Which?
2 Marylebone Road
London NW1 4DF
020 7770 7000
which.co.uk

Competition and Markets Authority
25 Cabot Square
London
E14 4QZ

Consultation Response

Which? response to the CMA's proposed conduct requirement to open up access to NFC technology on iOS devices

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Summary

We support the CMA taking action to open up competition and innovation in NFC enabled products and services on iOS devices. Apple's restrictions on NFC access are anti-competitive and hold back growth and innovation that can benefit consumers. The biggest use of NFC today is for contactless payments, and our research has shown that mobile digital wallets are used by a majority of UK consumers. Many consumers use their phones regularly to make payments, and lots of them rely exclusively on their digital wallets when out and about in place of physical payment methods. Opening up competition for digital wallet services should result in innovative services that benefit consumers. Our research estimates that the potential value of four innovative digital wallet features (automatic loyalty points, receipt storage, ID storage and flexible card functionality) is substantial, with estimates varying between c.£120m and £560m per year.[1] Even at the lower estimate, this indicates that increased competition could lead to significant economic benefits in the UK.

We broadly support the non-pricing terms in the CMA's proposed conduct requirement, including that access be provided with limited exceptions across both available technologies: Host-based Card Emulation (HCE) and a Secure Element (SE). Providing flexibility to third-parties across these NFC technologies is necessary to realise the full extent of the potential benefits of NFC service innovation.

However, we do not support the CMA's proposed approach of allowing Apple to provide access to NFC for a fee that it is left to determine based on high level principles. Our preference is for NFC access to be provided free of charge, as is the preference of the vast majority of stakeholders and as is the case in Europe. NFC technology is a global technology that is not owned by Apple. The CMA's use of principles provides Apple too much

[1] Which? (2026), Unlocking the Benefits of Digital Wallets. Available from: https://www.which.co.uk/policy-and-insight/article/unlocking-the-benefits-of-digital-wallets-a6HFq0a1sQSi

discretion to justify a fee based on the value it thinks it provides to developers. We do not think that Apple can fairly assess this value, adjusting for its substantial and entrenched market power, and are concerned that the proposed approach will result in Apple overcharging for NFC access and constraining the potential benefits.

Aims and benefits of the NFC Access CR

We support the aim of the NFC Access CR to unlock competition and innovation in NFC enabled products and services and create conditions for the development of new NFC use cases. We are encouraged that the CMA recognises in the aims of the CR the need for competition to be facilitated immediately to ensure the benefits of this intervention can be realised as soon as possible. These aims will only be met in full if Apple is required to give full, flexible and effective access to the NFC chip on iOS under fair commercial terms.

The most common use of NFC technology on mobile devices today is for payments, made through a digital wallet app. Our research has shown that digital wallets are widely used in the UK, in particular for the ease with which they allow consumers to make payments. We have found that digital wallets are more popular among younger consumers, but that there remains a sizable number of active users across all age groups, and that they are used frequently and often relied upon for payments instead of physical payment methods when consumers are out and about.[2]

There are considerable benefits to using digital wallets, primarily from the ease-of-use and efficient payment experience which makes for fast, seamless payment processes and safe, convenient storage of tickets and cards in place of physical alternatives. Security protocols and biometric authentication also make digital wallet payments a safe way to pay and protect consumers from security risks, and in some instances provide greater protection than traditional online payment methods, given card details are hidden from merchants during a transaction.

Anti-competitive restrictions on NFC access prevent consumers from choosing a wallet that suits their preferences - be that around brand, security, wallet features or anything else. Restricting competition also reduces opportunities for innovation in digital wallets and other NFC services. While payments are the most common use-case today, we agree with the CMA that NFC can support a range of future use cases. Our research has identified a number of potential innovative features that could emerge on digital wallets and bring benefits to consumers.

Both payment and non-payment innovations will bring benefits to consumers, and in developing new technologies and competing services, contribute to economic growth. This will be particularly impactful should it result in faster and more effective take up of transformative payment solutions like account-to-account (A2A) payments.

