

Before the
National Telecommunications and Information Administration
United States Department of Commerce
Washington, D.C.

In re

Developing a Report on Competition
In the Mobile App Ecosystem

Docket No. 220418-0099

COMMENTS OF

THE COMPUTER & COMMUNICATIONS INDUSTRY ASSOCIATION (CCIA)

In response to the Request for Comment published April 22, 2022, at 87 Fed. Reg. 24134 (the “RFC”), the Computer & Communications Industry Association (“CCIA”)¹ submits the following comments:

I. Introduction and Summary

CCIA is pleased to participate in this effort by the National Telecommunications and Information Administration (“NTIA” or the “Agency”) to examine the state of competition in the mobile application ecosystem. As shown herein, this ecosystem is already the “fair, open, and competitive marketplace” that this Administration hopes it will be. Executive Order 14036, 86 Fed. Reg. 36987, Section 1 (July 9, 2021) (the “E.O.”). Operating in the center of digital commerce, where consumers, developers, and investors offer and purchase all manner of features and content, the mobile application industry is the competitive engine of the American economy.

The competitive value of mobile applications lies in their very name: mobile. These products are the reward of the nation’s decades-long commitment to authorizing and licensing wireless spectrum for the delivery of high-speed communications and data. FCC spectrum auctions begat the explosion of the wireless-device market, and those devices are the blank slates upon which thousands of application developers created today’s almost inestimably diverse apps

¹ CCIA is an international, not-for-profit trade association representing a broad cross section of communications and technology firms. For 50 years, CCIA has promoted open markets, open systems, and open networks. CCIA members employ more than 1.6 million workers, invest more than \$100 billion in research and development, and contribute trillions of dollars in productivity to the global economy. A list of CCIA members is available at <https://www.ccianet.org/members>.

marketplace. The app ecosystem had to follow device users who left their desktops and larger CPE and took their work, shopping, and entertainment out of doors and around the world.

Twenty-first century consumers do not tolerate being tied down, neither to a physical location nor to a single device, nor to a single operating system. Once computing went mobile, product hegemony became more and more difficult to achieve across the digital economy.

The federal government can help preserve and foster the mobile app ecosystem by employing its authority and expertise to ensure continued investment, innovation, and user safety. The E.O. presents the perfect opportunity for agencies to collaborate on a federal privacy regime to provide clear, feasible, and enforceable protections for mobile app users. In addition, the E.O.’s stated goal of protecting “the growth and dynamism of our economy” underscores the importance of the nation’s antitrust enforcers – the Federal Trade Commission and the Antitrust Division of the Department of Justice – getting horizontal and vertical merger review right.² Transactions that reward innovation and investment will ensure that the mobile app ecosystem will remain as vibrantly competitive as it is today.³

II. The Mobile Application Ecosystem Is Robustly Competitive

The mobile app ecosystem is worth over \$155 billion to the U.S. economy and app revenue is expected to enjoy double-digit annual growth figures for the rest of the decade.⁴ Several features of the mobile ecosystem enable this astonishing explosion of content and functionality.

A. The Mobile Application Industry Continues to Experience Dramatic Growth and Diversity.

To begin, the mobile app ecosystem relies on innovative, thriving device manufacture. In telephone handsets, consumers can choose from a myriad of options manufactured by numerous

² See Press Release, Federal Trade Commission and Justice Department Seek to Strengthen Enforcement Against Illegal Mergers (Jan. 18, 2022), <https://www.ftc.gov/news-events/press-releases/2022/01/ftc-and-justice-department-seek-to-strengthen-enforcement-against-illegal-mergers>. The Request for Information (RFI) is available at <https://www.regulations.gov/document/FTC-2022-0003-0001>.

³ CCIA’s comments in response to the merger enforcement RFI are available here https://www.ccianet.org/wp-content/uploads/2022/04/04192022_CCIA-comments-on-FTCDOJ-RFI-on-merger-enforcement-.pdf.

