / integration	Moderate	• Facebook operates an extensive datacentre infrastructure that supports its service. • Facebook has moved towards devices (Facebook Home Android overlay, acquisition of Oculus).		
Geographical dependencies	Small	Facebook provides essentially the same service to its global customer base.		
Product and service markets affected	None			
Data and content	Internal use External use Curation/Editorial control	• Facebook uses the (partly personal) data and content provided by its users • Internally, for example in the news feed • Externally, in targeted advertising where advertisers can choose their audience by location, age, interests and more[101]. The underlying data stays within Facebook. • Facebook exercises editorial control according to its own community standards (Facebook community standards, available at www.facebook.com/communitystandards#)	Competition & Innovation Consumer interests Freedom from improper influence Integrity & continuity	Facebook's attraction for its users is its innovative use of data provided by themselves in ways that they find useful. This internal use of data occurs in parallel to its external use in targeted advertising, which strongly links to users' right to privacy and right to data protection and the integrity and security of (personal) data. Because of its large user base, Facebook is an important platform for sharing of news and opinions, which links Facebook's editorial control to freedom of expression.

[101] Easy and effective Facebook Adverts, www.facebook.com/business/products/ads

G Case study on Apple

Summary of Apple's business and activities
Apple Inc. designs, manufactures and markets mobile communication and media devices, personal computers and portable digital music players, and sells a variety of related software, services, peripherals, networking solutions and third-party digital content and applications. The company's products and services include iPhone, iPad, Mac, iPod, Apple TV, a portfolio of consumer and professional software applications, the iOS and OS X operating systems, iCloud and a variety of accessory, service and support offerings. The company offers a range of mobile communication and media devices, personal computing products and portable digital music players, as well as a variety of related software, services, peripherals, networking solutions and third-party hardware and software products. In addition, the company offers its own software products, including iOS, the company's mobile operating system; OS X, the company's Mac operating system; and server and application software.

Platform characteristics and relation to public interests
Figure 17 depicts the Apple platform characteristics and their link to public interests. The individual entries in the figure are explained in the table on the following pages. Based on its characteristics, Apple best matches the Platform of Platforms platform type.

General remark on the case studies
The goal of the case studies was not to evaluate or conclude on whether there is a need for more (or less) government intervention. Instead, the cases served to validate and refine the analytical framework, in particular how it captures the platform characteristics and public values. For this reason, the case descriptions in the annexes do not cover the instruments part of the framework and the impact of potential instruments on public values. For the same reason, the cases focus on the key characteristics of the platforms that have the strongest effects on public values. If the framework is applied to a case with the goal to analyse specific issues or questions, further detail is likely to be added to the figures and tables.

For each case, desk research and two or three interviews with the company involved and/or relevant stakeholders (competitors, consumer interest groups) have been used to build a view of the key platform characteristics and public values. The set of five cases has been selected to cover a wide variety of platform types and sectors, so that they can provide a broad base for validation. In the analyses, it is seen that the cases indeed touch upon many different characteristics and interests. At the same time, it is clear that five cases can never completely capture the richness of today's and tomorrow's digital platforms.

