

Appendix M: examples of practices that could be addressed by SMS Conduct Requirements

Introduction

1. Chapter 8 of our final report explains the details of the proposed pro-competitive regime for digital markets in the UK. As part of this regime, the government is proposing to allow the Digital Markets Unit to set enforceable conduct requirements (referred to collectively in this document as the ‘SMS Conduct Requirements’)¹ which would apply to the activity (or activities) that lead to a firm being designated with Strategic Market Status (SMS).² The SMS Conduct Requirements are proposed to contain three high-level objectives – beneath each objective will sit several principles-based categories of conduct requirements that would be set out in legislation. Under the government’s latest proposals, the DMU would have the power to identify firm-specific conduct requirements within each ‘category’ that would apply for each firm that has been designated with SMS, supported by guidance on how they would operate in practice.
2. As part of our assessment of potential interventions set out in Chapter 8, we have considered how the SMS Conduct Requirements, in combination with the DMU’s new pro-competitive intervention powers, might be used to address the potential harms to competition and consumers identified in this study.
3. In this appendix we explore the potential application of the SMS Conduct Requirements in further detail in the context of mobile ecosystems. Under each of the three main objectives set out in the government’s proposals, which are ‘fair trading’, ‘open choices’ and ‘trust and transparency’, we outline below a number of examples of behaviours where the firm-specific individual conduct requirements would be well placed to address a number of the concerns we have found in this market study and make these markets work better.

¹ In previous publications on this topic, the CMA has referred collectively to such requirements as being contained within ‘codes of conduct’. Following the government’s decision in its response to its consultation to refer to ‘conduct requirements’ instead, we have adopted that terminology in this document, and use the term ‘SMS Conduct Requirements’ when referring to the requirements collectively.

² [A new pro-competition regime for digital markets -government response to consultation.](#)

4. This appendix has two main sections:
 - First, we summarise the structure of the SMS Conduct Requirements and set out the key relationships that would be governed by them.
 - Second, we discuss in more detail how some examples that we have identified in this study relating to the potential behaviour of Apple and Google could be investigated under such requirements, setting out how the DMU could approach such investigations and some of the factors the DMU would likely need to take into account in reaching its conclusions. We structure the discussion under each of the three objectives of the SMS Conduct Requirements: fair trading; open choices; and trust and transparency, although in practice some types of conduct may be considered as potentially acting against more than one objective.
5. The purpose of this appendix is to add further evidence for the use of conduct requirements as a complement to existing powers,³ and also to demonstrate how these requirements would be an effective way in addressing many of the concerns we have identified in these specific markets.

Enforceable conduct requirements

6. Under the government's proposals for the new pro-competition regime, all firms designated with SMS will be subject to firm-specific conduct requirements designed to address the ability to exploit market power, with common objectives across SMS activities of fair trading, open choices and trust and transparency.
7. In its May 2022 response to its consultation on a new pro-competition regime, the government proposed that firms designated with SMS would be required to follow legally enforceable conduct requirements, which would manage the effects of market power by setting out how firms with SMS are expected to behave. The requirements are intended to offer clarity to both users and firms designated with SMS, aiming to influence the latter's behaviour in advance to prevent negative outcomes before they occur.
8. The SMS Conduct Requirements would work as an effective complement to competition law, addressing concerns that require rapid intervention to avoid

³ Including various consumer protection law requirements which relate to a number of the areas which the proposed conduct requirements may cover, which are set out in Appendices A and K.

lasting competitive harm and, for the firms subject to the requirements, providing increased certainty over what represents acceptable behaviour when interacting with users and competitors.

9. Based on the assessment in this market study, we consider the SMS Conduct Requirements would be an effective means of implementing many of the interventions we have considered in relation to those digital activities – operating systems; app stores; and browsers and browser engines – in which Apple and Google in our view, based on evidence to date, would meet the proposed criteria for possible designation with SMS.⁴
10. Under the government’s proposals, the introduction of SMS Conduct Requirements in relation to each designated activity (or group of activities) would comprise of the following:
 - **Objectives:** would set out the overarching aims and scope of the SMS Conduct Requirements. The three objectives proposed by the government are:⁵
 - **Fair trading:** users are treated fairly and are able to trade on reasonable commercial terms with firms with SMS. This aims to prevent exploitative conduct.
 - **Open choices:** users face no barriers to choosing freely and easily between services provided by firms designated with SMS and other firms. This aims to prevent exclusionary conduct, for example, the entrenchment, protection or extension of market power.
 - **Trust and transparency:** users have clear and relevant information to understand what services firms designated with SMS are providing, and to make informed decisions about how they interact with the firm. This aims to promote informed and effective choices.
 - **Specific conduct requirements:** legally binding conduct requirements would be specified by the DMU and define the behaviour expected of firms designated with SMS to comply. The government is proposing to set out ‘categories of conduct requirements’ in legislation, with the DMU having the power to develop firm-specific conduct requirements within

