

1 April 2022

Australian Competition & Consumer Commission  
23 Marcus Clarke Street  
Canberra ACT 2601  
Australia  
digitalmonitoring@accg.gov.au

**RE: *Comments of ACT | The App Association to the Australian Competition & Consumer Commission's Digital platform services inquiry 2020-2025, September 2022 interim report***

ACT | The App Association appreciates the opportunity to provide input to the Australian Competition & Consumer Commission (ACCC) on its September 2022 interim report, part of the ACCC's Consumer Commission's Digital platform services inquiry 2020-2025.<sup>1</sup>

The App Association represents thousands of small business application developers and connected device companies, located both within Australia and across the globe. These companies drive a global app economy worth more than AUD 2.3 trillion, and this economy continues to grow. App Association members leverage the connectivity of smart devices to create innovative solutions that introduce new efficiencies across consumer and enterprise use cases and rely on a predictable and fair approach to platform regulation to grow their businesses and create new jobs; therefore, ACCC's inquiry into online intermediation platforms is directly relevant to us, and we urge for the careful consideration of our views.

Generally, the App Association encourages competition policymakers and enforcers to avoid developing industry- or sector-specific merger enforcement guidance. There would be substantial risks and unintended consequences associated with disparate treatment among industries if the ACCC were to carve out exemptions or specifically target certain sectors of the economy. A flexible, industry-agnostic approach to competition policy and enforcement is far superior in addressing unique and challenging use cases, promotes a harmonized and predictable legal and business environment, and will be more able to keep pace with changes to the marketplace brought on by technological advancements that cannot be anticipated. The concept of a "digital platform" and "digital market" is constantly changing as new services and products are introduced to the public. Differences in terminology between how phrases are used in

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<sup>1</sup> <https://www.accc.gov.au/focus-areas/inquiries-ongoing/digital-platform-services-inquiry-2020-2025/september-2022-interim-report>.

commerce and how phrases are used in static industry-specific merger guidance will inevitably diverge, leading to an inconsistent application of antitrust law that would deter beneficial mergers and acquisitions.

Below, the App Association provides general views on digital platforms and competition, as well as reactions and feedback on specific conclusions raised by ACCC in its September 2022 interim report. Notably, the App Association recommends below that:

- The benefits of variety in digital software distribution platforms should be acknowledged within the September 2022 interim report. Otherwise, ACCC risks biasing later policy decisions made in the policy development process.
- Uniformity is integral when contemplating competition rules and guidelines. Industry- or sector-specific competition approaches may lead to unintended consequences associated with disparate treatment among industries if the ACCC were to carve out exemptions, including specifically targeting certain sectors of the economy.
- Small businesses within the app ecosystem rely on a flexible, industry-agnostic approach to competition policy and enforcement. A predictable legal and business environment allow for innovators to better navigate changes to the marketplace brought on by technological advancements that cannot be anticipated.
- Rigorous economic analysis is a cornerstone of any review or enforcement and must be continued in the Australian review process as it provides a transparent and objective method of evaluation in enforcements and allows businesses to predict when their actions may or may not create antitrust enforcement concerns. Reducing the role of or removing economic analysis from Australian competition decision-making processes would create uncertainty for businesses, disrupting legal and business certainties and limiting the ability of the innovative companies we represent to succeed.
- Objective data-driven evidence should be used to inform any changes made to competition reviews/enforcements of acquisitions/mergers rather than edge-use cases and hypotheticals. Specifically, vertical integrations should not be viewed as inherently anticompetitive or as innately having a negative effect on consumers, as such assumptions stand in stark contrast to both objective evidence and the experiences of our members. The distinction between vertical and horizontal mergers in enforcement guidance is important as the incentives for, dynamics driving, and potential to impact competition of both vertical and horizontal mergers often differ significantly.

The App Association shares ACCC's goals of advancing competition and innovation in digital platforms. We offer the perspectives and recommendations below on the proposed scope of the ACCC's inquiry and surrounding issues and welcome the opportunity to assist ACCC in its efforts moving forward.

## **I. The Impact of Platforms on Software Distribution: What Makes an Ecosystem Work?**

In just over a decade, the app ecosystem has grown exponentially alongside the rise of the smartphone. Valued at AUD 2.3 trillion, the app economy is driven by app developers and innovators who rely on software platforms to reach consumers around the globe. In 2020, the total number of app downloads was 247 billion (up from 194 billion in 2018)<sup>2</sup>, and the reach of software applications continues to grow. However, the app economy's trajectory encapsulates several factors that have contributed to its success.

The single most important factor in the app ecosystem's dynamic growth and unrivalled success is the presence of curated platforms, or app stores. Trusted app stores serve as a vital foundation for the growing uses of apps across industries and enterprises. Three key attributes led to the revolution in software distribution:

1. The provision of a bundle of services that reduces overhead costs;
2. Instantaneous and cost-effective consumer trust mechanisms; and
3. Cost-effective access to a global market.

