

**Comments of the International Center for Law  
and Economics, NTIA Request for Comments on  
Mobile App Ecosystem**

*Docket No. 220418-0099*

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# NTIA Request for Comments on Mobile App Ecosystem, Docket No. 220418-0099

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Our response to the National Telecommunications and Information Administration’s (“NTIA”) request for comments (“RFC”) is broken into two parts. The first part raises concerns regarding what we see as the NTIA’s uncritical acceptance of certain contentious assumptions, as well as the RFC’s pre-commitment to a particular political viewpoint. The second part responds to several of the most pressing and problematic substantive questions raised in the RFC.

The RFC appears intended to invite comments that conform to a pre-established commitment to interventionist policy. The heuristics and assumptions on which it relies anticipate the desired policy outcome, rather than setting a baseline for genuine input and debate. Unfortunately, these biases also appear to carry over to the substantive questions. These comments offer four substantive observations:

**First**, that interoperability is not a panacea for mobile-apps ecosystems. There are risks and benefits that attend interoperability and these risks and benefits manifest differently for different groups of end-users and distributors. Specifically, some users may prefer “closed” platforms that offer a more curated experience with enhanced security features.

**Second**, considerations of security are intrinsic to determining whether interoperability is feasible or desirable. Centralized app distribution is what allows platforms like the App Store to filter harmful content through a two-tiered process of both human and automated app review. Such control over the ecosystem’s content would necessarily be relinquished if third-party app distribution and payment systems were allowed on “closed” platforms.

**Third**, determinations of “user benefit” in the mobile-app ecosystem must account for both end-users and developers. Where the interests of the two sides of the market conflict, total output—rather than price—should be the relevant benchmark.

**Fourth**, there is no objective “correct balance” between security and access. Some end-users and developers prefer more curated and ostensibly safer ecosystems, while others are most concerned with the sheer quantity of options. The NTIA should not substitute its own preferences for the revealed preferences of millions of users and distributors.

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## I. The RFC’s Underlying Assumptions

A preliminary issue with the National Telecommunications and Information Administration’s (“NTIA”) Request for Comments (“RFC”)<sup>1</sup> is the contentious assumptions that are embedded in its general framing. From the RFC’s very first page, it repeatedly asserts consensus about “first principles” that are, in fact, the subject of active debate. The document thereby taints its more substantive questions by effectively narrowing the scope of answers that could be considered “legitimate.” This may be attributable to the RFC’s genesis in President Joe Biden’s Executive Order 14036<sup>2</sup> (“E.O.”), which asserted that:

[t]he American information technology sector has long been an engine of innovation and growth, but today a small number of dominant internet platforms use their power to exclude market entrants, to extract monopoly profits, and to gather intimate personal information that they can exploit. Too many small businesses across the economy depend on those platforms and a few online marketplaces for their survival.<sup>3</sup>

If one accepts this basic premise as laid out in the E.O., it follows that sweeping changes are needed to “restore” competition in digital markets and to protect end-users and developers alike. Each portion of that premise, however, is eminently subject to rebuttal. For instance, that small businesses “depend on” digital platforms can be seen as evidence of the benefits those platforms convey, in that they have enabled business that would otherwise never have had the resources to reach millions of potential customers worldwide to gain hitherto unimaginable levels of visibility.<sup>4</sup> Similarly, there is nothing inherently wrong with gathering personal information; it is, in fact, what allows platforms to tailor their services to users, which benefits both those users and advertisers.<sup>5</sup> The E.O. ignores these potential benefits of digital intermediation.

The RFC doubles down on this framing by casting several ordinary commercial practices—none of which have been declared illegal under existing U.S. competition law—as if they were evidence of a conspiracy against competition, consumers, and “small businesses.” It is noteworthy, however, that immediately after acknowledging the E.O.’s goal to “address the problem of dominant tech platforms undermining competition and reducing innovation,” the RFC undermines the implication that mobile-apps markets are stale, stagnant, or slow to innovate, by noting that:

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<sup>1</sup> *Developing a Report on Competition in the Mobile App Ecosystem* (hereafter, “RFC”), NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (Apr. 22, 2022) <https://www.federalregister.gov/documents/2022/04/22/2022-08573/developing-a-report-on-competition-in-the-mobile-app-ecosystem>.

<sup>2</sup> E.O. 14036, 86 FR 36987, <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/07/09/executive-order-on-promoting-competition-in-the-american-economy>.

<sup>3</sup> *Ibid.*, Section (r) (iii).

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

The two main app stores are operated by companies with headquarters in the United States. Global consumer spending in this ecosystem is also growing rapidly, estimated by some as nearly doubling from 2016 to 2020, to reach \$120 billion. *Entire new sectors of industries have been spawned* as a result of app innovation such as ride sharing, or have experienced technical advancement, such as smart home appliances.<sup>6</sup> [Emphasis added.]