[2] See footnote 1

Non-pricing terms of NFC access

Scope of access

We support the CR requiring Apple to grant and maintain effective access to iOS NFC technology with 'very limited exceptions' to developers who request access.[3] We are satisfied that the scope of access is sufficiently broad that relevant developers will have the opportunity to gain access to the NFC chip and that the exception to providing access based on the threat of serious harm, as described in paragraph 6 of the CR which sets a higher threshold than Apple's standard privacy and security arguments, is appropriate to balance security with effectiveness of the requirement.

Similarly, we support the wording in paragraph 5 of the CR which requires that provision of NFC access should remain of adequate quality and inclusive of all supporting functionality. Clarity over the nature of NFC access is crucial to enable developers to innovate and deliver NFC offerings to consumers effectively, and ensuring that this includes all ancillary services and remains sufficiently reliable and high quality basis will be effective in meeting this aim. To enable effective competition, NFC access enabled by this CR should allow developers to develop NFC offerings on iOS on the same basis as Apple Wallet and Apple Pay. We are therefore encouraged that the supporting functionalities which the CR necessitates specifically includes access to Express Mode and Power Reserve which represent key functionalities for providing NFC enabled services in certain settings. Unauthenticated transactions, including those where a phone's battery is low, are particularly important in transit use cases, a common use of NFC mobile technology. We agree with the CMA that for developers to compete effectively in transit and similar payment settings, they require access to the same functionality that enables Express Mode and Power Reserve.[4]

Clarity over NFC access also requires increased transparency over the terms on which access is offered. We support the proposal of an NFC Terms of Access page on Apple's website which provides a degree of certainty for developers. However, we note that the extent to which the terms, as set out on this page, are transparent depends on Apple's interpretation of the access fee, discussed below. Should the interpretation of these terms result in insufficient disclosure of how the fee(s) are calculated, or a fee structure that is overly complex, then the presence of a Terms of Access page won't in and of itself provide effective transparency that developers need.

Default status API

We agree with the proposal to allow developers to easily check whether they are the default contactless app on iOS developers via a default status API, bringing iOS NFC access in line with Android. The CMA rightly notes that an ability to effectively engage with users, including through prompting them about defaulting, is necessary for the aims of the CR to be met effectively. We are satisfied that there is insufficient evidence to suggest that risks of over-prompting users is high, and that developers are incentivised not to over-prompt users in an intrusive manner. The presence of a default status API may also support developers

[3] Paragraph 2.4(b) of the NFC Access Consultation document
[4] Paragraph 4.104 of the NFC Access Consultation document

commercial and strategic decision-making, further supporting competition of NFC-enabled services.

NFC on other devices

We disagree with the CMA's proposal to exclude wearable devices such as Apple Watch from scope of the conduct requirement. Wearables can be used like mobiles to make payments using NFC technology, and may become more frequently used for a range of NFC enabled services, for example using smart rings or fobs to unlock cars or doors. In the case of the Apple Watch, Apple Pay is the only contactless payment system available, and it is not possible to use this feature unless you have an iPhone.

By leveraging its market power in mobiles to restrict NFC access, Apple is distorting competition for payment systems in the downstream wearable market, and therefore reinforcing the market power in its mobile ecosystems, something that must be addressed. The CMA has signalled an intention to address interoperability issues with connected devices separately to this conduct requirement, and it may be possible to address NFC restrictions on wearables through a connected device conduct requirement. However, we think it is appropriate and expedient to address NFC access conditions across a range of Apple devices through this NFC Access CR.

It is also feasible, despite watchOS not being part of the mobile operating system designated activity. The Digital Markets Competition Regime Guidance sets out how Section 20(3)(c) of the Digital Markets, Competition and Consumers Act allows a CR to apply to a digital activity outside of the designation in the case that the firm conducts practices in the separate activity (in this case, watchOS) that 'materially increase the SMS firm's market power or materially strengthen its position of strategic significance in relation to the relevant digital activity'.[5] If Apple were to maintain its restrictions on NFC access on watchOS, anyone with an Apple Watch and an iPhone would face barriers to adopting third-party NFC services on their iPhone as this would require using different services across their watch and phone. Therefore, the NFC restrictions on Apple Watch will strengthen the market power in mobiles with respect to NFC services which this CR is seeking to correct for.