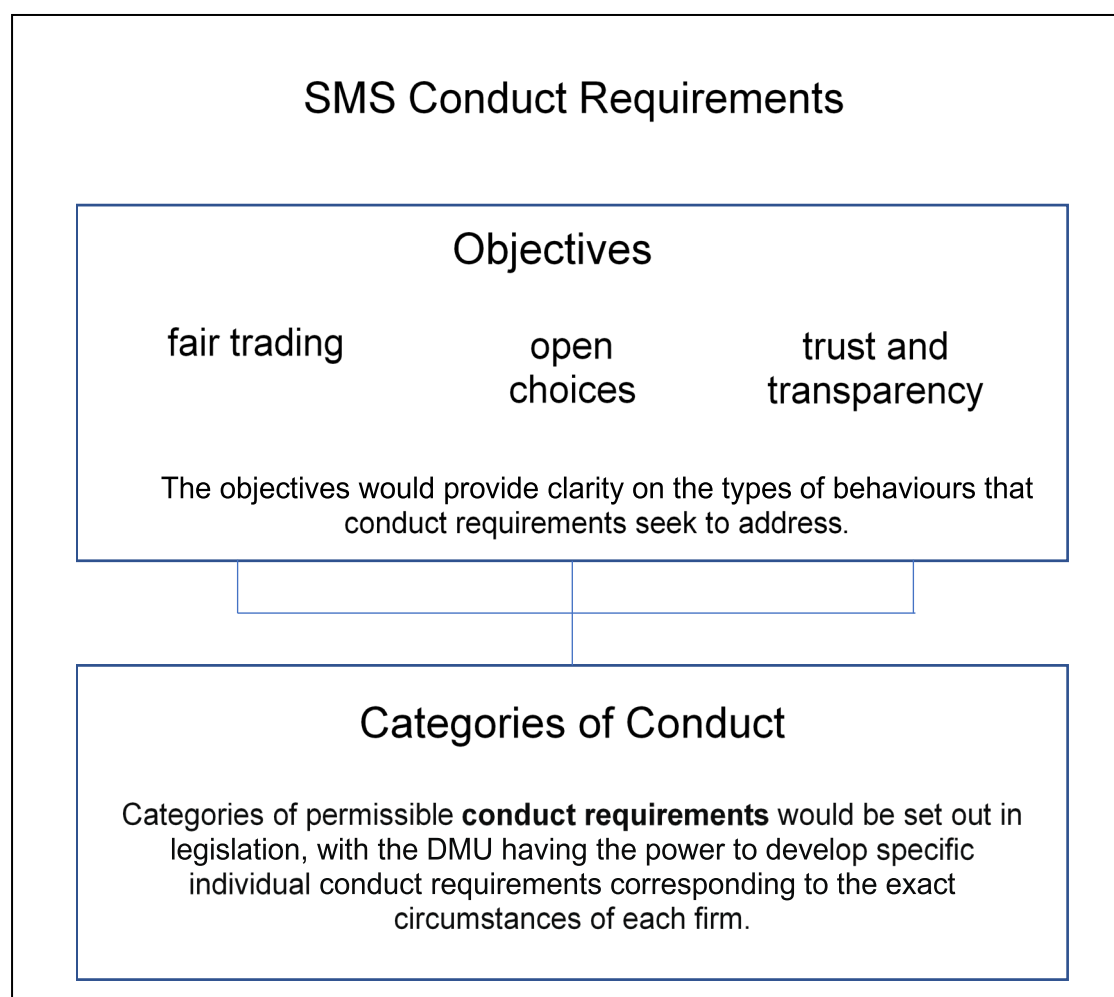
⁴ We have not at this stage made any assumption as to whether the different activities within the scope of this study would be considered together as a single activity, or as separate activities. This would be influenced by the specific drafting of any legislation and would be for the DMU to determine.

⁵ We note that in the government’s response to the consultation on [A new pro-competition regime for digital markets](#) the final wording of the objectives is yet to be finalised.

those categories, tailored to the specific circumstances of each firm and respective digital activity.

- **Guidance:** the DMU would have the ability to develop guidance specific to each of the firms with SMS and to outline its view on how the firm-specific conduct requirements apply to that firm. Where an SMS firm has different sets of requirements as a result of involvement in distinct digital activities, guidance could be established for each activity. The guidance could include specific instances of behaviour that may breach the requirements, in order to clarify what is expected of the firm designated with SMS. The guidance would be aimed at helping firms to comply with the legal requirements, but would not in itself be legally binding.

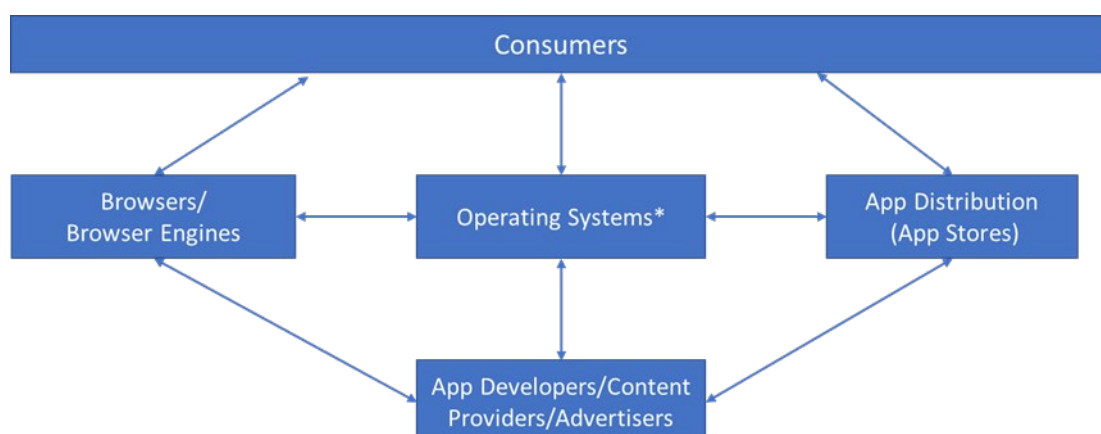
Figure M.1: structure of SMS Conduct Requirements