Claims of “tech platforms undermining competition and reducing innovation” are obviously at odds with the finding that output and innovation in the relevant sector are growing, but the RFC is replete with such apparent contradictions. The NTIA claims upfront that it is seeking information to “further develop its understanding of competition within the mobile app ecosystem.”<sup>7</sup> But in other places, the RFC appears to have already reached the conclusion that intervention is warranted to address an insufficiently competitive market, as where it requests information about “active ways to increase competition through government or private sector action.”<sup>8</sup>

What follows is a non-exhaustive list of examples of fallacious assumptions and apparent contradictions embedded in the RFC, which should set the stage for our responses to some of the document’s substantive questions in Part II.

**First**, the RFC assumes that markets currently are not “sufficiently” competitive and that they therefore do not deliver maximum benefits to users.<sup>9</sup> But it elsewhere seeks input on how to measure competition and user benefit.<sup>10</sup> How can the NTIA conclude that markets are not sufficiently competitive or that they do not benefit consumers when its questions presuppose that it does yet not possess a complete set of tools to assess such questions empirically?

**Second**, the RFC asserts as a goal that the app market should “be robust, open, innovative, and secure – and without barriers to entry or growth,” a framing that could be read as implying that the market is currently none of those things. But as already noted, the NTIA elsewhere acknowledges that the app market is growing and that it has helped to spawn innovative new industries.<sup>11</sup> Moreover, standards like “openness” and “robustness” are fuzzy, while others are impossible to meet—e.g., there will always be some barriers to entry in every market. The RFC appears to set a broad mission statement for the market with no demarcation or limiting principles (e.g., barriers to entry can always be lower; markets can always be “more robust” and “open”; there

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<sup>6</sup> RFC, p. 24134.

<sup>7</sup> RFC, p. 24136

<sup>8</sup> RFC, p. 24136. (“NTIA is seeking information on the state of competition, the factors affecting app development and distribution, and active ways to increase competition through government or private sector action”).

<sup>9</sup> RFC, p. 24134-5.

<sup>10</sup> RFC, p. 24138, question 22. (“The E.O. asks the department to explore ways to maximize ‘user benefit’ with regard to competition in the mobile app ecosystem. How should we measure user benefit?”).

<sup>11</sup> See *supra* note **Error! Bookmark not defined.**

can always be “more innovation.”) Truisms of this sort are not useful to inform policy debates, because they are essentially unfalsifiable. What is missing from the RFC—and from the E.O. that spawned it—are empirical benchmarks to establish when “more” is legally and economically relevant.

**Third**, another apparent underlying assumption embedded in the RFC is that it is a proper role of government to seek to “maximize” consumer welfare in every market.<sup>12</sup> This is not obviously true. Another common perspective is that the economic system ought to defer to private initiative and entrepreneurship, with government intervention left as a last resort—i.e., invoked only when it is clear that the public interest has been harmed as a result of illegal (e.g., anticompetitive) practices, or where there is clear evidence of persistent market failure.<sup>13</sup> Indeed, this is the mainstream position that long has informed antitrust law, and remains the dominant approach to protect competition in the United States.<sup>14</sup> According to this view, which is one we share, it is ultimately immaterial whether the NTIA can conjure a hypothetical “nirvana scenario” in which end-users and developers *might* be better off. Achieving such a state is beyond the government’s competences. Except in very special exceptions (e.g., public utilities or other natural monopolies, which does apply to mobile-app ecosystems), it should not even be countenanced. Perhaps more importantly, “nirvana fallacies” of this sort tend to overlook the likelihood that government intervention will lead to failures of its own.<sup>15</sup> It would be especially dangerous to engage in social engineering to maximize “user benefit” without a clear means to measure success.

**Fourth**, the RFC misrepresents some factual claims. For instance, Footnote 13 suggests that the district court decision in *Epic Games Inc. v. Apple Inc.* changed how Apple’s App Store assesses commission fees as well as the “restrictions they place on how apps interact with consumers, as well as technical barriers.” While Judge Gonzalez Rogers did strike down Apple’s anti-steering provisions under the California Unfair Competition Act, she sided with Apple on all other counts. That includes the App Store’s 30% commission levied on in-app payments, which is the industry standard.<sup>16</sup>

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<sup>12</sup> See, e.g., RFC, p. 24138, question 22.

<sup>13</sup> Alan Devlin, *Antitrust as Regulation*, 49 SAN DIEGO L. REV. 823, 830 (2012).

<sup>14</sup> See, e.g., Christine S. Wilson, *Welfare Standards Underlying Antitrust Enforcement: What you Measure is What you Get*, Luncheon Keynote Address at George Mason Law Review 22nd Annual Antitrust Symposium: Antitrust at the Crossroads? (February 2019); Phil Gramm and Christine S. Wilson, *The New Progressives Fight Against Consumer Welfare*, THE WALL STREET JOURNAL (Apr. 3, 2022); Alden Abott, *Why Consumer Welfare Remains the Standard for Antitrust*, THE WALL STREET JOURNAL (Apr. 7, 2022).

<sup>15</sup> Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 THE JOURNAL OF LAW AND ECONOMICS, 1 (1969). See also, Frank H Easterbrook, *Limits of Antitrust*, 63 TEX. L. REV., 1 (1984).