As with the proposed fee setting, discussed below, our recommended approach to require NFC access be granted on wearables as well as mobile devices would bring the UK in line with other jurisdictions. Apple is required to grant third-party access to the NFC Controller under Digital Market Act interoperability specifications in Europe.[6]

Access requests and complaints mechanism

We support the requirement for an effective access request and complaints process to ensure that the NFC access CR is able to be implemented effectively. We agree with the CMA that access will not be effective if developers are not able to understand the steps required to obtain access, or have sufficient opportunity to resolve access request issues.

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[5] Paragraph 3.14 Digital Markets Competition Regime Guidance

[6] https://digital-markets-act.ec.europa.eu/businesses-portal/interoperability/apple-specification-proceedings-interoperability-connected-devices-and-request-based-process_en

However, while the requirement specifies the need for a clear, transparent and readily accessible authorisation process which sets out, among other things, timelines for access requests and requirements for keeping developers informed, it does not provide any expectation for what the timeliness should be. Notwithstanding the need for due process, and acknowledging that different access requests will require different consideration, given the expectation that there will be very limited exceptions to granting NFC access requests, we encourage the CMA to proactively review the terms when they are published and ensure that the timeframes are appropriately quick to prevent developers from experiencing unnecessary delays.

Technological basis for NFC access

We support the proposed basis for requiring provision of NFC access using both HCE and SE technologies. To ensure the requirement is as effective as possible at opening up competition and realising benefits for consumers, the technological basis of NFC access should ensure flexibility for developers, speed of access and adequate security controls for consumers. We are content that the CMA has adequately considered these factors and that the dual technology basis represents the most effective solution.

A technological basis for NFC access that does not provide sufficient flexibility for developers risks the intervention not being fully effective at opening up the market. If access were to be provided on just HCE or just SE, there may be use cases that are not suitable for one or other of these technologies, or there may be scaling opportunities that are not taken up by developers who currently use one of these technologies. There is mixed evidence about which technology is most appropriate for use for different purposes, and we note evidence from stakeholders that both technologies are equally compatible with a range of use cases including card payments, digital identity, event tickets, and loyalty cards.[7] Perhaps most importantly, it is unclear whether future use cases may suit one or other of the technologies, so to promote effective innovation the flexibility for developers to use both HCE and SE is in and of itself desirable and consistent with the aim of creating a supportive environment for the development of new NFC services.

We note that the existence of HCE-based NFC services in other jurisdictions, like Europe, means that it may be most likely that this is the technological basis that would facilitate the fastest development of NFC-based services in the UK. In line with the aim of realising immediate competition for NFC solutions, we agree with the CMA that it is important that HCE is reflected in the requirement.

We are satisfied that based on the evidence provided by stakeholders, and the observations of NFC security on other devices and in other jurisdictions, that providing NFC access using both HCE and SE can ensure that consumers are sufficiently protected from data breaches or fraud.

[7] Paragraph 4.36 of the NFC Access Consultation document

NFC access fee

The consultation document clearly sets out the case for reducing the fees payable for accessing NFC technology on iOS. The CMA is right to recognise that 'there is strong reason to believe that the fees Apple currently charges for NFC access … act as a significant barrier to entry and expansion' and that for an NFC access requirement to be effective 'access must be provided on pricing terms that allow developers to establish viable business models and compete effectively'.[8] However, we are concerned that the proposed pricing principles in the CR will not be effective in meeting this aim.

Free of charge access

The simplest and most effective solution is to require NFC access to be provided free of charge, which is our recommended approach. We consider that this both meets the aims of the requirement to provide immediate competition and foster an environment which encourages innovation, without compromising Apple's incentive to invest in and innovate its NFC platform. We think such an approach would be consistent with the powers available to the CMA through the DMCC Act.

The case for access to be granted free of charge relies on the fact that Apple currently exerts its substantial and entrenched market power in its mobile ecosystem to leverage favourable terms for access to this non-proprietary hardware component on its mobiles. As the CMA recognises, NFC technology is an open, global industry standard technology that is neither owned nor governed by Apple but developed through industry bodies such as International Organization for Standardization (ISO) and NFC Forum.[9] While Apple is responsible for integrating the NFC chip as part of its mobile devices and ensuring operability with its Operating System, the production costs of this component, like other components of the device, are factored into the device cost.