Today, every successful platform for mobile, desktop, gaming, and even cloud computing must provide these features or risk failing in the marketplace.

## **II. How Developers Distributed Software Before Platforms**

Much has changed for consumers and developers since the early days of software applications. In the early 1990s, consumers were tasked with the challenge of locating and then travelling to a brick-and-mortar store that happened to sell software. Once internet connectivity became a standard feature in most private residences, consumers began to download applications from the comfort of their homes without having to step foot in a physical store. Despite the changes brought by internet connectivity, the golden age of personal computer (PC) software pales in comparison to the size and scale of the mobile app revolution during which software developers evolved into app developers. During this transition to online distribution, consumers were often unable to trust software downloaded from the internet because the vetting function of platforms had not yet been introduced.

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<sup>2</sup> L. Ceci, *Number of Mobile App Downloads Worldwide from 2018 to 2023*, Statista, <https://www.statista.com/statistics/241587/number-of-free-mobile-app-downloads-worldwide/> (showing consistent growth in app downloads from 2018-2020 with further growth projected through 2023).

Before the ubiquity of mobile platforms, the software ecosystem ran on PCs, and software companies had to cobble together a distribution plan, including the creation of consumer trust from the ground up. This forced early app companies, often with teams of one to two developers, to wear many hats to develop, market, and benefit from the sale of their products. App companies were not only required to write code for their products, but they were also responsible for:

1. Managing their public websites;
2. Hiring third parties to handle financial transactions;
3. Employing legal teams to protect their intellectual property; and
4. Contracting with distributors to promote and secure consumer trust in their product.

The skillsets required to manage the overhead of online software distribution were often not “core competencies” of small development companies, and the additional steps cost app developers valuable time and money, with little tangible benefit.

In the internet economy, immediate consumer trust is almost impossible without a substantial online reputation, and not attaining it spells death for any app company. However, what does “trust” mean? In this context, trust refers to an established relationship between the app company and consumer where the consumer demonstrates confidence to install the app and disclose otherwise personal information to an app company. Prior to platforms, software developers often had to hand over their products to companies with a significant reputation to break through the trust barrier.

Developers in a pre-app store world experienced difficult and oppressive distributor requirements placed on software developers that predated the platform ecosystem. When dealing with retail distributors, these small businesses were required to guarantee a competitive price, pay 3-6 percent of sales as a marketing fee in addition to AUD 160,000 for product launch marketing, shipping to deliver their products to distributors, and buying back unsold products. Once contracts were negotiated, software developers were often required to spend additional money so that in-store catalogues would feature their product or retail stores would place their product on an endcap display, all before consumers even saw the products.

However, with the advent of the smartphone and app stores, the experience of these innovative small businesses became a relic of the past. The smartphone, in its brief history, revolutionised the economy at large and established a symbiotic relationship between software platforms and developers. The fact that developers have a choice in which platform to use to reach their consumers and clients underscores that platforms compete not only as app marketplaces but as developer services providers. When developers distribute an app through an internet browser, and not through a platform’s app store, the developer still benefits from the trust consumers have that the web browser running on their phone is safe to use. In this way, developers can choose not to make use of a platform’s developer services and instead use other service providers for functions like distribution and marketing while still reaching the same consumer base.

### III. The Applicability of Antitrust Law to Software Platforms: Two-Sided Market Analysis

#### a. Software Platforms and Market Definitions

A market definition should precede a determination of market power and abuse. While a market definition should consider antitrust foundations such as the existence of substitutes, such an analysis must be fact-specific and traditional antitrust analysis is not easily applied to platforms that often are multi-sided markets.

Multi-sided platforms differ from traditional markets in important ways because the platform creator's practices and pricing on one side of the market affect the other side. For example, investments that increase participation or quality on one side of the market create the value that is sought by the other side. The value of the services that a two-sided platform provides increases as the number of participants on both sides of the platform increases. A platform firm must therefore be concerned not only with its own quality and advertising, but also that of the vendors who operate over its network.<sup>3</sup>

Traditionally, antitrust analyses on two-sided markets (e.g., newspapers) have focused on only one side of the market because of the limited impact of network effects. Where platforms experience more indirect network effects with linked demands and pricing—such as in the case of software app distribution platforms—including both sides in the relevant antitrust market is appropriate. Mobile platform markets likely require consideration of at least three distinct markets (possibly four if one considers wireless carriers) to perform one transaction. But even where multi-sided platforms have demonstrable competition on both sides of a transaction, using traditional constructs such as the “small but significant non-transitory increase in price test” (SSNIP) on one side of the transaction would lead to the misapplication of antitrust law.