<sup>16</sup> The RFC also characterizes Apple’s 30% commission as “Apple taking a percentage of apps’ revenues,” without acknowledgment that the commission serves as compensation for using Apple’s IP, App Store, and for gaining access to Apple’s hundreds of millions of users.

In other places, the RFC asks leading questions that include contentious assertions as if they were settled fact. For instance, question 5(a) alludes to a market “imbalance” to describe the reality that some apps are more popular and lucrative than others:

Can any potential harms, such as deficiencies in data security and privacy protections, be traced back to the *current imbalance*? [Emphasis added]

Question 6(a) asks:

Are there unique market dynamics in this ecosystem (*such as the existence of a small number of dominant technology companies*) that affect mobile apps’ ability to secure funding? [Emphasis added]

**Fifth**, before it has even collected the feedback the NTIA says it needs to improve its understanding of mobile-app ecosystems, the RFC assumes that intervention is warranted. It states:

NTIA is seeking...active ways to increase competition through government or private sector action.<sup>17</sup>

While barely acknowledging the existence of the government’s current antitrust tools, which have been honed through decades of doctrinal and jurisprudential refinement, the RFC implicitly concludes that such tools are insufficient to deal with whatever problems may arise in the mobile-app market and that far-reaching reforms are instead required. Not only does this assume the existence and insolubility of problems that remain largely untested, but it completely fails to reckon with the risks of intervention.

Indeed, sorely missing from the RFC is any sense of the fallibility of regulation.<sup>18</sup> The background implication that government regulation of platforms will enhance welfare ignores real-life regulatory costs and the possibility of regulatory failures.<sup>19</sup> The RFC never inquires, for example, about the potential risks of government intervention in a dynamic and fast-paced market that has to date developed admirably without much in the way of government intervention (or precisely for that reason). Much like the recent joint request for information from the U.S. Justice Department and the Federal Trade Commission Cementing concerning merger guidelines, the RFC is

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<sup>17</sup> RFC, p. 24136. *See also*, questions 26 and 27, which ask which specific measures the federal government and the private sector/civil society can take, respectively, to ensure and promote healthy app competition.

<sup>18</sup> *See*, in the context of legislation proposed to “rein in” tech companies, Alden Abbott, *Consumer Welfare-Based Antitrust Enforcement Is the Superior Means to Deal with Large Digital-Platform Competition Issues*, TRUTH ON THE MARKET (Nov. 2, 2021) <https://truthonthemarket.com/2021/11/02/consumer-welfare-based-antitrust-enforcement-is-the-superior-means-to-dealing-with-large-digital-platform-competition-issues>.

<sup>19</sup> *See* Demsetz *supra* note 15.

“overwhelmingly concerned with the presumed dangers of underenforcement but inexplicably pays almost no heed to the possibility, let alone the cost, of overenforcement.”<sup>20</sup>

In conclusion, all of the above serves to signal that the NTIA is committed to a predetermined conclusion and is not genuinely interested in good-faith responses from a broad constituency of stakeholders. Notwithstanding the foregoing, in the next section, we address some of the substantive questions put forth in the RFC.

## II. Substantive Questions

The thrust of our response to the RFC’s substantive questions can be summarized as follows: interoperability offers both benefits and drawbacks. Closed or semi-closed ecosystems with more limited interoperability can offer benefits that include increased security and choice curation, which can enhance both end-user and developer satisfaction. (Since app stores are two-sided markets, the two are interconnected through indirect network effects). Moreover, different sets of users and developers will enjoy different benefits from relatively closed and relatively open systems, and there are complex inter- and intra-group tradeoffs that must be weighed when choosing to opt for either one.

Variiegated consumer preferences in the market have long allowed “open” and “closed” systems to coexist. Thus, forcing all closed or semi-closed platforms to become “open” threatens to reduce competition where it matters most—i.e., in the choices for and among “open” and “closed” platforms. We therefore counsel a light-touch approach when it comes to tinkering with core features of the mobile app ecosystem market.

### A. Interoperability, Question 9(a)

What observers mean by the term “interoperability” can vary widely. There are narrow senses in which it can refer to allowing user data from one service to be made directly portable to other services. At the other end of the spectrum, it could mean regulations to require virtually any vertical integration to be unwound. In between are various applications in which a given product is configured to work with products made by one or more other companies.

In the context of mobile-app markets, interoperability generally refers to “opening” mobile-operating systems to core services provided by third parties, such as app stores and in-app payment processing. It also typically refers to such systems allowing “side-loading,” through which users can download and install apps directly from the Internet, rather than from official app stores.

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<sup>20</sup> Geoffrey Manne, Dirk Auer, Brian C. Albrecht, Eric Fruits, and Lazar Radic, Lazar, *Comments of the International Center for Law and Economics on the DOJ-FTC Request for Information on Merger Enforcement 4* (Apr. 21, 2022), <https://ssrn.com/abstract=4090844> or <http://dx.doi.org/10.2139/ssrn.4090844>.