11. In the markets we have reviewed in this market study, conduct requirements could potentially be used to address concerns relating to a range of Apple's and Google's different relationships with the consumers and business users which interact with them, as gatekeepers of these key mobile ecosystems.

12. In Appendix L, we have explained our current view, which is that Apple and Google would meet the criteria for SMS currently suggested in the government's consultation for each of the following activities within their mobile ecosystems:
- mobile operating systems and, for Apple, the devices on which they are installed;
 - native app distribution; and
 - mobile browsers and browser engines.
13. Where Apple or Google were designated with SMS in relation to their respective mobile ecosystems, the resultant associated binding requirements would be used to address concerns relating to a range of different relationships between firms with SMS, consumers and business users, which include:
- relationships between operating systems and users that may make it more difficult for users to exercise choice;
 - native app developers' relationships with mobile ecosystems as a gateway for hosting content and accessing consumers via the mobile ecosystem, but which could also compete with the mobile ecosystems' own native apps and services;
 - web-based app developers' relationships with mobile ecosystems as a gateway for potentially hosting content and accessing consumers via the mobile ecosystem, but which could also compete with the mobile ecosystems' own native apps and services;
 - browser developers' relationships with the mobile operating system, which provide consumers with a gateway to access content, access consumers via the mobile ecosystem, and which could also compete with the mobile ecosystems' own browser services and app distribution channels;
 - relationships with manufacturers of mobile devices and suppliers of connected devices that rely on access to the mobile ecosystem; and
 - consumers' direct interactions with mobile ecosystems (eg using a browser or accessing an app).

Figure M.2: mobile ecosystem relationships



** plus relationships between operating systems and manufacturers of mobile devices or suppliers of other connected devices that rely on access to the mobile ecosystem*

14. In the following sections, we provide examples of areas where specific conduct requirements could be applied to the digital activities in this study. We have not sought to establish that Apple or Google would currently be breaching any such requirements if they were imposed. However, we consider that these are areas where there either appears to be legitimate concerns regarding current practices, or that either firm has the ability and incentive to behave in such a way that may not be consistent with the proposed objectives of the SMS Conduct Requirements.

Fair Trading

15. The first of the three objectives proposed by the government is fair trading. Fair trading relates to the ability of firms with a strong trading position to impose terms which are worse than those which would be observed in a competitive market, such as high prices or poor service quality.
16. The fair trading objective is intended to ensure users are treated fairly. In the context of mobile ecosystems, the conduct requirements associated with this objective could address concerns around the potential for Apple and Google to impose unreasonable terms on other actors in the mobile ecosystem, including on app developers, competitors and end customers.
17. Table M.1 outlines several types of conduct we have identified that could be applied under the objective of fair trading. Based on our findings, we have also identified examples of practices which could potentially be addressed under this objective, and in the section below we discuss how some of the

examples relating to native apps could be considered further as part of future conduct requirements.

Table M.1: concerns that could be addressed under the fair trading objective

Potential categories of conduct requirements	Examples of practices within each activity that could be addressed under the objective of 'fair trading' through firm-specific conduct requirements
To trade on fair and reasonable contractual terms	<p>App store: Concerns about Apple and Google potentially requiring access to commercially sensitive data relating to competition in app development, through operation of the app store and app review process (Chapter 6)</p> <p>App store: Concerns that Apple's MFi⁶ agreements undermine developers' IP rights (Chapter 6)</p> <p>App Store: Concerns that the app review processes may impose unfair terms on app developers (Chapter 6)</p>
Not to apply unduly discriminatory terms, conditions or policies to certain users or categories of users	<p>Operating system: Concerns that Apple and Google are unreasonably providing some developers with preferential access to interoperability relative to others, for example through providing competing browsers or native apps with unequal access to APIs. (Chapters 5 and 6)</p> <p>App Store: Concerns that Apple's contractual terms and conditions unreasonably restrict Cloud gaming (Chapter 6)</p>
Not to unreasonably restrict how users can use SMS firms' services	<p>App store: Concerns about restrictions on native app developers' choice of payment solutions provider (Chapter 6)</p> <p>Browsers: Concerns regarding the lack of WebKit browser engine functionality on iOS, which may potentially restrict competition in the market for app distribution by (eg push-notification browser engine functionality on iOS) (Chapter 5)</p> <p>App Store: Concerns that app developers have insufficient control over refunds and cancellations for purchases made using in-app purchasing systems, because Apple and Google make choices on their behalf through their control of customer relationships (Chapter 6)</p>

Practices that affect app developers

18. The majority of the examples listed above relate to the trading relationships between the SMS firms and third-party native app developers.
19. We identified several practices affecting native app developers that relate to requirements falling under the fair trading objective, including:

⁶ Apple's MFi Program covers third-party hardware accessories that use Apple's MFi licensed technology to connect electronically to Apple devices. These technologies include the Lightning connectors that are required for any accessory that needs to be 'plugged in' to an iPhone, but exclude Bluetooth connections. [Apple MFi Program FAQs](#).