ACCC should provide the flexibility for case-by-case market definitions, and a full understanding of a market is required in order to appropriately apply antitrust law to multi-sided digital platforms. Both legacy and novel economic and legal approaches can and should address the complexities of multi-sided platforms.

In its September 2022 interim report, ACCC appropriately recognizes a number of prominent digital platforms in existence today;<sup>4</sup> however, the App Association requests that ACCC supplement this discussion by further discussing the broad range and diversity of digital platforms that serve countless consumer and enterprise use cases and explore the ways in which they compete with one another for developers and customers. While there is a persistent tendency to include only two platform providers, Apple and Google, in a list of “app stores,” for developers the market is much wider,

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<sup>3</sup> Mark Rysman, *The Economics of Two-Sided Markets*, 23 J. Econ. Persp. 125, 136 (2009).

<sup>4</sup> September 2022 interim report at 16-25.

with different choices being most desirable based on the use case and potential customer base. Certainly, the Apple and Google app stores offer immense value that developers realize through lower overhead and compliance costs, built-in customer trust, increased speed to market, and wider distribution and market access, as discussed elsewhere in this comment. These platforms provide a centralized framework for app developers to engage and secure visibility with the 3.4 billion app users worldwide. With lower costs and barriers to entry, both fledgling and established app developers can find success. In addition to the Apple and Google app stores, App Association members leverage many further options for developers. A game developer can choose platforms like Epic or Steam, and enterprise developers can look to hundreds of proprietary, custom platforms or could create their own. Moreover, for developers looking to reach a general audience, using the web is an alternative, especially for companies that are looking for different kinds of distribution or search services than those available on platforms. Additionally, software developers could choose to advertise on Facebook or distribute their products through Amazon, or one of the Chinese platforms. It is worth noting, however, that there are some important distinctions between software platforms—like the App Store or Google Play which provide a marketplace for software apps—and social media platforms or “aggregators” that connect people with information and are fueled by data. Aggregators like Facebook and Twitter, for example, connect people with information and other people (and generate valuable data in the process), while the Google Play store and the App Store provide a marketplace for consumers and app developers to transact directly. These differences illustrate the diversity in the market for distribution methods, as developers may prefer one model over another.

And although developers can choose from multiple platforms, there is no such thing as a perfect platform. Many app developers pay a fee to platforms for developer services, and they expect those services to meet their needs. Just as online companies must clearly communicate their data practices to consumers, so must platforms clearly define the requirements and details of their terms of service to developers. For example, when platforms change their developer guidelines, they must communicate clearly and ensure developers understand what the changes mean for them and their customer relationships.

b. Software Distribution Platforms, Market Power, and Monopoly Power

Once a market has been appropriately defined, an antitrust analysis would turn to a determination of market and monopoly power. Market power and monopoly power are related concepts but are not the same. Market power is the seller's ability to raise prices above those that would be charged in a competitive market, while monopoly power occurs when a firm has the power to control prices and exclude competition. ACCC should distinguish the two concepts as a matter of degree, monopoly power being higher. However, a firm's mere possession of either market power or monopoly power is not enough for ACCC to find competitive harm; ACCC must demonstrate that the firm unfairly values its products resulting in harms to consumers and competitors. Demonstration of such abuse is critical to properly determining whether antitrust remedies are appropriate, and if so, to what degree. The App Association applauds ACCC for recognizing the complexity of establishing market power when evaluating digital platforms in its September 2022 interim report,<sup>5</sup> but urges for its analysis to be updated to clearly define and explore both market power and monopoly power.

Platforms play an important role in tech-driven markets as well as across a variety of economic sectors, bundling sets of services together for sellers and connecting those sellers with specific categories of buyers. Australian antitrust policy should reflect that market power assessments should be more holistic and rely on factors past market share alone, and that new digital platforms illustrate that the application of traditional antitrust fact patterns to complex software platforms is ill-advised. Over-reliance on basic market share (e.g., the relative size of a user base) breakdowns wrongly equates *share* with *power*, ignoring unique attributes of multi-sided platforms such as the ability to benefit from multiple services on the same platform, a low barrier to substitution, and ease of market entry by new competitors. Such characteristics minimise the lock-in effect on users. Further, a proper antitrust analysis should also demonstrate that the monopoly power at issue is not short-lived. Such a determination will, again, be highly fact-dependent and should be comprehensive, based on rigorous and objective economic analysis.

We also strongly caution ACCC to avoid relying on unproven allegations made by outlier opportunist companies seeking to upend the harmonious app ecosystem for their own company's benefit. For example, in its September 2022 interim report, ACCC cites the claims made by Epic Games, Inc. in a U.S. lawsuit against Apple Inc.<sup>6</sup> We strongly urge ACCC to review the App Association's amicus brief filed in this case, which we have appended to this comment.<sup>7</sup>

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

<sup>6</sup> *Id.* at 40.