Interoperability increasingly has been posed by policymakers in myriad jurisdictions as a potential solution to various problems alleged to be associated with digital services and with large online platforms, including mobile app stores. The European Union’s proposed Digital Markets Act, for example, would mandate interoperability in certain contexts for “gatekeeper” platforms.<sup>21</sup> Interoperability mandates of various kinds have also been included in several bills currently before Congress, including the American Innovation and Choice Online Act.<sup>22</sup> It is also central to the *Epic v. Apple* litigation, currently before the 9<sup>th</sup> U.S. Circuit Court of Appeals, in which Epic seeks to challenge Apple’s “walled-garden” business model.<sup>23</sup>

Proponents argue that interoperability is a “super-tool” for bolstering competition and enhancing the welfare of both end-users and developers.<sup>24</sup> But interoperability is not a panacea, and it comes with both potential benefits and drawbacks.<sup>25</sup> For example, interoperability might be too costly to implement or maintain, requiring the host platform to constantly monitor and oversee, e.g., whether third-party app stores and in-app payment-processing systems are consistent with the performance and quality standards of the ecosystem.<sup>26</sup> It also might add too much complexity and confusion for users, who may prefer a curated experience that shifts the burden of making certain choices onto the platform.<sup>27</sup>

In the context of mobile-app ecosystems, however, it is the increased risks to security and the weakening of inter-brand systems-level competition that stand out as the biggest potential danger of wide-ranging interoperability mandates.

For instance, whereas sideloading mandates purportedly aim to give users more choice, they can only achieve this by removing the option to choose a device with a “walled garden” approach to privacy and security (such as is taken by Apple with iOS). By undermining the “walled garden” approach, sideloading mandates may force users to use alternative app stores preferred by

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<sup>21</sup> See *Proposal for a Regulation of the European Parliament and of the Council on Contestable and Fair Markets in the Digital Sector* (Digital Markets Act), COM/2020/842 final.

<sup>22</sup> American Innovation and Choice Online Act, S. 2992, 117th Cong. (2022).

<sup>23</sup> *Epic Games Inc. v. Apple Inc.*, No. 4:20-cv-05640-YGR, 2021 U.S. Dist. LEXIS 172303 (N.D. al. Sep. 10, 2021).

<sup>24</sup> See Fiona Scott Morton, et al., *Equitable Interoperability: The “Super Tool” of Digital Platform Governance* (SSRN Scholarly Paper No. 3923602), SOCIAL SCIENCE RESEARCH NETWORK (Oct. 27, 2021) <https://doi.org/10.2139/ssrn.3923602>.

<sup>25</sup> Even some proponents of interoperability recognize this. See Wolfgang Kerber and Heiker Schweitzer, *Interoperability in the Digital Economy*, 8 J. INTELL. PROP. INFO. TECH. & ELEC. COM. L. 39-58, 39 (2017). (“The complex trade offs between benefits and costs of a higher degree of interoperability suggest the need for a careful and separate analysis of each specific interoperability issue, caution regarding a (top down) imposition of mandatory standards and interoperability obligations, and a greater focus on unilateral solutions of interoperability problems, such as adapters or converters.”).

<sup>26</sup> See Sam Bowman, *Mandatory Interoperability Is Not a ‘Super Tool’ for Platform Competition*, TRUTH ON THE MARKET (Nov. 29, 2021) <https://truthonthemarket.com/2021/11/29/mandatory-interoperability-is-not-a-super-tool-for-platform-competition>.

<sup>27</sup> See, in general, BARRY SCHWARTZ, *THE PARADOX OF CHOICE: WHY MORE IS LESS*, REVISED EDITION (Harper Collins, 2009).

particular app developers. In that respect, there is no guarantee the incentives of developers and users will be aligned; this could ultimately mean less privacy and security for the latter.

This is not to suggest that “closed” ecosystems boast perfect security, but evaluations of, e.g., Apple’s walled-garden ecosystem generally find it provides greater security than Google’s Android, which adopts a more “open” approach.<sup>28</sup> Indeed, even Epic Games CEO Tim Sweeney has recognized that Apple would lose its competitive advantage if it were to compromise its safety and security features.<sup>29</sup> Relatedly, interoperability mandates might prescribe a particular product design and effectively foreclose experimentation and innovation, forcing all operating systems to follow the same template.

The designation of platforms as “open” or “closed,” however, represents overly simplistic characterizations and says little about either’s relative superiority or tendency to generate more or less net social gain. As Jonathan M. Barnett has written:

Open systems may yield no net social gain over closed systems, can pose a net social loss under certain circumstances, and . . . can impose a net social gain under yet other circumstances.<sup>30</sup>

For instance, closed proprietary platforms like Apple’s increase companies’ incentives to internalize positive indirect network effects (i.e., the feedback loops between end-users and developers), which can lead them to induce “higher levels of product variety, user adoption and total social welfare than open platforms.”<sup>31</sup> Indeed, in a two-sided market, a “proprietary platform may in fact induce more developer entry (i.e., product variety), user adoption and higher total social welfare than an open platform.”<sup>32</sup> In other words, preventing certain apps from accessing the App Store, and preventing certain transactions from taking place within it, may ultimately increase the number of apps and transactions on Apple’s platform, because effective curation by the platform made it more attractive to a wider set of consumers and developers.