One of the core aims of the proposed CR, most relevant to the consideration of whether to charge a fee (and if so, what), is to protect Apple's incentive to invest in its NFC platform. We disagree with the CMA that in order to maintain legitimate interests to invest and innovate in NFC access Apple must be remunerated for the 'service it provides'.[10] It is debatable whether allowing access to the NFC chip on iOS devices constitutes provision of a service, given the NFC is a global technology used by a wide range of device manufacturers. Regardless, we do not consider Apple's incentive to invest in its NFC platform will differ materially whether it is able to capture rents from third-party NFC use or not. Fundamentally because, as the CMA acknowledges, Apple's incentives are driven by sales of mobile devices and well functioning NFC enabled services are a key part of the attractiveness of these devices.[11] For example, innovations that are exclusive to iPhones such as Power Reserve increase the quality of iPhones relative to other devices, regardless of whether they are accessed on the Apple Wallet or a third-party wallet. Apple would still have an incentive to develop such functionality, it just would not be able to generate revenue from providing access to the underlying technology - something it is only able to do effectively because of

[8] Paragraphs 4.117 and 1.9 of the NFC Access Consultation document
[9] Paragraph 4.182(b) of the NFC Access Consultation document
[10] Paragraph 4.141 of the NFC Access Consultation document
[11] Paragraph 4.142 of the NFC Access Consultation document

its market power. Indeed, Apple would have an increased incentive to innovate its Apple Wallet and provide compelling NFC services that differentiates it from the competition and discourages third-parties from entry. In any case, given NFC technology is developed by industry bodies and not Apple itself, industry-wide innovations will apply to iPhones regardless of whether Apple charges rents on accessing the NFC technology.

Charging third-parties to access the NFC chip is inconsistent with Apple's treatment of other peripheral hardware on iOS devices such as the camera, microphone or bluetooth transceiver for which Apple provides developer API access free of charge. Some of these technologies, like the camera, require much greater investment to develop and innovate, yet Apple allows third-party developers to access the technology without recovering these costs. This is likely because development of third-party services using these hardware components is valuable to Apple as it increases the attractiveness of its devices. This two-way value exchange also exists with respect to the NFC chip, however a key difference exists with NFC technology that makes open access to the hardware less valuable to Apple compared to requiring users to use its native NFC enabled services - it is able to monetise use of the NFC chip on a per-use basis via transactions. There is no transaction involved with each use of the camera or microphone, yet investment, innovation and development of these technologies continues to advance significantly.

In a competitive market, Apple charging for access to the NFC chip would be less problematic as developers would be able to reach customers on a range of other devices. Apple's substantial and entrenched market power prevents them from doing so, and gives Apple the platform to exert its power and shut out the competition.

The case for access to be provided free of charge is strengthened by comparisons with other manufacturers and jurisdictions. Google does not charge a fee for access to the NFC chip, and Apple is no longer permitted to do so in Europe, via HCE technology, following concerns raised by the European Commission about the lack of access given to third-parties under abuse of dominance legislation (not the Digital Markets Act). We acknowledge that the legislative setting is different, but find it telling that Apple voluntarily offered to resolve the Commission's concerns by providing NFC access free of charge which was then brought into law. It does not appear that Apple tried to resolve the Commission's concerns by opening up access and charging a fee.[12] Wherever possible, Apple is incentivised to suggest solutions to competition concerns that retains its ability to generate revenue, and the fact that it voluntarily withheld this solution in Europe is indicative of the viability of free of charge access.

Requiring access to be provided free of charge in the UK would therefore align the UK with other jurisdictions and manufacturers, be consistent with the 'vast majority of stakeholders' who submitted this view in response to the CMA's call for evidence, and we think be consistent with the aims and proportionality of the UK digital markets regime.[13]

[12] https://ec.europa.eu/commission/presscorner/detail/eu/ip_24_3706
[13] Paragraph 4.158 of the NFC Access Consultation document

Setting a non-zero fee

The consultation document suggests the CMA is unwilling to require Apple to provide access free of charge. In which case, a principle-based approach is reasonable as opposed to defining a non-zero fee which would carry its own risks. If taking this approach, the CMA must define principles which can ensure an outcome that results in a rate low enough to be considered fair and have material market opening effects. We are concerned that the principles defined in the CR risk an outcome that is inconsistent with this.