- concerns that Apple’s MFi agreements undermine developers’ IP rights;
 - concerns that Apple and Google are unreasonably providing some developers with preferential access to interoperability relative to others, for example through providing competing native apps with unequal access to APIs;
 - concerns that Apple’s contractual terms and conditions unreasonably restrict cloud gaming;
 - concerns about restrictions on app developers’ choice of payment solutions provider;
 - concerns relating to Apple and Google potentially requiring access to commercially sensitive data relating to competition in app development, through operation of the app store and app review process; and
 - concerns that app developers have insufficient control over refunds and cancellations for purchases made using IAP, because Apple and Google make choices on their behalf through their control of customer relationships.
20. Some of these are discussed in more detail below to illustrate how these concerns could be addressed through firm-specific conduct requirements.

Access to commercially sensitive data obtained through app review process

21. By virtue of their positions in operating systems and app distribution, both Apple and Google have access to large volumes of commercially sensitive information on the businesses of the app developers who create apps for their respective ecosystems:
- Through the app review process, Apple and Google could gain early information on new app features before they are introduced. We have heard concerns that they may also be able to use the process to require developers to provide sensitive information.
 - Because certain app developers are required to use Apple’s and Google’s payment systems for in-app purchases, Apple and Google have access to transactional-level sales data in relation to such transactions.
 - Through their operation of app stores, Apple and Google also have access to data on downloads and usage of all apps. Some such information is made public, but more detail is available to Apple and Google, for example the amount of time users spend on individual apps.

22. The collection of some or all of this information may be necessary for Apple and Google to operate their app stores (and in Apple's case its MFi Program⁷) effectively. However, Apple's and Google's agreements with developers do not include any express restrictions on how Apple and Google may use the information they gather from developers. Therefore app developers have a legitimate concern that data could be used in a way which favours Apple's and Google's own competing apps and services (such as digital advertising).
23. These concerns could, for example, be addressed through a specific conduct requirement for **SMS firms operating app stores to restrict their use of data from customers and business users only to ways which are reasonably linked to the provision of the app store review process for which the data was obtained.** To the extent that this does not generally happen at present, this should be low cost for SMS firms to implement and provide confidence to app developers (and their investors) seeking to expand and compete with Apple and Google.
24. Several stakeholders suggested such obligations should apply not only to native apps, but to data from their respective mobile ecosystems more generally. This would need to be considered further on a case-by-case basis, as it may in some cases be necessary to share data to ensure performance across the mobile ecosystem. However, we agree generally that, if SMS firms are using data from SMS activities to give these firms an unfair advantage this could be a breach of the conduct requirements.
25. Apple and Google have each submitted that they already have internal measures in place which are intended to protect third-party data, and so may already be compliant with such a conduct requirement based on existing policies. However, given the breadth of ways that both app-specific and aggregated data could potentially be used to preference an SMS firm's own services, the DMU would need to assess whether these were sufficient, or whether additional policies and procedures may be required.

App review process: fair and non-discriminatory contractual terms and conditions

26. The app review process is an opportunity for Apple and Google to identify and address potential concerns with apps, such as user safety, inclusion of

⁷ Apple's MFi Program covers third-party hardware accessories that use Apple's MFi licensed technology to connect electronically to Apple devices. These technologies include the Lightning connectors that are required for any accessory that needs to be 'plugged in' to an iPhone, but exclude Bluetooth connections. As explained in Chapter 6, Apple's MFi Program gives Apple access to additional information on manufacturers who produce these accessories (who may also be app developers, offering apps that interoperate with their products). <https://mfi.apple.com/en/faqs.html> <https://mfi.apple.com/en/faqs.html>

potentially harmful content and reliable app functionality. However, as discussed in Chapter 6 we are concerned about a lack of transparency in both the app review guidelines and the review process itself.

27. Before developers can distribute their apps to consumers through Apple's App Store or Google's Play Store, they must submit the apps for app review. Each store has a set of rules that apps must comply with to be accepted, and every app or app update is reviewed for compliance with these rules before it can be distributed via the app store.
28. While both Apple and Google publish the rules for admission to their app stores, Apple in particular gives itself wide discretion to reject apps for new reasons not covered by the existing rules.
29. As discussed in Chapters 6 and 7, concerns have been raised about the opacity and inconsistency of Apple's app review process in particular, and to a lesser extent Google's. A lack of clear and transparent guidelines and review process could result in avoidable delays and frustration from the app review process, which could result in harm to consumers through worse consumer experience or delays in accessing new apps. It could potentially deter developers from developing new features, and harm innovation.
30. Although we are not at this stage assessing the validity of individual complaints as part of this market study, we consider that Apple and Google could do more to ensure that they contract with developers on fair and reasonable terms, and to ensure consistent application of their relevant app developer guidelines. This could be addressed by a specific conduct requirement for **Apple and Google to act in a fair and reasonable manner when designing and implementing the app review process, and to not apply unduly discriminatory terms, conditions or policies to users or categories of users.**
31. The purpose would be to reduce Apple's and Google's potential to preference their own apps – in turn providing greater confidence to app developers – for example by delaying or frustrating rivals' attempts at app updates, or through inconsistent application of app store rules between different apps. It would also prevent them from designing the guidelines in a way which discriminates in favour of business models which are aligned with their own interests, or otherwise preference their own mobile ecosystems. More broadly, this specific conduct requirement would require Apple, in particular, to allocate sufficient resources to the app review process to meet the reasonable requirements of app developers.