<sup>7</sup> See appended amicus brief of ACT | The App Association in *Epic Games, Inc. v. Apple Inc.*, U.S. Court of Appeals for the Ninth Circuit, Case No. 4:20-cv-05640 (1 April 2022).

#### **IV. The Software Side of the Market**

Turning to the different sides of the software platform market, the most visible side for the general public is the one characterised by software sellers (app developers) selling to software consumers (businesses and individual consumers). One of the most often-cited alleged competitive deficiencies on this side of the market is the practice of self-preferencing by platforms. Considering the unique nature of software distribution platforms, self-preferencing is in most cases pro-competitive because it is an example of vertical integration. We urge ACCC to conclude that where vertical integration or self-preferencing can lead to greater efficiency, better quality, or lower costs for consumers, there are minimal antitrust issues when users can easily switch to another platform.

Considering that smartphones are music players, cameras, and multimodal communications devices, a narrowly focused view of one of these features without recognising the integration of the same into the devices is incompatible with the way consumers experience them. Moreover, ACCC should expect competition to discipline examples where self-preferencing is bad for consumers because those consumers can leave the platform due to demonstrably low switching costs. Just like other categories of market activity, an antitrust inquiry into self-preferencing is generally only appropriate where the company at issue has market power and where it is using that market power to harm competition and consumers. Unfortunately, in other jurisdictions such as the European Union (EU), policymakers have proposed flipping the burden onto platforms to show that self-preferencing has no long-run exclusionary effects and either the absence of adverse effects on competition or an overriding efficiency rationale. The App Association discourages such an approach in Australia because it would chill market activity that is likely to benefit consumers.

#### **V. The Developer Services Side of the Market**

Aside from the antitrust attacks on platform activity in the software half of the two-sided market, critics also allege competition abuses in the developer services side of the market. ACCC should be especially wary of populist calls for the overapplication of antitrust law to digital platform activity in this side of the market. Some are seeking to leverage this trend to use the antitrust laws to punish their competitors and tend to overstate the problems they identify. For example, advocates for antitrust intervention point to the cost of the services software platforms provide to developers as evidence that policymakers should expand antitrust law. To show that paying for developer services is unfair, they compare the cost of software distribution to the cost of payment processing. Similarly, payment processing is just one element of the array of services you get on a software platform, which include: immediate availability through hundreds of millions of people's devices; marketing through the app store; privacy features embedded in the platform; assistance with intellectual property protection; and security features built into the platform. Complaints about the costs of developer services paid to platforms are overstated because such costs are being compared to a much less

substantial service and do not warrant an expansion of antitrust law or the creation of a new regulatory regime to reduce the price of developer services.

The other evidence advocates offer to show harm to competition occurs in making software available on the open internet free when it is not; software distribution on a platform generally costs money. As discussed above, selling software on the open internet requires the seller to take on several tasks the software platform bundles together (including marketing, intellectual property policing, privacy controls, security features, and payment processing). And even taking it at face value, the premise has the inconvenient characteristic of proving the opposite point—that is, selling software on the open internet can be a substitute for selling software on a platform. Not only that, detractors of software platforms say they have no choice but to submit to software platform demands and then openly admit that they need not submit to software platform demands because they sell their software on the open internet instead. It is hard to imagine that this internal inconsistency goes unnoticed, and observers likely cannot help but discern from this that software sellers have options. Indeed, many other developers have made the transition off platforms without claims of anticompetitive conduct. Substitutes, even when they are not identical, are common in market economies and tend to signal healthy competition.

The other conclusion ACCC should draw from these arguments is that policymakers should be wary of opportunistic behaviour by well-resourced competitors disguised as antitrust concern. Those that are most vocal often imply they are speaking for the app economy as a whole, but in reality, they tend to be larger companies seeking to use antitrust law or other policy levers to undermine competitors. Right now, the largest software platforms generally charge the same (as a percentage of revenue) for developer services regardless of the company's size or political clout, or in some cases less for smaller developers. Smaller developers have the advantage in either of these arrangements because they do not have the leverage to negotiate better terms on their own, as larger companies do. Overtures to have ACCC or other policymakers involve themselves in developer-platform relations, therefore, may benefit the largest software companies on the platforms while leaving small developers like App Association members worse off. If large software companies convince ACCC to require software platforms to give them a better one-off deal, App Association members and their clients and customers are forced to subsidise the resulting discount for these larger companies. Adding insult to injury, many App Association member companies compete with these larger firms, so the benefit handed to the larger companies could directly disadvantage App Association members.