There is a “fundamental welfare tradeoff between two-sided proprietary ... platforms and two-sided platforms which allow ‘free entry’ on both sides of the market.”<sup>33</sup> Consequently, “it is by no means obvious which type of platform will create higher product variety, consumer adoption and total

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<sup>28</sup> See e.g., Nokia, *Threat Intelligence Report 2020* (2020) available at <https://www.nokia.com/networks/portfolio/cyber-security/threat-intelligence-report-2020>. See also, Randal C. Picker, *Security Competition and App Stores*, NETWORK LAW REVIEW (Aug. 23, 2021) <https://www.networklawreview.org/picker-app-stores>. In *Epic Inc. v. Apple Inc.*, the district court and even the CEO of Epic Games acknowledged the superior security of the App Store, which runs a semi-closed system. In other words, Apple’s ecosystem has limited interoperability.

<sup>29</sup> *Epic Inc., v. Apple Inc.*, at 45.

<sup>30</sup> See Jonathan M. Barnett, *The Host’s Dilemma: Strategic Forfeiture in Platform Markets for Informational Goods*, 124 HARV. L. REV. 1861, 1927 (2011).

<sup>31</sup> Andrei Hagiu, *Proprietary vs. Open Two-Sided Platforms and Social Efficiency*, Working Paper 06-12 (May 2006).

<sup>32</sup> *Id.* at 16.

<sup>33</sup> *Id.*

social welfare.”<sup>34</sup> Similarly, there are important inter- and intra-group tradeoffs between end-users and developers, on the one hand, and among different types of end-users and developers, on the other.

Even should an open platform lead to more apps and in-app payment options for all consumers, it may nonetheless be the case that some consumers will be better off as a result and others will be worse off. The economic literature has long recognized that consumers differ in terms of their knowledge, sophistication, and diligence. More vigilant users may be able to avoid downloading apps and using in-app payment systems that are unreliable or that impose overly invasive data-sharing obligations, while less vigilant users could fall prey to malware, spyware, and other harmful content enabled by an open system. An ecosystem with more apps may be better at delivering more and more kinds of content to diligent consumers while simultaneously exploiting more vulnerable consumers.<sup>35</sup>

Developers must contend with similar tradeoffs. If Apple and similar closed or semi-closed systems did not charge developers a 30% commission for in-app sales, they would likely find some other means to finance development of the App Store ecosystem, with additional fees either on developers or on users. Relative to other potential systems, the current system benefits smaller developers and developers of non-gaming apps. As the district court recognized in *Epic v. Apple*, Apple’s 30% in-app payment fee cross-subsidizes the delivery of services to the approximately 80% of apps that are free and that pay no in-app payment fees. In other words, developers who monetize through in-app payments subsidize the rest of the App Store.

Further, thanks to this model of cross-subsidization, every developer has access to the same high-quality distributor (the App Store) of its products, and the same high-quality system for in-app payments. While Apple could choose a model that offers the best deals to the largest developers, applying the same conditions to all developers is a competitive strategy that has enabled Apple to attract as many quality developers as possible. Indeed, the App Store also provides many other benefits that enable “small developers to compete with large ones,” including developer tools, promotional support, advertising (72% of small developers lack a marketing budget), and a ready audience. Further, closed and semi-closed ecosystems like Apple’s allow previously unknown developers to rapidly expand because (i) users do not have to fear that their apps will contain some form of malware and (ii) they greatly reduce payment frictions, most notably security-related ones.<sup>36</sup>

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<sup>34</sup> *Id.*

<sup>35</sup> See, for a similar point, Mark Armstrong, *Interactions Between Competition and Consumer Policy*, 4 COMPETITION POL’Y INT’L 97, 130 (Spring 2008).

<sup>36</sup> See Dirk Auer, *The Epic Flaws of Epic’s Antitrust Gambit*, TRUTH ON THE MARKET (Aug. 27, 2020), <https://truthonthemarket.com/2020/08/27/the-epic-flaws-of-epics-antitrust-gambit>.

If Apple allowed competing app stores and payment processors (i.e., if the iOS became interoperable), it would have to employ a different model to finance the App Store and gather its commission. It may prove more difficult or effectively impossible to meter access charges according to a developer’s size or the extent of its in-app payment usage, forcing Apple to forfeit many of the benefits that currently accrue to small developers. There is no reason to believe this outcome would ultimately benefit consumers or developers as a whole, let alone the entire two-sided market.