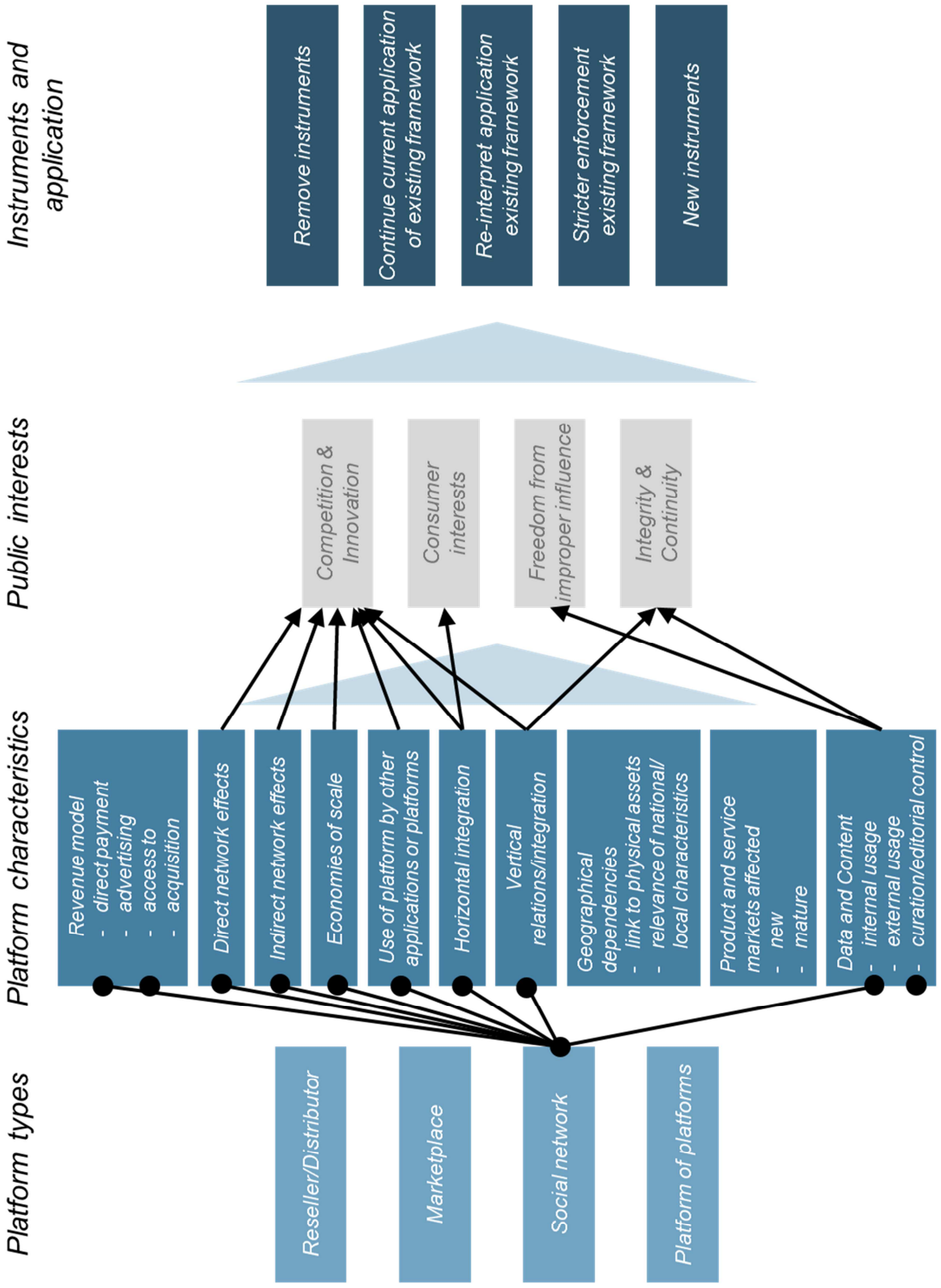

Figure 17. Overview of Apple platform characteristics and their relation to public interests

Evaluation of case study on Apple

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Revenue model	Direct Payment Access	Mainly a device and retail company. iPhone sales represented 56% of sales, while iTunes Store, Software and Services represented 10% of sales (in 2014). iTunes Store, App Store, iBooks Store, Mac App Store, Apple Music, iCloud, Apply Pay, Apple Music, Apple TV, iOS and OS X. Apple Developer Program (developer program: fee for app availability in App Store. No hosting frees, with Apple receiving 30% of sales revenue). [102]		
Direct network effects	Moderate	Direct interaction between iMessage and FaceTime users. Family and Home Sharing allows content to be shared with other accounts. User reviews and ratings in may affect popularity of apps.		
Indirect network effects	Strong	The value of services such as the App Store for users may increase with the number of apps available. Platform may also be more attractive to app developers given the number of users.		Through the app store, Apple has created a new market for app developers. Being a first mover gave and gives Apple a significant advantage here, due to large indirect network effects. Similar advantages were gained by Apple with iTunes music store, where Apple was also a first mover.
Economies of scale	Strong	Apples spends USD 6 billion on research and development (in 2014). The production of devices is also affected by economies of scale.	Competition and innovation	
Use by other platforms or applications	Strong	Third-parties create apps and content for the App Store, Mac App Store, Apple Music, iOS, OS X, and iBooks.	Competition and innovation	

[102] https://developer.apple.com/programs/

Evaluation of case study on Apple (continued)

Characteristic	Evaluation	Explanation	Impact on public interests	Explanation
Horizontal integration	Strong	Apple devices are designed to work best with Apple operating systems and apps (such as iMessage, FaceTime, and iCloud).	Competition and innovation. Consumer interests.	Competition issues may arise where companies engage in tying or bundling products. Integration across operating systems may create lock-in. But also innovation in in use experience, with smooth integration.
Vertical relations / integration	Strong	Apple operates its own retail stores, produces its own hardware, operating systems, and apps. Operates its own cloud infrastructure.	Integrity	Enables Apple to monitor tightly control integrity of data and services.
Geographical dependencies	Low	Apple provides essentially the same service to its global customer base. Copyright/geolocation seems not of great relevance		
Product and service markets affected	None			
Data and content	Internal use Curation/Editorial control	Apple has editorial control of the iTunes Store, App Store, iBooks Store, Mac App Store, and Apple Music. Apple has a Move to iOS app available on Google Play, allowing transfer of personal data from Android to iOS. Strong emphasis on controlled and secure environment	Freedom from improper influence Integrity & continuity	

H Illustration of return direction: impact of potential interventions on public interests and platforms

To illustrate the backward direction of the analytical framework, we consider a (fictitious) social network application driven by a direct payment (subscription) revenue model. The social networking platform exhibits strong direct network effects. We assume that the data that users provide to the social network is used only within the platform. For the purpose of this example, we analyse the impact of mandatory portability of personal data on the characteristics of this platform, and further on public interests. The mandatory portability of personal data is an instrument contained in the current proposal for the European General Data Protection Regulation. Figure 1 and the table on the next page show a compact analysis of the impact of this instrument on the fictitious platform.