Even as the antitrust concerns expressed in this area are often overstated, a competition analysis of these dynamics is not always the final say, and antitrust concerns may conflict with countervailing policy priorities. For example, policymakers have raised alarms over measures software platforms use to protect consumer privacy. In one instance, a software platform faced antitrust concerns after a decision to curtail apps' ability to track a consumer's location even when the app is not running unless the consumer clearly consents. Advocates exert a steady stream of pressure on software

companies and platforms to improve their privacy practices, especially with respect to location data, often pointing to how companies collect such sensitive personal information. In reality, privacy controls at the platform level ameliorate this perceived problem by making it easier to set collection rules for all or specific apps.

Policymakers have long made it clear that companies should embed privacy into the design of their products and services. Accordingly, the purpose of a privacy prompt from the platform's operating system should not be to confuse a consumer into selecting an option that gives away more data than they intended. It follows that requiring platforms to make it easier to provide location data, even when an app is not running, than it is to protect that data—because doing so would help a specific app developer—runs headlong into the policy imperative of privacy by design. Looking at the issue solely from a competition lens is, therefore, an incomplete view. Moreover, the more privacy-protective approach of one software platform differentiates it competitively from other platforms that arguably make it easier for developers to collect sensitive data. In resolving these policy tangles, the focus should be on what works best for consumers. Antitrust law by itself rightfully addresses consumer welfare — it does not seek to benefit competitors. So, if a platform has an offering that a consumer prefers over the offering of an independent developer, ACCC should ask whether the complaints of powerful competitors necessitate legislating away that choice.

App Association members are selective about the markets they enter, but they compete aggressively. And the presence of a powerful and well-resourced competitor is not always enough to totally discourage entry. Having plentiful resources is an undeniable advantage as a competitor (whether it is a platform or not), but our member companies exist because they fill a niche with a differentiated product, they can compete on price, or they can simply outmaneuver the larger competitors. The continued existence and success of camera apps on app stores is an example of companies competing directly with a platform.

But that is not to say a company with a competing offering should never be purchased by a larger company. There are three main definitions of success for a small company: passing the company along to the next generation; being purchased by a larger company; or (much less often) an initial public offering (IPO). Being purchased is often the best of these three options for the business owner and consumers — after all, IPOs are expensive and fraught with risk. A purchase that helps produce better products or services for consumers is both a natural and beneficial end for some companies and healthy from a competition perspective.

## **VI. The Developer Services Market**

At first, developers were reluctant to join platforms, worried that the model might not accommodate their ability to launch fast and iterate their apps. But successful platforms changed the app ecosystem by providing app developers with ubiquitous access to a broader swath of consumers. Platforms provide a centralised framework for app

developers to engage and secure visibility with 5 billion app users worldwide. With lower costs and barriers to entry, both fledgling and established app developers can find success.

One of the central markets at issue is the market for developer services, where a developer pays a platform for assorted services including distribution, marketing, etc. This market also experiences vigorous competition. There is a tendency to include only a few platforms in this category of competitors, but for developers, the market is much wider. For example, game developers can choose additional platforms just for games, and enterprise developers can look to hundreds of proprietary, custom platforms or could create their own.

a. How Software Developers Established Consumer Trust Before Platforms

Before the introduction of the smartphone, software developers built consumer trust slowly and at great expense, and that trust was and remains essential for a software developer to bring a product to market. Most did not have a widely recognisable brand to endorse the software. Prior to mobile platforms, software developers often had to break through the trust barrier by handing over their products to companies with a significant reputation.

Even shareware products that could be digitally distributed would end up partnering with reputable brands to gain consumer trust. Today, consumers can download games like these for free on platforms. These platforms not only lower cost by taking care of the significant overhead involved in selling their product, but they can also reach consumers much more easily.

But the trust mechanism provided by the platforms is not merely an aspect of size. Consumer trust requires constant maintenance and vigilance because the loss of trust hurts both the platforms and the developers who rely on them. The immediate consumer trust embedded into platform brands worth billions of dollars allows developers to clear the critical hurdle of achieving trust from consumer adoption.

b. How Software Developers Dealt with Piracy Before Platforms

Before the age of platforms, software developers struggled to safeguard their IP against piracy and theft. Software companies faced serious challenges in protecting their products in retail stores because the licensing codes remained active and easy to steal. Once developers overcame the significant barriers to bring their products to market, they were faced with the threat of piracy and theft which limited their volume of business and hurt their bottom line. As far back as 2006, it was estimated that, on average, software developers lost AUD 10.1 million in revenue per year.

Before software developers could leverage dispute resolution mechanisms provided by platforms, developers were left with the significant burden of intellectual property infringement litigation in court, which could leave the legitimate IP owner with several thousand AUD per month in legal fees and months or years diverted from company matters. When the infringement originated abroad, software developers were at the mercy of foreign judicial systems, some lacking rule of law and impartiality. Software developers and copyright holders continue to benefit from platforms' cost-effective avenues, such as their dispute resolution mechanisms referenced above, to distribute and protect the integrity of their products.