Ultimately, “open” and “closed” platforms are both legitimate business models that offer different benefits to different groups of users. Forced interoperability would essentially render platforms like Apple much more similar, if not identical, to platforms like Android. Under the guise of fostering competition on Apple’s platform—which, as the district court found, is not a monopoly (because it is subject to competition from, among others, Android)—this de facto standardization would instead diminish competition where it matters most, i.e., at the inter-brand, systems level.<sup>37</sup> This is also explicitly recognized by the antitrust laws, which are unequivocal in their preference for inter-brand over intra-brand competition.<sup>38</sup>

In sum, blunt interoperability mandates could undermine systems-level competition and lead to worse outcomes for both end-users and developers. As Giuseppe Colangelo has written:

Regulatory proposals may cause unnecessary overreaching. Indeed, by questioning the core of digital platform business models and affecting their governance design, these interventions entrust public authorities with mammoth tasks that could ultimately jeopardise the profitability of app store ecosystems. Furthermore, they may overlook the differences between Google and Apple business models.<sup>39</sup>

## **B. Screening Harmful Content, Question 17**

In comparison with “open” platforms, closed and semi-closed platforms in which app distribution and review are centralized have certain important advantages in terms of safety and security. Indeed:

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<sup>37</sup> See Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93, 110 (1994). “[T]he primary cost of standardization is loss of variety: consumers have fewer differentiated products to pick from, especially if standardization prevents the development of promising but unique and incompatible new systems.”

<sup>38</sup> See *Business Electronics Corp. v. Sharp Electronics Corp.*, No. 485 – 1910, *Dissent* (1988), at 14. “A demonstrable benefit to Interbrand competition will outweigh the harm to intrabrand competition that is caused by imposition of vertical nonprice restrictions on dealers.”

<sup>39</sup> Giuseppe Colangelo and Oscar Borgogno, *Platform and Device Neutrality Regime: The New Competition Rulebook for App Stores?* (January 4, 2022). Stanford-Vienna TTLF Working Paper No. 83, 2022 87-9; a modified and updated version of the paper is forthcoming in THE ANTITRUST BULLETIN, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4000597](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4000597).

Maintaining some control over the apps that can access the store notably enables platforms to easily weed out bad players. Similarly, controlling the hardware resources that each app can use may greatly improve device performance. In other words, centralized platforms can eliminate negative externalities that “bad” apps impose on rival apps and on consumers. This is especially true when consumers struggle to attribute dips in performance to an individual app, rather than the overall platform.<sup>40</sup>

The paradigmatic example of the benefits of limited interoperability is Apple’s App Store. Apple’s centralized review process is multi-layered: every app and every app update approved to the App Store is reviewed by both automated systems and Apple employees, who are experts in app review. The initial automated-review step includes metadata and asset analysis, static analysis, and dynamic analysis.<sup>41</sup> These automated processes are particularly useful for detecting certain security threats. Computers are reasonably effective at identifying malware, private use of application programming interfaces (APIs), and potentially pirated software. They work with an enormous corpus of data associated with identified threats, including suspicious keywords, malicious IP addresses and URLs, and other data in order to check each app for known security and reliability threats and potential legal violations. The process also involves a post-app review, through which Apple detects malicious content that developers implement *after* a benign app is approved.

Next, comprehensive human review helps weed out harmful apps that might fly under the radar of automated processes, such as content in violation of Apple’s guidelines for children, social-engineering attacks, or content that undermines user privacy. For example, a human reviewer is better positioned to determine whether a list of entitlements requested for an app is reasonable or whether it betrays a malicious or generally negative ulterior motive. By way of example, a human reviewer is better positioned to confirm that a Tic-Tac-Toe app’s request for access to the camera betrays an ulterior motive. Similarly, human reviewers were also able to identify the “Blue Whale Campaign” apps that encouraged users to commit suicide.

As demonstrated in Apple’s proposed findings of fact and conclusion of law in *Epic v. Apple*, about 35% of apps submitted to the App Store are rejected, and less than 1% of such rejections are appealed by developers.<sup>42</sup> As a result of Apple’s review process, there is a significantly smaller number of malicious iOS apps than those available on Android.<sup>43</sup> For instance, in 2019, the

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<sup>40</sup> Dirk Auer, *10 Things the American Innovation and Choice Online Act Get Wrong*, TRUTH ON THE MARKET (Jan. 18, 2022) <https://truthonthemarket.com/2022/01/18/10-things-the-american-innovation-and-choice-online-act-gets-wrong>.

<sup>41</sup> Static analysis consists of reviewing and analyzing the app and its binary code without executing it. This is a first-level approach to ferreting out impermissible aspects of software, such as the presence of links to malicious websites, pirated and/or cloned apps, and other known security concerns. During dynamic analysis, the proposed app or app update is executed so that its behavior may be analyzed.

<sup>42</sup> See *Epic Games, Inc. v. Apple Inc.*, No. 4:20-cv-05640-YGR, 2021 U.S. Dist. LEXIS 172303 (N.D. Cal. Sept. 10, 2021), at para. 133. Available at: <https://cand.uscourts.gov/wp-content/uploads/cases-of-interest/epic-games-v-apple/Epic-Games-20-cv-05640-YGR-Dkt-410-Apple-Proposed-Findings-of-Facts-and-Conclusions-of-Law.pdf>.