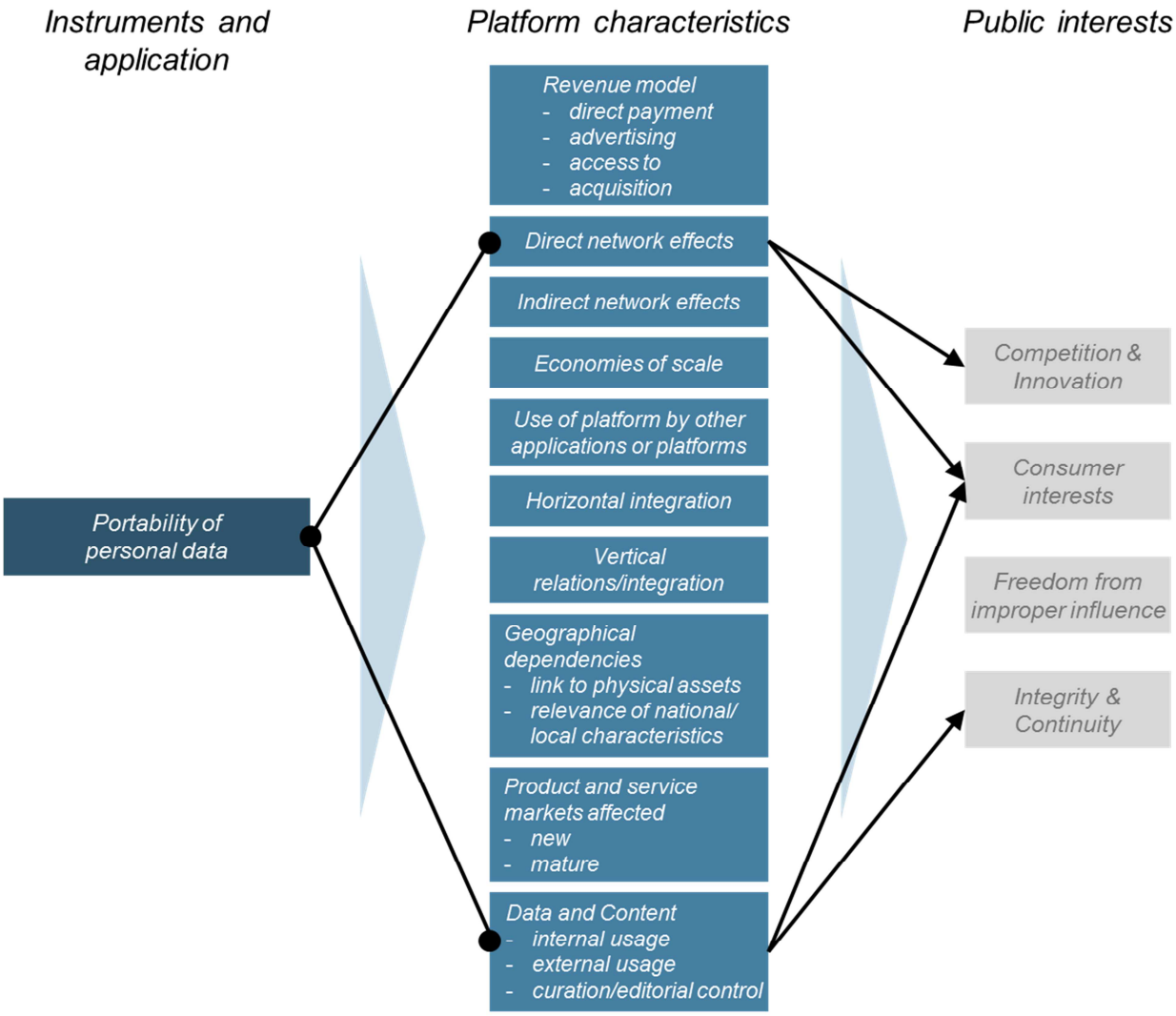

Figure 18. Overview of impact of portability instrument on (fictitious) social networking platform

Characteristics	Impact of portability on characteristics	Impact on public interests
Revenue model – direct payment		
Direct network effects	Portability does not affect the direct network effect itself, as it is still attractive to be part of a large social network. Portability does make the direct network effects more vulnerable as groups of users can easier move to another platform	**Consumer interests** – consumer gets more control over his personal data and the barrier to become an active member on another social network becomes smaller. This is an intended effect of the proposed portability. **Competition & Innovation** – portability decreases the entry barrier for new, competing social networks. It may shift the mode of competition from 'compete for the market' to 'compete in the market'.
Data and Content – internal usage	Portability affects platform's internal use of data. Portability can be seen as a new type of external use, not driven by platform owner, but by consumer.	**Competition & Innovation** – portability may make it less attractive to innovate in internal use of new data as these data need to be portable as well, giving away a potential head start. Innovations also bring a need for updates of export formats which requires work and coordination/standardisation between platforms. Platforms may react with 'lowest common denominator' approaches to defend their interests. **Consumer interests** – see above. **Integrity & Continuity** − data will cross company/platform domains, potentially introducing security vulnerabilities. It can also lead to inconsistencies in datasets that have been used in parallel in multiple social networks.