Despite all of these platform-enabled advantages, for developers looking to reach a general audience, using the web is an alternative, especially for companies that are looking for different kinds of distribution or search services than those available on platforms. It is worth noting, however, that there are some important distinctions between software platforms—some provide a marketplace for software apps, while social media platforms or “aggregators” connect people with information and run on data. Aggregators connect people with information and other people (and generate valuable data in the process), while the app stores provide a marketplace for consumers and app developers to transact directly. These differences illustrate the diversity in the market for distribution methods, as developers may prefer one model over another.

Software platform safety and security are essential elements of developer services, particularly for enterprise app developers. Software platforms' security features have improved markedly over the course of their existence yet must continually adapt to address new vectors and threats. While unlocking a device used to require simply a four-digit passcode, devices are now capable of biometric authentication and software platforms make these authentication measures available to developers as well so that they can also offer these heightened security measures to their customers to build and maintain trust. But the game of cat-and-mouse between cybersecurity professionals and hackers will never end, and security must continue to evolve to meet and beat the threats. Although some platforms do not control device security, developers want the platform's security features to work seamlessly with any relevant hardware and that they account for all attack vectors. Software platforms should continue to improve their threat sharing and gathering capabilities to ensure they protect developers across the platform, regardless of where threats originate. Moreover, they should approve and deploy software updates with important security updates rapidly to protect consumers as well as developers and their clients and users.

## VII. Signs of Competitive Health: Platforms Unlock New Markets

As successful as the past decade plus has been for the app economy, the next decade could be even better. In just the third quarter of 2019, the major app stores generated more than AUD 30.2 million in revenue, a robust 23 per cent year-over-year increase from the third quarter of 2018. This growth suggests the developer-platform model is still succeeding. Moreover, app economy growth is likely to endure because developers are continuing to create new products, services, and markets that did not exist prior to platforms. A notable example of the app economy's ingenuity is in combatting the COVID-19 pandemic. Mobile apps have been effectively utilised for contact tracing notifications to assist in minimising the spread of the disease, saving countless lives.

Perhaps most importantly, the universe of platforms is continuing to evolve and expand as diverse kinds of hardware connect to the network. For example, new platforms are cropping up for wearables. Connected home devices and cars drive cross-platform interoperability so that voice-assisted capabilities can communicate with other devices — further weighing against conceptions of platform markets where a single player wields market power and indicating that developer services will continue to improve and evolve along with demand.

Another area where platforms enable developers to reach new audiences is through accessibility tools. Mobile operating systems are built with powerful accessibility tools for developers to use in creating apps that enhance the lives of the disabled. Whether it is voice directions in a mapping app for the visually impaired or text to speech tools for those with a speech-language disorder, offering these tools as part of a developer tool kit assists any app in reaching a wider audience.

In addressing transparency in digital platform operations, ACCC addresses featuring and ranking in app stores.<sup>8</sup> App Association app developer members often are featured based on their designing of a sleek user interface and intuitive user experience, updating their app(s) regularly, optimising app localisations, making the app accessible to those with disabilities, gathering reviews, and creating an app preview. On the App Store, building an innovative app that stands out and letting the App Store editorial team know about it (through <https://developer.apple.com/contact/app-store/promote/>) is the best way to get featured. The Google Play store is more algorithm-driven (rather than editorial-driven); on Google platforms, it is more important to get discovered by users and start trending to be noticed. The app title, number of downloads, good ratings, and price are the main factors that determine search rank. Generally, platform transparency, including with respect to ranking and featuring in app stores, is important to our members and any business users to increase their ability to plan ahead and attain legal certainty for their business but is not crucial to our members' success in a platform. The App Association believes that there are different levels of transparency and notes that while more information on some levels can be beneficial (e.g., technical specifications, tools available to business users), platforms should not be obligated to disclose all their

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<sup>8</sup> September 2022 interim report at 56.

business operational details, such as their ranking-specific algorithms. Full and complete transparency would make search ranking manipulation nominal and fill the app stores with spam. It is important to allow the platforms enough flexibility to continue to optimise their search and ranking algorithms and stay ahead of those who are trying to game the system.

## **VIII. Concluding App Association Views on Various Proposed Remedies and the Path Forward for the Digital Platforms Inquiry**

The extraordinary rise of the app economy happened in tandem with the development of the smartphone and software platforms. The presence of established, centralised platforms helps to drive the app ecosystem's dynamic growth and unrivalled success. Platforms serve as vital foundations and databases for the growing uses of apps across industries and enterprises. Software platforms do three things for app developers:

1. Reduce overhead costs across the board;
2. Provide instantaneous consumer trust mechanisms; and
3. Enable cost-effective access to a global market.