The proposed principles are similar to those used in the proposed Steering conduct requirement, and our concerns are similar to those we outlined in our response to that consultation.[14] Most problematic is the use of the value-based principle.

In theory, the CMA considers a value-based approach to be viable 'to allow Apple to capture a share of the surplus created where its offer to developers in relation to NFC access is particularly differentiated, valued, or the result of ongoing innovation'.[15] As discussed above, NFC technology is open and used globally across all major mobile devices to perform the same functionality and service. While Apple has developed some differentiated functionalities such as Power Reserve, we don't think that this constitutes a 'particularly differentiated' service. We also mention above the concept of the two-way exchange of value. Developers offering innovative services on iOS devices can increase the value of those devices. If innovation in the use of NFC enabled services is significant, the value those third-party services bring to iOS could be significant, especially considering a counterfactual where innovative services are available on competing android devices and not iOS.

The practical challenges with a value-based approach present particularly high risks to the CR being effective. The CMA recognises three considerations that Apple would need to make to appropriately determine a fair and reasonable fee based on the value approach. Apple must adjust any value assessment to reflect a) the effects of its substantial and entrenched market power b) the value specifically from Apple's NFC investments not the broader technology development and c) the two-way nature of value exchange.

We do not have confidence that Apple can do this objectively to result in a fee that can be considered fair. Aside from stating that these considerations must be accounted for in the CR wording, the CMA provides no guidance to Apple on how it expects them to be applied in practice. Adjusting for market power, for example, is highly complex and requires significant judgement in the context of complicated market dynamics and incomplete data. The CR gives Apple discretion to make these value judgements, and it is incentivised to make judgements that result in retaining as high a fee as possible. The flexibility in the CR wording means Apple will feel confident it can stand by these judgements in the face of scrutiny. The same rationale can be applied to distinguishing between value derived from its own specific NFC investments and those associated with NFC-enabled services generally, and the two-way value exchange.

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[14] https://www.which.co.uk/policy-and-insight/article/the-cmas-consultation-on-steering-conduct-requirements-for-apple-and-google-a0KGT2k2dIAV

[15] Paragraph 4.169 of the NFC Access Consultation document

Our concerns about the ability for Apple to make these are highlighted by its submission to the CMA, where it considers that the fees it currently charges for NFC access are fair and reasonable based on value. We do not, therefore, share the CMA's confidence that use of the value-based principle would result in a fair and reasonable fee that is substantially lower than Apple's current fees.

The value-based approach was Apple's preferred approach to setting a fee, as it is likely to result in the highest justifiable fee. The CMA outlines its intention for the principles to be used in conjunction with one another, as a 'set of relevant considerations and points of reference' for determining a fee.[16] However, as per our consultation response to the Steering CR, without further clarity about how these points of reference should be used we are concerned that there is a risk that the other principles are rendered redundant, or considered an afterthought.

In the absence of requiring NFC access be provided free of charge, our preferred approach is to use a cost-based principle. This would allow Apple to recover the costs of providing access to the NFC technology, which we do not anticipate would be high, as implied by evidence obtained by the CMA from Google.[17] While not without need for a degree of interpretation, a cost-based principle is considerably more measurable and subject to fewer practical barriers as the value principle.

However, the CMA is proposing a cost-based principle based on a 'cost-plus' approach where it allows Apple to include a reasonable rate of return. We are concerned that, for the same reasons as the value-based principle (and when used in conjunction with it), there is too much discretion about what a reasonable rate of return would be. The CMA states that 'it would be appropriate for Apple to design how to approach such issues in practice subject to being required to provide the necessary evidence to justify compliance'.[18] At best, we think this risks a fair outcome being delayed through regulatory dialogue between Apple and the CMA about how Apple has interpreted the principle, and at worst this gives Apple too much discretion to justify its preferred fee in the context of a cost-plus approach. The CMA should instead either remove the ability for Apple to earn revenue above a cost baseline or provide further specification about what a reasonable rate of return would be to achieve an outcome in line with its expectations of a fee that is low and substantially lower than charged currently.