<sup>43</sup> *Id.*

iPhone platform accounted for 0.85% of malware infections, while Android accounted for 47.15%.<sup>44</sup> Out of the 10 largest families of malware targeting mobile devices, none are iOS exclusive, and only three are present on the iOS. By contrast, all 10 are present on Android, and six are Android-exclusive.<sup>45</sup>

Ultimately, the combination of human review with automated static and dynamic analysis, using Apple’s proprietary tools for every app and app update, uniquely differentiates Apple’s closed ecosystem from others.<sup>46</sup> The model cannot be converted into an open platform without fundamentally altering the entire ecosystem and forfeiting the significant safety benefits that accrue from Apple’s current “walled-garden” approach. Thus, forcing iOS to be interoperable would result in a loss of safety and security on what is, by all measures, the safest and most secure mobile-app ecosystem currently in existence.

### **C. Measuring User and Developer Benefits in the App Market, Questions 22(a) and (b)**

App stores, the locus of mobile-app ecosystems, are two-sided markets. Two-sided markets connect distinct sets of users whose demands for the platform are interdependent—i.e., consumers’ demand for a platform increases as more products are available and, conversely, product developers’ demand for a platform increases as additional consumers use the platform, increasing the overall potential for transactions. Due to the complex dynamics and feedback loops (indirect network effects) unique to two-sided markets, platform conduct that may appear suboptimal when the effects on only one set of users are considered may, in fact, prove to be welfare-enhancing when the net effects on both sides are examined.<sup>47</sup>

In the context of antitrust, the U.S. Supreme Court has recognized that it is improper to assess the presence of anticompetitive effects by focusing on only one side of a two-sided market.<sup>48</sup> Similarly, applying the insights from the Court’s opinion in *Ohio v. American Express* to Apple’s App Store, the district court in *Epic Games Inc. v. Apple Inc.* recognized that:

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<sup>44</sup> *Id.* See also Milad Taleby Ahvanooy, et al., *A Survey on Smartphones Security: Software Vulnerabilities, Malware, and Attacks*, 8 INT. J. ADV. COMPUT. SCI. APPL. 36 (2017) (“A Survey on Smartphones”). According to F-Secure, 99% of malware attacks occur on Android, and around 0.1% on Apple iOS. According to Kaspersky, 84.5% occur on Android, and 11.69% take place on Apple iOS.

<sup>45</sup> *Id.* at 39.

<sup>46</sup> *Id.* at 30. Arguing that Android OS is more vulnerable to malware attacks because it uses open-source software, meaning that “everybody can develop apps freely.”

<sup>47</sup> See Geoffrey A. Manne, *In Defense of the Supreme Court’s “Single Market” Definition in Ohio v American Express*, 7 J. OF ANTITRUST ENF’T 104, 110 (2019) [hereinafter *In Defense of Amex*] (“[E]vidence of a price effect on only one side of a two-sided platform can be consistent with either neutral, anticompetitive, or procompetitive conduct.”).

<sup>48</sup> *Amex*, 138 S. Ct. at 2287. “Evidence of a price increase on one side of a two-sided transaction platform cannot by itself demonstrate an anticompetitive exercise of market power.”

In two-sided transaction markets, an anticompetitive price or restriction on one side may well reflect a competitive equilibrium on the other side. Thus ... competitive effects can only be determined after carefully considering both sides of the transaction (developers and users), including any indirect network effects.<sup>49</sup>

Indeed, “[g]iven the differential incidence of price and quality across a platform, it is impossible to capture the competitive dynamics and to measure the competitive effects by viewing only the partial price on one side.”<sup>50</sup> Moreover, in *Epic v Apple*, failing to account for effects on both sides of a two-sided market was fatal for the plaintiff’s case. As ICLE scholars argued in an amicus brief submitted to the 9<sup>th</sup> Circuit:

Epic’s argument inappropriately divorces inherently intertwined aspects of the market. Epic cannot lessen its step one burden by artificially dividing the market, and then purporting to show harm in only one market segment.<sup>51</sup>

Thus, in “exploring ways to maximize ‘user benefit,’” the NTIA should simultaneously take account of effects on both groups of users—i.e., consumers and developers. The best way to do this would be to focus on the market’s total output. Unlike prices, which might be infra-competitive (predatory) on one side but supra-competitive on the other, output tells us what is happening in the market *as a whole*.<sup>52</sup> Looked at in isolation, price structures on two-sided platforms that appear skewed may, in fact, be socially optimal. As Andrei Hagiu has argued:

By being able to balance the interests of the two sides through its pricing structure, a proprietary platform may come closer to the socially optimal level of adoption than a platform simply pricing at marginal cost on both sides.<sup>53</sup>

Further, harmful market power is what allows monopolists to profitably reduce output.<sup>54</sup> By examining the extent to which this is, or is not, the case in the mobile-apps market, the NTIA can

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<sup>49</sup> *Id.* at 162–63.