Today every successful platform for mobile, desktop, gaming, and even mainframe computing must provide those features, or they fail in the marketplace. Apps serve as the driving force in both the popularity and development of the smartphone and in turn, platforms offer lower barriers to entry for software developers into markets worldwide. The two entities' successes are symbiotic, and ACCC should take great care not to upset this healthy dynamic that has widely benefitted Australian consumers and businesses widely.

Building on the views and recommendations above, we offer the following general suggestions, followed by reactions to the various conclusions and proposed remedies put forward by ACCC.

- The App Association generally urges ACCC to ensure that it appropriately discusses the demonstrated benefits of various digital platforms, in particular software distribution platforms as discussed above, in addition to the potential harms elaborated on throughout the September 2022 interim report. Without sufficient credit being given to digital platforms in its September 2022 interim report, ACCC risks biasing later policy decisions made in this policy development process.
- ACCC is strongly encouraged to avoid developing industry- or sector-specific competition approaches as there would be substantial risks and unintended consequences associated with disparate treatment among industries if the ACCC were to carve out exemptions or specifically target certain sectors of the economy. A flexible, industry-agnostic approach to competition policy and enforcement is far superior in addressing unique and challenging use cases, promotes a harmonized and predictable legal and business environment, and will

be more able to keep pace with changes to the marketplace brought on by technological advancements that cannot be anticipated. The concept of a “digital platform” and “digital market” is constantly changing as new services and products are introduced to the public. Differences in terminology between how phrases are used in commerce and how phrases are used in static industry-specific merger guidance will inevitably diverge, leading to an inconsistent application of antitrust law that would deter beneficial mergers and acquisitions. ACCC’s discussion of scope in Section 7.2<sup>9</sup> also illustrates, in the App Association’s view, the futility of attempting to carve out a future-facing definition for the “digital platforms” to which such industry-specific policies would apply.

- If Australian competition policy is revisited as a result of ACCC’s digital platforms inquiry, we urge for careful and targeted improvements to be made to existing law, consistent with the above. Further, any changes in Australian competition policy and enforcement must retain rigorous economic analysis as a cornerstone of any review or enforcement. Economic analysis provides a transparent and objective method of evaluation in enforcements and allows businesses to predict when their actions will and will not create antitrust enforcement concerns. Reducing the role of or removing economic analysis from Australian competition decision-making processes would create uncertainty for businesses, disrupting legal and business certainties and limiting the ability of the innovative companies we represent to attain success.
- ACCC should inform any updates made to competition reviews/enforcements of acquisitions/mergers using an objective data-driven evidence base and avoid making policy-level decisions based on edge-use cases and hypotheticals. In considering any updates to merger policy, ACCC should be mindful to avoid framing mergers, especially vertical integrations, as inherently anticompetitive or as innately having a negative effect on consumers as such assumptions stand in stark contrast to both objective evidence and the experiences of our members. We further urge ACCC to appropriately maintain the distinction between vertical and horizontal mergers in enforcement guidance as the incentives for, dynamics driving, and potential to impact competition of both vertical and horizontal mergers often differ significantly.
- Altered or new recordkeeping obligations imposed on companies covered by future rules should be tailored and imposed with a priority for minimizing compliance burdens.

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<sup>9</sup> *Id.* at 72-73.

### a. The App Review and Curation Process

ACCC's September 2022 interim report, at various points, discusses digital platforms' transparency and dispute resolution.<sup>10</sup> App Association members have a wide range of experiences across numerous platforms with respect to the time taken to get an app onto the app store, issues that prevent apps from being approved, information provided about the review process, the adequacy of communications from the app store during the review process, and changes to app store review processes. When developing an app, there are many steps involved from designing and testing to eventually getting your app approved for release on the platform of your choice. For instances where the launching of an app doesn't go as planned and a developer needs to engage in a store's appeals process, the App Association has developed a document to help developers avoid or resolve the most common issues, including conflicting revenue flows, the use of undocumented or unauthorised application programming interfaces (APIs), and conflicts between the platform's privacy protections and the functionality of the app.<sup>11</sup>