We acknowledge that, in the absence of requiring access free of charge, there is no single measure to determine a fee that is going to be without trade-offs or an element of judgement. The varied nature of NFC services, the interaction between hardware and software and the distinction between open NFC technology and Apple-developed technologies means no single principle will suit all parties. We encourage the CMA to better balance its approach to give more certainty to developers at the expense of the current flexibility afforded to Apple.

We support the administrative simplicity principle which will provide certainty and transparency for developers. We do not consider that under our recommended approaches,

[16] Paragraph 4.186 of the NFC Access Consultation document
[17] Paragraph 4.165 of the NFC Access Consultation document
[18] Paragraph 4.166 of the NFC Access Consultation document

a flexibility principle is required as any fee charged should not depend on the nature of the service enabled by the NFC access.

Proportionality assessment

Provision of NFC access has well established precedent from both Apple itself, with regards to SE, and from Google with regards to both SE and HCE technologies. The CMA therefore has a good understanding of the costs that Apple will incur and we note that these are not estimated to be significant.[19] We support the CMA's assessment of costs to consumers, with respect to both security and user experience. We note the evidence that says security and fraud risks from either HCE or SE are both low, and that providing new access using HCE will not result in any materially higher risks to consumers. The CMA received a significant amount of evidence to support this, and we are satisfied that this is an appropriate assessment despite the claims made by Apple, which the CMA places limited weight on.[20] In any case, we agree that digital wallet providers are sufficiently incentivised to ensure the security and privacy of consumer data to ensure their services are attractive. We agree that costs attributable to any negative user experience from increased prompts are likely to be very low.

We support the CMA's estimate of the benefits of the CR. The CMA identifies the benefits of increased competition in NFC based services are greater choice, greater innovation and higher quality services. Quantifying these benefits is not possible with any certainty, as the scope and nature of innovation resulting from greater competition is not possible to determine.

To provide an indicative estimate of the potential scale of these benefits, we conducted a discrete choice experiment to understand the potential benefits of innovation in digital wallet services. Our research estimates that the potential value of four innovative features (automatic loyalty points, receipt storage, ID storage and flexible card functionality) could be between c.£120-560 million per year. Further information on the results from this experiment can be found in our full report Unlocking the benefits of digital wallets. This is a conservative estimate, based on one set of innovations which were suitable for use in our experiment. We agree with the CMA that one of the greatest sources of benefits could be from the increased use of A2A payments, which has been identified as requiring open NFC access for widespread adoption. We note the evidence submitted to the CMA that A2A payments could reduce payment costs for merchants and expand payment choice for consumers. The CMA cites an Ernst and Young and Open Banking Limited report which estimates the value of switching all payments from card transactions to A2A payments, and the associated lower payment processing costs, could be around up to £1.9bn per year. If only a proportion of these benefits are realised and attributed to the opening of NFC technology, alongside the direct benefits of other innovation as indicated by our research, we consider the benefits from this CR are likely to be substantial, and to far outweigh the costs.

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[19] Paragraph 5.79 of the NFC Access Consultation document

[20] Note, if opening access to NFC on iOS leads to an increase in A2A payments, as intended, payment disputes regulation must be updated to ensure consumers are adequately protected across all digital payments, see our response to the HMT consultation on modernising payment service regulation here

Implementation and monitoring

We support the proposed implementation of the CR within 3 months following a decision, during which time Apple is required to engage with the CMA to develop the changes required to comply with the requirements, and 3 monthly compliance reports thereafter. If the CMA confirm the principled approach to setting a fee, as set out in the consultation document, we encourage them to use this pre-implementation engagement to work closely with Apple to ensure that it's interpretation of the fee principles is in line with the CMA's expectations of a low and substantially lower than current fee for NFC access. It is very possible that Apple does not develop what we would consider a fair fee at the first time of asking, and so close engagement during this development stage will prevent the benefits of more open NFC access being delayed, which will be important to meet the CR's aim of having an immediate impact.

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For more information contact:
Angus Gibson, Senior Economist
angus.gibson@which.co.uk

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