⁴ Mobile Apps Market Size to Grow by USD 653.91 billion, Technavio (Mar. 30, 2022), <https://www.prnewswire.com/news-releases/mobile-apps-market-size-to-grow-by-usd-653-91-billion-technavio-301511786.html>.

competitors, including devices from Apple, Samsung, Lenovo/Motorola, Google, LG, and more.⁵ Taking the device market in the aggregate, more than 12.3 billion new IoT devices were online in 2021.⁶

The mobile app industry is most assuredly keeping pace. It is estimated that 8.93 million mobile apps were available in 2021.⁷ According to Statista, as of 2021, approximately 3.04 million apps were available on the Google Store, and 2.09 million were available on Apple,⁸ with hundreds of thousands of apps also available on app stores run by Amazon, Microsoft, Samsung, and others. One report states that consumers downloaded 230 billion apps in 2021.⁹ Statista has forecasted that 184 billion apps will be downloaded by 2024.¹⁰

As to revenue, the mobile app industry, valued at \$154.05 billion in 2019, is expected to grow 11.5% year over year until 2027, according to Grand View Research.¹¹ By that calculation, the 2027 valuation would be \$366.34 billion. A more optimistic analysis by Transparency Market Research states that mobile apps will grow at double that rate – 20.2% – until 2030, with a valuation of \$717 billion in 2030.¹² By all indicia, mobile apps are and will remain a large component of the U.S. economy.

Part of appreciating the size of the mobile app ecosystem is defining its participants. The RFC asks what entities and products should be included in the category of “mobile application.”¹³ A proper definition of the term must include any integrated set of features and functionalities that operate on a computing device using wireless technology to reach the telecommunications network. The class of user – an individual versus an enterprise – need not

⁵ U.S. Smartphone Market Share: By Quarter, Counterpoint (May 2, 2022), <https://www.counterpointresearch.com/us-market-smartphone-share/>.

⁶ IoT 2021 in Review: The 10 Most Relevant IoT Developments of the Year, IOT Analytics (Jan. 11, 2022), <https://iot-analytics.com/iot-2021-in-review/>.

⁷ How Many Apps Are There Globally? (2021 Facts and Statistics) (Apr. 19, 2021).

⁸ *Id.*

⁹ State of Mobile 2002, data.ei, <https://www.data.ai/en/go/state-of-mobile-2022>.

¹⁰ See *supra* n.7.

¹¹ Report Overview, Mobile Application Market Size, Share & Trends Analysis Report by Store Type, By Application, By Region, and Segment Forecasts, 2020-2027 (Sept. 2020), <https://www.grandviewresearch.com/industry-analysis/mobile-application-market>.

¹² Mobile Application Market to Value US\$717Bn by 2030, Notes TMR Study, PR Newswire (Jan. 19, 2022), <https://www.prnewswire.com/news-releases/mobile-application-market-to-value-us-717-bn-by-2030-notes-tmr-study-301463848.html>.

¹³ RFC ¶ 2.

be a criterion of the definition.¹⁴ In fact, as explained in Section II.B. below, both individuals and enterprises must be equally counted as mobile app users, because mobile apps are in large part meant to serve these two related but distinct sets of customers. More precisely, mobile apps often are the tools that bring consumers and enterprises together through functionalities like restaurant reservations and travel booking. Likewise, apps that operate in the middleware layer should be included in NTIA’s study of the mobile app ecosystem because the defining characteristic of an app is not its technology but its utility.¹⁵ All of these features of mobile app rightly should be considered part of this ecosystem.

B. Mobile Application Behavior Can Be Constrained by the Interrelated Demands of Many Sets of Differently Situated Customers.

Many mobile applications serve many sets of customers: (1) end user consumers use apps for work, information, and entertainment; (2) tens of thousands of firms in the product and service sectors rely on apps to offer and sell their wares to these end users; and (3) app developers sell new content, features, and functionalities that bring users, buyers, and sellers together. In economic theory, firms that serve diverse, but interrelated sets of customers in this way are known as “multi-sided.”

Companies at the leading edge of technological innovation, including many of CCIA’s members, have harnessed technologies to serve multiple, interrelated sets of customers and offer valuable products and services to businesses and consumers alike. Faced with the expectations of two or more groups of potential buyers, multi-sided firms are significantly constrained from donning the attributes of market power (the ability to set price and control output).