32. The implementation of this specific conduct requirement could include the development of supplementary guidance, to provide clarity over the actions which the DMU considers SMS firms would be expected to perform to meet this specific conduct requirement. Guidance could provide the DMU's assessment of the terms that should be clarified to meet the conduct requirement, including guidance on the way in which Apple and Google should:
- outline the processes followed in the app review process, in order to be able to demonstrate that it is compliant with the fair trading objective;
 - provide fair warning of any changes to the standards for app review process, where those changes may have a material effect on users, and transparency regarding how they may impact apps which have already been approved;
 - maintain well-defined processes for how problems identified by the app review process are communicated, including clarification of what remedies are required;
 - maintain an effective complaints handling or dispute resolution process, where the lack of such a process is a barrier to the effective implementation of the app review process;
 - ensure certain procedures and/or service metrics are set out explicitly in the review process, in order to provide appropriate transparency to users and confidence on comparable treatment; and
 - provide regular reporting on the app review process, including the effectiveness of dispute resolution processes.
33. These requirements could also be considered to be relevant to the trust and transparency objective. Under the SMS regime, the DMU would be able to consider imposing these requirements on Apple and Google in connection with the app store activity, and they could contribute to both the fair trading and trust and transparency objectives.

Open Choices

34. The second of the three objectives set out in the government's proposals is open choices. The objective of open choices is intended to require the SMS firm to allow users to choose freely between elements of the SMS firm's services and those offered by competitors. This objective is aimed primarily to address the potential for exclusionary behaviour on the part of the firm

with SMS, ie where a firm with SMS has the ability and incentive to reserve certain activities for itself, as a result of its market power in a designated activity. For mobile ecosystems, this may be through bundling activities together such as app distribution and payment systems.

35. Specific conduct requirements under the open choices objective could also address concerns around the potential for Google and Apple to use the sources of market power in SMS activities to unreasonably favour their own businesses in associated markets, such as their browsers, app stores and their own apps and services to users.
36. Finally, conduct requirements under this objective could address situations where greater interoperability across ecosystems may benefit users (for example, to enable them to transfer content between devices more easily).
37. Table M.2 outlines several types of conduct we have identified that could be applied under the objective of Open Choices. Based on our findings, we have also identified examples of practices which could potentially be addressed under this objective, and in the section below we discuss how some of the examples could be considered further under conduct requirements.

Table M.2: concerns that could be addressed under the open choices objective

Potential categories of conduct requirements	Examples of practices that could be addressed under the objective of 'open choices' through firm-specific conduct requirements
<p>Not to impose undue restrictions on competitors or on the ability of users to use competing services, including through bundling or tying the provision of products or services in markets where the SMS firm has market power with other services in a way which has an adverse effect on users</p>	<p>Operating systems: Restrictions on users' ability to transfer data and subscriptions when using the same apps on different operating systems, increasing costs for users and making it harder to switch between operating systems (Chapter 3)</p> <p>Operating systems: Concerns about restrictions in Google agreements which could potentially hold back forking (Chapter 3)</p> <p>App stores: Concerns that apps accessed outside of first-party app stores do not automatically update, with the user having to update the app manually (Chapters 4)</p> <p>App stores: Concerns that Apple's and Google's payment systems are bundled with their app store services (Chapter 6)</p> <p>App Stores and Browsers: Concerns relating to pre-installation of own browsers and of own native apps (Chapter 5 and 6)</p> <p>App Stores: Concerns that Apple is restricting the ability of third-party mobile wallet providers to offer contactless payments (Chapter 6)</p>
<p>Not to influence competitive processes or outcomes in a way that unduly self-</p>	<p>Operating systems and app stores: Concerns that the licensing of key apps and APIs is conditional on the pre-installation and prominent display of an app store (Chapter 4)</p>