<sup>50</sup> *In Defense of Amex*, at 109; see also generally David S. Evans & Richard Schmalensee, *The Antitrust Analysis of Multi-Sided Platform Businesses*, in OXFORD HANDBOOK OF INTERNATIONAL ANTITRUST ECONOMICS 405 (Roger Blair & Daniel Sokol eds., 2013).

<sup>51</sup> *Brief of Amici Curiae International Center for Law & Economics and Scholars of Law and Economics in Support of Appellee/Cross-Appellant*, at 7. Available at: <https://laweconcenter.org/wp-content/uploads/2022/04/ICLE-Epic-Games-v-Apple-Amicus-as-filed-2022.pdf>.

<sup>52</sup> See generally Thomas A. Lambert, *A Decision Theoretic Rule of Reason for Minimum Resale Price Maintenance*, 55 ANTITRUST BULL. 167 (2010).

<sup>53</sup> Andrei Hagiu, *Proprietary vs. Open Two-Sided Platforms and Social Efficiency* at 19 (AEL-Brookings Joint Ctr. for Regul. Stud., Working Paper No. 06-12, 2006).

<sup>54</sup> See, e.g., PHILIP E. AREEDA, ET. AL., ANTITRUST LAW, AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION 501 (4th ed. 2017) (“Market power is the ability to raise price profitably by restricting output.”). *Rebel Oil Co. v. Atl. Richfield Co.*, 51 F.3d 1421, 1434 (9th Cir. 1995) (“Prices increase marketwide in response to the reduced output because consumers bid more in competing against one another to obtain the smaller quantity available.”); *Ball Memorial Hosp. v. Mutual Hosp. Ins.*,

check the soundness of some of its basic postulates, such as that the market is insufficiently competitive, that it is monopolistic, or that it exhibits “unhealthy competition.”

Accordingly, to the extent that there are conflicts between end-users and developers, the assessment of user benefits should take a holistic view that focuses on total output on the mobile-apps market.

#### **D. Striking a Balance Between Security and Access, Question 24(a)**

There is no singular “right balance” between safety and security, but rather a sliding scale that admits a range of “right” answers. Indeed, some end-users and developers might reasonably prefer a more secure ecosystem with fewer apps, while others might be interested in sheer quantity. As Dirk Auer has written:

It is also conceivable that consumers prefer to make many of their decisions at the inter-platform level, rather than within each platform ... They might thus purchase an iPhone because they like the secure App Store, or an Android smartphone because they like the Chrome Browser and Google Search. Forcing too many “within platform” choices upon users may undermine a product’s attractiveness.<sup>55</sup>

In this example, users who want additional assurance that apps will meet a certain standard of security and trustworthiness can opt for Apple’s “walled garden” ecosystem. Thus, striking the “right” balance between security and access inherently hinges on normative preferences that, in turn, involve complex inter- and intra-group tradeoffs (see section IIA). As such, it is a question best left to companies and consumers, and not to the government. As the district court correctly recognized in *Epic v. Apple*, “consumers should be able to choose between the type of ecosystems and antitrust law should not artificially eliminate them.”<sup>56</sup>

Even if the NTIA could conjure a scenario that was more “optimal” in terms of security and access, this would not justify foisting it on users, developers, and platforms. As the Court has recognized, in a free-market economy, even monopolists are entitled to make independent business decisions.<sup>57</sup> Businesses are under no general obligation to adopt “less restrictive means of achieving a legitimate business purpose.”<sup>58</sup> Thus, to avoid overreach, alternatives to current mobile-app

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784 F.2d 1325, 1335 (7th Cir. 1986) (“Market power comes from the ability to cut back the market’s total output and so raise price[.]”).

<sup>55</sup> See Dirk Auer, *10 Things the American Innovation and Choice Online Act Get Wrong*, TRUTH ON THE MARKET (Jan. 18, 2022), <https://truthonthemarket.com/2022/01/18/10-things-the-american-innovation-and-choice-online-act-gets-wrong>.

<sup>56</sup> *Epic Inc. v. Apple Inc.*, at 45.

<sup>57</sup> See *Trinko*, 540 U.S. at 408; *Pac. Bell Tel. Co. v. Linkline Commc’ns, Inc.*, 555 U.S. 438, 452–53 (2009) (quoting *Trinko*, 540 U.S. at 408).

<sup>58</sup> See *NCAA v. Alston*, 141 S. Ct. 2141, 2161 (2021) finding that businesses are not required to use “anything like the least restrictive means of achieving a legitimate business purpose.”

ecosystems should be considered *only* if the existing models are patently harmful or illegal, and not when governments or their agencies *prefer* one business model over another or when they imagine a “better” way of doing things. Ultimately, this prevents a “future filled with public micromanagement of legitimate business decisions.”<sup>59</sup>

To put it clearly: finding the “right balance between security and access” should be left to the market.

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<sup>59</sup> See *Alston*, 141 S. Ct. at 2147, 2162, noting that such a strict standard would prevent a “future filled with judicial micromanagement of legitimate business decisions.”