As a matter of antitrust enforcement, however, the most commonly used analytical tools were developed to analyze single-sided markets; they may fail to account for the “actual market realities”¹⁶ of many multi-sided firms. These shortcomings raise the risk of overlooking the significant constraints that multi-sided firms face and, accordingly, finding anticompetitive conduct where none exists. Such “false positives” by regulators and courts deter innovation and hinder consumer welfare.

¹⁴ See RFC ¶ 2.

¹⁵ See *id.* ¶ 4.

¹⁶ *Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451, 466 (1992).

Because many multi-sided firms generate value by facilitating transactions among their various customer sets, the demand for the services that a multi-sided firm offers to any one “side” depends not only on the characteristics of those services, but also on the demand for the services offered to the other sides.¹⁷ Thus, such firms must not only cater to the individual needs of their various customers, but also manage the interrelationships between those needs.

For example, multi-sided firms are constrained by the availability of substitute products. But pricing and output decisions in a multi-sided market may also be subject to constraints that arise from the phenomenon of interrelated demand among multiple sides of the platforms. These constraints—no less than the availability of reasonable substitutes—limit a firm’s ability to unilaterally raise prices or reduce output.

In addition, multi-sided firms face competition from other multi-sided firms as well as from single-sided firms that serve one side of the multi-sided firm’s market. Competition among multi-sided firms magnifies the effects of a price increase even further as attrition from the first firm enhances the attractiveness of the competing firm. A hypothetical monopolist test that looks only at one side of the market when considering competing firms could therefore significantly underestimate the competitive constraints at play.¹⁸

Appropriate analysis for such a firm looks to both—or all—sides of the market it serves in order to assess the overall impact that its conduct has on its ecosystem. This analysis should be employed for the mobile app ecosystem. Properly applied, multi-sided competitive analysis will show that the mobile app ecosystem is in fact extremely competitive on price, quality, and utility.

C. *Consumers’ Increased Reliance on Multi-Homing Maintains Competitive Dynamism in the Mobile App Ecosystem.*

Multi-homing, which is the practice of configuring a computing device to multiple network connections and IP addresses, is a barrier-destroying agent that has created and will maintain the vibrant competition in the mobile app ecosystem evidenced in these comments. According to a recent study, “multi-homing mitigates the tendency for network effects to lead to

¹⁷ See, e.g., Lapo Filistrucchi *et al.*, *Market Definition in Two-Sided Markets: Theory and Practice*, 10 J. Competition L. & Econ. 293, 296-97 (2014).

¹⁸ *Market Definition in Two-Sided Markets*, 10 J. Competition L. & Econ. at 296-297.

winner-takes-all situations: if market actors can multi-home, there is scope for stable situations with multiple networks.”¹⁹

Mobile apps, particularly entertainment apps, have had to adapt to follow consumers from device to device. As an example, Minecraft, a top-selling Microsoft gaming product, operates on 21 different types of devices, including iOS, Sony, and Android systems. Another example from the gaming industry is Fortnite, which runs on both iOS and Android devices via Xbox Cloud Gaming. And YouTube is a popular Google video sharing device that is available on dozens of device types, including iOS and Android mobile devices, game consoles, smart TVs, and streaming media devices. In addition, companies have joined together to develop standards that improve multi-homing and compatibility.²⁰

Consumer multi-homing necessarily brings downward pressure on price. David Evans, noted economist and leading developer of multi-sided firm analysis, has noted that, “Not surprisingly, the price level tends to be lower with multihoming because the availability of substitutes tends to put pressure on the multi-sided firms to lower their prices.”²¹ The mobile app ecosystem demonstrably will continue to benefit from multi-homing with respect to both product diversity and price.

D. Consumer Switching in The Mobile App Ecosystem.

Evidence shows that consumers switch between the devices and operating systems that they use to access mobile applications. The extent of switching in the mobile app ecosystem should be a consideration in determining whether this marketplace is competitive.

The majority of mobile apps are built for multiple operating systems. According to a recent study by the Progressive Policy Institute, 54% of the Top 200 free mobile apps are available on both the Apple and Google Play platforms in the United States.²²

¹⁹ Observatory on the Online Platform Economy, Analytical Paper #7, Multi-homing: obstacles, opportunities, facilitating factors at 36-41 (Jan. 1, 2021), <https://platformobservatory.eu/app/uploads/2021/01/AP-7-Multihoming-Jan-2021-EC-final-for-pbl.pdf>.