<p>preferences a firm's own services over those of rivals</p>	<p>App stores: Concerns that ranking in the app store is determined in a manner that favours the app store provider's own apps (Chapter 6)</p> <p>App stores: Concerns that Apple/Google's own apps do not face the same delays from app review process as third-party apps (Chapter 6)</p> <p>App stores: Concerns about the imposition of IAP commission structures and anti-steering restrictions on downstream rivals, which creates additional costs for rivals and can unduly preference first-party apps (Chapter 6)</p> <p>Browsers: Concerns that certain mobile browser functionality within the mobile ecosystem defaults to Apple/Google's own browsers even when user has selected alternative browser as default (eg Google widget). (Chapter 5)</p> <p>Operating systems: Concerns about inferior access to attribution and monitoring APIs for native app developers using third-party advertising services as compared to those using Apple's advertising services (Chapter 6)</p> <p>Operating systems and app distribution: Concerns that the process associated with sideloading of apps, which often involves multiple steps and warning signs, may deter users through its complexity and design (Chapter 4)</p> <p>Operating systems and App stores: Concerns that Apple may not be applying the same privacy standards to itself as to third parties, insofar as its ATT policy makes a distinction between first-party and third-party data sharing which gives Apple licence to use a wide range of data that it treats as 'first-party', potentially coming from a range of Apple's different apps and services as well as from user activity within third-party apps. (Chapter 6)</p>
<p>Not to unreasonably restrict interoperability with third-party technologies where this would have an adverse effect on users</p>	<p>Browsers and app distribution: Concerns that Apple restricts access to alternatives to Apple's Webkit browser engine on iOS, and this adversely impacting consumers for web apps (Chapter 5)</p> <p>Browsers and app distribution: Concerns that Apple restricts access to certain important functionality on the Webkit browser engine on iOS which would allow third parties to develop more effective web apps, and this adversely impacting consumers (Chapter 5)</p>
<p>Not to unreasonably withhold, withdraw, or deprecate APIs or hardware in a way which has an adverse effect on users</p>	<p>Operating system and browsers: Concerns that Apple and Google may be unreasonably withholding APIs from third-party developers which are available to own native apps and own browsers (Chapters 5 and 6)</p>
<p>Not to make changes to non-designated activities that further entrench the firm's position in its designated activity/activities unless the change can be shown to benefit users</p>	<p>Operating systems and Browsers: Concerns regarding Google's use of ancillary services such as gmail to prompt users of third-party browsers on Android devices to switch default browser to Chrome (Chapter 5)</p> <p>Operating systems: Lack of ongoing interoperability between Apple's other devices, including connected devices, and Android devices (Chapter 3)</p>

Practices that affect user switching between mobile ecosystems

38. We identified two main practices affecting user switching that relate to open choices principles in the course of our study:
- restrictions on users' ability to transfer apps and data across mobile operating systems when switching devices; and
 - lack of interoperability between Apple's connected devices and equivalent features on the Android operating system.
39. Each of these practices could potentially be addressed by conduct requirements requiring Apple:
- not to unreasonably restrict interoperability with third-party technologies where this would have an adverse effect on users; or
 - not to unreasonably withhold, withdraw, or deprecate APIs or hardware in a way which has an adverse effect on users.
40. The first of these practices is discussed in more detail below to illustrate how it could be addressed through conduct requirements.

Transferring data, apps and app content across devices

41. As described in Chapter 3 and Chapter 8, evidence on the switching process suggests that there are some limitations in the tools available to transfer data and apps across ecosystems, which may create barriers to switching for some users. Google told us that it already makes necessary features and functionalities available to aid user switching and supports remedies aimed at reducing barriers to switching from iOS to Android. Apple told us that transferring data and apps across ecosystems is already possible and easy, both from Android to iOS and vice versa.
42. We reviewed the data and app transfer functionalities currently made available to iOS users by Android device manufacturers, such as Samsung and Google, and we found that some technology, such as cable options,⁸ allows for a relatively comprehensive data and apps transfer post-switching. However, there remain some limitations in this data transfer technology, particularly for wireless and cloud-based transferring of data, which may create barriers for some users against switching.

⁸ See Appendix D for further evidence on barriers to switching mobile operating systems.

43. In our view, the asymmetries of technology being made available to facilitate the transfer between Android and iOS ecosystems suggest that this concern could be suited for the conduct requirements, requiring Apple not to unreasonably restrict interoperability with third-party technologies where this would have an adverse effect on users. For example, there could be a specific conduct requirement that **mobile operating systems should not unreasonably restrict rivals' access to technology to facilitate users transferring their data and apps across devices.**
44. The purpose of this requirement would be to address concerns raised by users that it may be difficult or impossible to transfer data and apps to a new device, which deters them from switching operating systems. Given the importance of this functionality to users, we consider that there is a good case that Apple should be subject to a requirement to provide necessary APIs to enable iOS users to migrate their apps and data to Android devices more easily. The assessment by the DMU of whether this requirement would in practice require Apple to provide additional APIs over and above those which are currently available, would need to assess the additional implementation costs and any technical constraints associated with those additional APIs.

Practices that affect competition in app distribution – sideloading

45. We have identified a number of practices affecting native app developers seeking to use sideloading as an alternative to the Play Store where Google's terms may be contrary to the open choices objective. Whilst the considerations set out below are focused on Android, the same principles would apply to iOS if third-party app stores and sideloading were permitted, either following intervention or voluntarily by Apple through changes to iOS.
46. In particular, several concerns have been raised with regards to the steps that users have to go through when attempting to sideload native apps on Android devices, which currently involves multiple steps and warning signs which may deter users from using alternative app distribution models. Many app developers that we engaged with on this subject told us that they did not make their apps available through sideloading due to the protracted process that users would have to go through.
47. In our view, if developers are able to demonstrate, through a certification or other app security verification process, that their apps meet requisite security standards, Android's existing warnings would go beyond what would be considered reasonable. We consider that this concern could be addressed by a specific conduct requirement that SMS firms must **not deter users from accessing alternative app distribution models in a way that**

unduly self-preferences the firm's own services, in particular through imposing unreasonable additional costs on users.