²⁰ Amazon, Apple, Google, and Zigbee Alliance and board members form working group to develop open standard for smart home devices (Dec. 18, 2019), <https://www.apple.com/newsroom/2019/12/amazon-apple-google-and-the-zigbee-alliance-to-develop-connectivity-standard/>.

²¹ D.S. Evans, The Antitrust Economics of Multi-Sided Platform Markets, Yale Journal on Regulation, Vol. 20, No. 2, 2003, at 346, <https://openyals.law.yale.edu/handle/20.500.13051/8032>.

²² Elliott Long, Why Users Aren’t Locked Into Their Smartphone Brand, PPI, at P4 (Apr. 2021), <https://www.progressivepolicy.org/publication/why-users-arent-locked-into-their-smartphone-brand/>.

PPI analyzed the means of data transfer related to several core apps commonly used on mobile devices, including contacts, calendars, photos, music, and videos.²³ They found several apps for transferring data, such as AT&T Mobile Transfer and Verizon Transfer, that transfer a photo library in seconds.²⁴ PPI’s study involved transferring “a basket of 25 common apps consumers use for entertainment and to complete tasks” between the Apple and Google platforms. The transfers took less than an hour.²⁵

III. Mobile App Distribution and Interoperability Are Operating Procompetitively to the Benefit of All Sides of the Industry

A. The Distribution of Mobile Apps Is a Success Story.

App stores provide options for app developers to reach consumers in an efficient manner.²⁶ In turn, consumers have a broader choice of software to use in their daily lives. In open systems, app developers and consumers have a number of platforms available to choose from, including Google Play Store, Amazon Appstore, Samsung Galaxy Store, SlideME, 1Mobile Market, Mobile9, Opera Mobile Store, Mobango, F-droid, GetJar, and more. Consequently, both app developers and consumers can choose from a wide range of app stores. Additionally, in some cases users can install software from other sources, or run it directly from a browser.

Apps are a popular way to consume content and they are used across phones, tablets, game consoles, and smart TVs. These ecosystems have offered customers access to nearly 2 million apps, the overwhelming majority of which is free, and support millions of U.S. jobs.²⁷ Continuing to provide choices to developers and users fosters competition and innovation in this space.

App stores also invest significant resources in research and development to maintain these ecosystems. This includes investments in privacy and security systems that protect consumers. The low fees that some developers pay for hosting their products on an app store

²³ *Id.* at P5.

²⁴ *Id.*

²⁵ *Id.* at P8.

²⁶ See RFC ¶ 13.

²⁷ See, e.g., iOS App Economy Creates 300,000 New US Jobs as Developers Adapt During Pandemic, <https://www.apple.com/newsroom/2020/09/ios-app-economy-creates-300000-new-us-jobs-as-developers-adapt-during-pandemic/>.

minimize barriers to entry and allow companies to continue investing in the ongoing development of protections that safeguard consumers. Free market forces, including competition between app stores in open systems, prevent stakeholders from charging excessive fees.

Importantly, app stores are incentivized to support developers, including those that compete with the companies providing the app stores, as innovation attracts customers, reinforcing innovation and competition in the ecosystem. As such, companies in recent years have made significant changes to their business model and billing practices to be responsive to feedback from developers and policymakers.²⁸

B. *Interoperability Between Mobile Apps Has Grown Organically as a Procompetitive Benefit.*

The mobile app ecosystem displays a high degree of interoperability.²⁹ As explained in Section II.D. above, the mobile app ecosystem is not beset with significant costs in the switching between devices and platforms. The mobile app ecosystem has evolved to a point that ancillary apps are available to enable fast, seamless data transfer between apps. This evolution may in part be attributed to the competitive constraints that the ecosystem experiences as a multi-sided industry facing demands from interrelated sets of users. It may perhaps also be the product of the lessons that the tech industry writ large learned from the government’s suit against Microsoft,³⁰ which demonstrated how foreclosing interoperability will stymie, and possibly break – a market.

Whatever the impetus, interoperability between mobile apps has arisen and grown naturally in the development of the ecosystem. What should not be forgotten, however, is that there are costs associated with ensuring interoperability, including the potential for security risks.³¹ Ensuring interoperability can, for example, slow down processing speed, making an app less user friendly and thus less successful.³² Interoperability thus often carries a tradeoff in

²⁸ See, e.g., Google My Business: What’s Changing (And What’s Not) in 2022 (Jan. 19, 2022), <https://www.forbes.com/sites/forbesagencycouncil/2022/01/19/google-my-business-whats-changing-and-whats-not-in-2022/?sh=194a7a37472e>.

²⁹ See RFC ¶ 9.

³⁰ The D.C. Circuit affirmed Judge Jackson’s ruling that Microsoft’s commingling of Windows OS code with Internet Explorer browsing code prevented users from operating their choice of browser on their PCs in violation of Section 2 of the Sherman Act. *United States v. Microsoft*, 253 F.3d 34, 66-67 (D.C. Cir. 2001).

³¹ See RFC ¶ 17.

³² See Caroline Wang, Mandated Interoperability Will Hurt Consumers, The American Consumer Institute Center for Citizen Research (July 23, 2021), <https://www.theamericanconsumer.org/2021/07/mandated-interoperability-will-hurt-consumers/>.

quality, raising the question whether efforts in the service of substitutability have the concomitant effect of decreasing utility.³³

The potential for security risks, which necessarily include risks to user privacy, is present when application program interfaces (APIs) are shared among platforms and apps.³⁴ While shared APIs can provide great value in an ecosystem, they also introduce the need to manage risks, and competing ecosystems may manage these risks differently. Indeed, in ongoing litigation, Judge Yvonne Gonzalez Rogers rejected the antitrust claims that Epic Games brought against Apple in the Northern District of California in part because the security standards protecting the Apple App Store implement a legitimate business purpose.³⁵ The App Store is not, Judge Rogers found, the product of monopolistic, exclusionary conduct for not allowing app developers unfettered access to roam across Apple’s App Store code.

These issues are procompetitive justifications for gaps in interoperability. The forthcoming NTIA report should not dismiss or diminish these considerations by presuming that a decision not to code an app for interoperability evidences exclusionary conduct. “In short, we cannot infer from the absence of interoperability that something is wrong[.]”³⁶

We note that in a few cases, federal mandates for app interoperability may be appropriate. A possible example is where apps are used in the provision of healthcare. The Department of Health and Human Services has adopted regulations mandating interoperability for apps that organize users’ electronic health information (EHI) pursuant to the 21st Century Cures Act, Pub. L. 114-255 (2016). The statute includes a requirement that health information be easily transferred and that applications for storing and displaying health records be interoperable. The final rules became effective June 30, 2020,³⁷ and include a certification process for standardized APIs to ensure EHI interoperability.³⁸ Recognizing the federal government’s unique role in the

³³ 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/>.

³⁴ Ham-Handed Interoperability Mandates for Big Tech Will Harm Consumers, National Taxpayers Union Foundation (Feb. 10, 2022), <https://www.ntu.org/foundation/detail/ham-handed-interoperability-mandates-for-big-tech-will-harm-consumers>.

³⁵ *Epic Games, Inc. v. Apple Inc.*, No. 4:20-cv-05640-YGR, Rule 52 Order After Trial on the Merits at 145–46 (ECF 812).

³⁶ See Bowman *supra* n.33.

³⁷ 21st Century Cures Act: Interoperability, Information Blocking, and the ONC Health IT Certification Program, 85 Fed. Reg. 25642 (2020).

³⁸ *Id.* at 25645.

provision of healthcare, CCIA believes that these mandates should be the exception, not the rule.

IV. The Federal Government Can Play a Vital Role in Preserving User Privacy and Fostering Competition for the Mobile App Ecosystem

The RFC asks what measures, if any, the federal government should take with regard to preserving and fostering competition in the mobile app ecosystem.³⁹ Two key policy goals should be creation of clear guidance for consumer privacy and maintenance of merger analysis that rewards innovation and investment in mobile apps.

A. Federal Guardrails for Ensuring the Privacy of User Data on Mobile Apps Will Benefit Consumers and Foster Growth in the Market.