48. This intervention could require Google to adapt its approach to address the concerns about self-preferencing in the current process where consumers are required to take a number of additional steps to directly download apps, regardless of the security credentials of those apps. For example, Google could introduce a mechanism to give app developers the opportunity to verify that the developer and their apps' security credentials are valid, as described further in Appendix N.
49. One potential response to this conduct requirement could be to amend the choice architecture to make it easier for users to make effective choice between the default app store and alternative app distribution models. Changes to choice architecture may be a low-cost way to address concerns about self-preferencing. However, they are likely to require testing and trialling of the user journey to assess whether the proposed alternative allows effective decision-making and does not continue to influence user choice in favour of the SMS firm. Whilst these measures could introduce some additional costs to Google and Apple, the DMU would be able to balance these against the potential benefits from these measures, in assessing whether there would be a breach of the conduct requirements and the effectiveness of proposed changes.

Trust and Transparency

50. The third objective set out in the proposed SMS Conduct Requirements is trust and transparency. Digital markets are characterised by extensive use of data, and also by complex and often opaque processes for delivering services, including algorithms, auctions, and the delivery by digital firms of services to consumers on behalf of suppliers. A number of digital markets are characterised by an asymmetry of information, with limited evidence provided to users on how algorithms work, and the processes followed by digital firms in implementing terms and conditions are far from transparent. These all result in a gap in the information naturally available to both suppliers and consumers about the services provided in digital markets, in a way which does not arise as frequently in many traditional markets.
51. A related concern associated with digital markets is the difficulty in ensuring that consumers are able to make informed and effective decisions. Users may otherwise be influenced by choice architecture and default settings into making choices that may not be in their best interests, and may also lack sufficient information to make effective choices, undermining the effectiveness of competition. Although information to inform decision-making

may be available in theory, it is often very difficult for users to access and act on that information in practice. All of these factors can reduce trust in the market.

52. The trust and transparency objective is designed to ensure SMS firms provide clear and transparent information to users, including both consumers and businesses which transact with the SMS firm, so that they sufficiently understand how the SMS firm operates and are able to make informed decisions.

Table M.3: concerns that could be addressed under the trust and transparency objective

Potential categories of conduct requirements	Examples of practices that could be addressed under the objective of ‘trust and transparency’ through firm-specific conduct requirements
To provide clear, relevant, accurate and accessible information to users	<p>App stores: Concerns that app store guidelines and feedback provided during app review processes are not sufficiently clear and transparent, potentially leading to unnecessary delay in approval of new apps or app updates, and that the current app review appeal processes are inadequate (Chapter 6)</p> <p>App stores: Concerns that third-party native app developers receive insufficient information about search ranking algorithms and editorial features on Apple’s and Google’s app stores (Chapter 6)</p> <p>App Stores: concerns some information is being presented to consumers in a way that could confuse them and cause them to purchase subscriptions they do not want or expect and that they are not provided with a sufficiently a clear and accessible refund and cancellation policy (Chapter 6)</p>
To ensure that choices and defaults are presented in a way that facilitates informed and effective customer choice and ensures that users can take decisions in their own best interests	<p>Browsers: Concerns that the complexity of the user journey to change the default browser deters users from switching defaults (Chapter 5)</p> <p>Browsers and app stores: Concerns regarding choice architecture within Apple’s and Google’s respective ecosystems potentially being used to influence consumer behaviour in a way that preferences Apple/Google. This includes through privacy choice architecture employed in relation to native apps (ATT) (Chapters 5 and 6)</p>
To give fair warning of and explain changes that are likely to have a material impact on business users	<p>App stores: Concerns that Apple does not provide sufficient notice or explanation about the implementation of changes that have a material effect on the ability of certain app developers to gain revenue for their businesses, including ATT (Chapter 6)</p> <p>App stores: Concerns that third-party native app developers receive insufficient information about material changes to algorithms that can have an adverse effect on their business (Chapter 6)</p>

53. Table M.3 outlines several types of conduct requirement we have identified that could be applied under the objective of trust and transparency. Based on our findings, we have also identified examples of practices which could potentially be addressed under this objective, and in the section below we

discuss how some of the examples relating to native apps could be considered further in the context of future specific conduct requirements.

Practices that affect native app developers

54. We discussed under the fair trading objective concerns that app store guidelines and feedback provided during app review processes are not sufficiently clear and transparent. The specific conduct requirements discussed under fair trading, in relation to these concerns, could also be consistent with the trust and transparency objective.
55. In this section we consider one further practice in respect of the operation of app stores which is relevant to the trust and transparency objective:
- concerns that third-party native app developers receive insufficient information about search ranking algorithms and editorial features on Apple and Google's app stores, including changes to algorithms.

Improved app store algorithm transparency

56. Apple's and Google's app store discovery processes are driven by complex and opaque algorithms. Given the importance of app store discovery, the ways in which these algorithms work and the changes that are made to them can have significant consequences for the native apps which compete in Apple's and Google's mobile ecosystems.
57. Many developers (both small independent apps and well-established developers) have expressed concern about the opacity of Apple's and Google's approach to app store discovery. These developers expressed concerns about risk to their discoverability and business models from unexpected changes to Apple's and Google's algorithms. These changes can have a material impact on the flows of user traffic downloading different apps and so are important commercially to the many businesses that rely on this traffic.
58. Those that have expressed concerns are broadly of the view that they do not get sufficient transparency about the operation of the algorithms to optimise their own business operations. A number have suggested that Apple and Google should be under obligation to provide greater transparency and more notice of potential changes. While we have not at this stage sought to test the validity of each specific concern identified by developers, we agree with the broad argument that this form of lack of transparency can cause harm to developers and to competition more broadly, and that app store operators

should take reasonable steps to provide transparency. We have identified two specific conduct requirements that could address these concerns.

59. The first is for **Apple and Google to be obliged to provide greater visibility over the operation of search and ranking algorithms to developers**, under requirements for SMS firms to provide clear, relevant, accurate and accessible information to users. We recognise that there are constraints to the degree of transparency that can be provided to market participants about how these algorithms work. In particular, some degree of opacity may be appropriate to ensure that they cannot be gamed by market participants and made less effective. However, given their importance to the functioning of competition in the native app market which relies on discoverability through app stores, we believe some additional transparency is warranted. This could be achieved through publishing greater information about the algorithms. A similar proposal was made in the Online Platforms and Digital Advertising market study relating to algorithm transparency relating to search, social media, and digital advertising.
60. The second type of conduct requirement would be for SMS firms to give fair warning about changes to the operation of algorithms where these are likely to have a material effect on users, and to explain the basis of these changes. Sufficient advance notice and disclosure of some of the results from testing the impact of prospective changes on user behaviour, may allow business users to prepare and respond to the changes more quickly, minimising temporary disruption that sudden unexplained changes might otherwise cause. Again, this was previously considered in the Online Platforms and Digital Advertising market study.
61. Both of these types of conduct requirements are also considered further in the CMA's recently published advice on application of the code of conduct to Platforms and Publishers. In our view, for certain app developers that have a particular reliance on app discovery, similar concerns are likely to arise. In making any assessment of whether additional transparency was required, there would be further consideration of the potential justifications for limiting transparency, discussed above, including implementation costs.

Responding to future changes

62. As discussed above, the SMS Conduct Requirements are intended to offer clarity both to users and firms designated with SMS, aiming to influence the latter's behaviour in advance to prevent negative outcomes before they occur.

63. The sets of requirements would work as an effective complement to competition law, addressing concerns that require rapid intervention to avoid lasting competitive harm and, for the firms subject to the requirements, providing increased certainty over what represents acceptable behaviour when interacting with users and competitors.

Box M.1: eSIMs

We have heard concerns from some mobile network operators (MNOs) that Apple and Google could leverage their market power in mobile ecosystems to enter into the distribution of mobile connectivity in the UK.⁹ This entry may be facilitated by an increased availability and take-up of eSIM-enabled devices in the future.

With eSIMs, the SIM is embedded into a mobile device and is not tied to one specific provider. In principle, this could make it easier for customers to switch provider and to use more than one mobile provider on the same device. eSIMs allow customers to set up a new mobile provider directly on their device, and to have more than one profile on their device at a time (multi-homing), thereby enabling users (or an algorithm) to switch between mobile providers and obtain the service they require. The take-up of eSIM-enabled devices is likely to increase over time as users upgrade their mobile devices. The rollout of eSIMs could also enable Apple and Google to embed the ability to switch mobile provider into their mobile operating systems. Just as, today, users access third-party software and load it onto their device via the Apple and Google app stores, mobile operating systems could become platforms for choosing and purchasing mobile connectivity services.

As set out by Ofcom in a discussion paper on its future approach to mobile,¹⁰ two broad competition concerns could arise in such a scenario. These could potentially be addressed through specific conduct requirements that we envisage applying to SMS providers of mobile operating systems.

Fair trading concerns

Apple and Google could leverage their positions in mobile ecosystems to weaken competitive constraints in the distribution of retail mobile connectivity, such that they could charge elevated commissions, or extract rents from mobile operators in exchange for prominence on a choice screen. These costs would ultimately be borne – at least in part – by consumers.

Open Choices concerns

Apple and Google could choose to enter into the market for the supply of connectivity as a mobile virtual network operator (MVNO) and present their own connectivity service on the choice screen. This could provide them with incentives to self-preference their own services, which could harm competition and consumers in the long run.

We will continue to work with Ofcom who are carrying out further work and thinking in this area in advance of publishing their conclusions at the end of 2022.

⁹ [BT Response to Interim Report](#); [Vodafone UK response to Interim Report](#)

¹⁰ [Ofcom's future approach to mobile markets: a discussion paper](#).

64. While categories of permissible conduct requirements would be set out in legislation, the DMU would have the power to develop specific conduct requirements corresponding to the exact circumstances of each firm, to ensure the DMU can respond to changes in the market and associated harms, as they evolve.
65. Based on our study we consider the SMS Conduct Requirements could provide an effective tool for enabling the DMU to rapidly respond to changes in the market and associated harms as they evolve, as well as concerns identified in our study relating to existing conduct. Box M.1 provides an illustrative example of how this might be applied, based on the emerging mobile device technology of eSIMs.