The federal government can encourage “healthy competition”⁴⁰ in the mobile app ecosystem by employing its authority and expertise to adopt a set of “rules of the road” for protecting the privacy of app users’ personal data. When consumers know their rights and providers have clear guidance on how to protect those rights, firms and consumers are free to experiment, innovate, and make good choices.

The more that consumers have entrusted their daily lives to digital helpmeets, the more a consensus has formed that the U.S. needs a generally applicable, federal privacy statute.⁴¹ Our persistent inability to craft federal legislation has left a vacuum that now is being rapidly filled with disparate legislative efforts in various states.⁴² Neither consumers nor the business community are well served by a mosaic of state privacy laws having different emphases, different focuses, and different standards.

The Agency’s survey of the mobile app ecosystem is a timely opportunity for collaboration on privacy guidelines. This ecosystem might, in fact, be the best arena for starting the discussion. With its size and expected continued growth, the mobile app industry already touches the lives of tens of millions of Americans. Mobile apps could finally be the fulcrum for

³⁹ RFC ¶ 27.

⁴⁰ *Id.*

⁴¹ E.g., Thorin Klosowski, The State of Consumer Privacy Laws in the U.S. (and Why It Matters), NY Times (Sept. 6, 2021), <https://www.nytimes.com/wirecutter/blog/state-of-privacy-laws-in-us/>.

⁴² See, e.g., Virginia Consumer Data Protection Act (“VCDPA”) § 59.1-571 *et seq.* (Mar. 2, 2021), Colorado Privacy Act (“CPA”) § 6-1-1301 *et seq.* (July 7, 2021); see also California Privacy Rulemaking, Proceeding No. 01-21, The California Privacy Rights Act (November 3, 2020); Colorado Privacy Rulemaking, The Colorado Privacy Act (July 8, 2021).

leveraging the concerns of consumers into unified 21st Century privacy regime for all of U.S. commerce.

B. Federal Merger Analysis Can Foster Healthy Competition in the Mobile App Ecosystem by Recognizing the Pro-Consumer Benefit of Mergers and Acquisitions in this Industry.

As NTIA may well be aware, the FTC and DOJ jointly have commenced a proceeding to consider refreshing the merger guidelines.⁴³ The RFI seeking comment devotes several questions to how merger analysis should apply to “digital markets,” which would include mobile apps. In its responsive comments, CCIA emphasized the salutary effects of mergers and acquisitions on both innovation and investment in digital markets, demonstrating with empirical evidence that consumers benefit when app developers and investors have an expectation of an ownership transaction that will reward them for their ingenuity.

The point is equally salient in this inquiry. The federal government – more specifically, federal antitrust enforcers – can ensure that mobile app competition remains robust by applying merger analysis that recognizes the value that mergers and acquisitions bring to consumers.

CCIA is not advocating, in either proceeding, the creation of a new set of merger guidelines that rewrite antitrust practice and jurisprudence accumulated over the course of many decades. To the contrary, the guidelines already are flexible enough to apply to any market, including digital markets, and undertaking a wholesale revision to these longstanding principles would introduce uncertainty and ambiguity to the process of evaluating transactions. The agencies would do a great service to consumers and to mobile app firms by preserving the merger guidelines, albeit with a more pointed reliance on modern economic theory such as the multi-sided analysis we discuss in Section II.B. above. Finality and clarity in federal regulation encourage firms to enter, compete, and remain in the marketplace. In turn, competition thrives in the marketplace.

V. Conclusion

Growth and innovation in the mobile app ecosystem, together with rapid advancements in the power and diversity of mobile devices, have created a fiercely competitive environment

⁴³ See *supra* n.2.

benefiting consumers, developers, and the computer industry. Federal agencies can foster the ecosystem's continued success by crafting sensible guidelines for privacy and properly applying existing merger analysis to encourage transactions that reward innovation and investment in mobile applications.

Respectfully submitted,

Krisztian Katona
Vice President of Global Competition and
Regulatory Policy
Stephanie A. Joyce
Chief of Staff and Senior Vice President
Computer & Communications Industry Association
25 Massachusetts Avenue NW, Suite 300C
Washington, DC 20001
kkatona@ccianet.org
stephaniejoyce@ccianet.org

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