Our member companies pay a fee to platforms for developer services, and they expect those services to meet their needs. Just as online companies must clearly communicate their data practices to consumers, so must platforms clearly define the requirements and details of their terms of service to developers. For example, when platforms change their developer guidelines, they must communicate clearly and ensure developers understand what the changes mean for them and their customer relationships. Occasionally, we hear from a member company that an ill-defined change significantly impacted their business. For example, a software platform recently put a member company that provides a call blocking app on notice for temporary removal unless it made changes to how it obtained permission for gathering incoming call data. The platform did not clearly explain how its policies changed or why they would necessitate action on the app's part, but it was the first removal notice of its kind in the app's nine years on the platform. Ultimately, the platform did not remove the app, but the process for remaining on the store was difficult enough to navigate that the company looked to us, their trade association, for help. Relevantly, this occurred amid a major update to the U.S. state of California's privacy laws, so it may be an example of the unintended consequences of government intervention. The safety and security software platforms are essential elements of developer services. Software platforms' security features have improved markedly over the course of their existence. Whereas unlocking a device used to require a four-digit passcode, devices are now capable of biometric-based authentication, and software platforms make these authentication measures available to developers as well so that they can also benefit from these heightened security measures. But the game of cat-and-mouse between cybersecurity professionals and hackers will never end, and security must continue to evolve to meet and beat the

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<sup>10</sup> *E.g.*, September 2022 interim report at 55-57.

<sup>11</sup> This resource is available at <https://actonline.org/wp-content/uploads/The-App-Makers-Guide-to-Ensuring-a-Successful-App-Launch-July-2020.pdf>.

threats. Although some platforms do not control device security, developers want the platform's security features to work seamlessly with any relevant hardware and to account for all attack vectors. Software platforms should continue to improve their threat sharing and gathering capabilities to ensure they protect developers across the platform, regardless of where threats originate. Moreover, they should approve and deploy software updates with important security updates rapidly to protect consumers as well as developers and their clients and users. The same is true when it comes to privacy controls. App developers want platform-level privacy controls they can adapt for their products and services. The types and nature of these controls vary among platforms and this variation should result in continuously improving options that iterate with end user expectations and privacy risks.

Similarly, software platforms play a significant role in helping small developers enforce their intellectual property (IP) rights. Our member companies' IP helps eliminate the inherent disadvantages of being a small, innovative company by enabling them to protect the fruits of their ingenuity from larger firms that might want to take it. Unfortunately, some of our member companies fall victim to IP thieves that succeed in selling the pirated content or using it to steal ad revenue on platforms. Ad networks can and do help mitigate the pirated ad revenue problem, but platforms must also vigorously police their app stores for stolen content. With vast online stores, it is difficult for a platform to verify legitimate requests to remove allegedly pirated content. But a single app developer should not need the help of a legal team or trade association to resolve the issue. In one instance, an App Association member company, Busy Bee Studios, approached us when it was unable to convince the platform to investigate an app that appeared to have been stolen from Busy Bee. With our assistance, the platform investigated the issue and found that the infringing app was in fact stolen content. But the time and resources it took our member company—which only has a few employees—to resolve the issue were significant and could have gone toward the development of their next app. Since this issue arose, IP resolution processes improved across the board, but the story is a reminder that they are important and in-demand developer services that platforms should improve in order to compete for developers.

#### b. App Store Rankings

ACCC's September 2022 interim report also discusses app store rankings at various points.<sup>12</sup> Transparency, including in platform ranking and featuring, is important to our members and any business users to increase their ability to plan ahead and guarantee legal certainty for their business, but is not "crucial" to our members' success in a platform. The App Association believes that there are different levels of quality of transparency and note that while more information on some levels can be beneficial (e.g., technical specifications, tools available to business users), platforms should not be obligated to disclose all their business operational details, such as their ranking specific algorithms. Other regulators, such as the European Commission (EC), have suggested various mandates in this area such as a transparency scorecard, including

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<sup>12</sup> *E.g., Id.* at 55-56.

aspects like explanations given, ranking, and data captured/used. The EC's P2B Regulation already provides a monitoring mechanism to address app ranking and featuring, and the App Association strongly cautions against new mechanisms that would contradict or overlap with the obligations already imposed by the EC's P2B regulation. We urge ACCC to consider the impact of the P2B Regulation and its global impact after it has been in effect for some time before implementing additional transparency measuring tools.

c. Collection and Use of Consumer Data

ACCC's September 2022 interim report further raises issues relating to the collection and use of consumer data at various points.<sup>13</sup> Across the App Association's membership, data is collected consistent with relevant laws and regulations for a range of purposes including 'app functionality only' as well as 'functionality and targeted advertising'. Again, with the wide range of app stores available to our members, experiences and practices differ between platforms.

Policymakers at all levels have made it clear that companies should embed privacy into the design of their products and services, and App Association members work to build in privacy from the initial stages of design. Accordingly, the purpose of a privacy prompt from the platform's operating system should not be to confuse a consumer into selecting an option that gives away more data than they intended.<sup>14</sup> For example, requiring platforms to make it easier to provide location data even when an app is not running than it is to protect that data runs headlong into the policy imperative of privacy by design. Looking at the issue solely from a competition lens is, therefore, an incomplete view. Moreover, the more privacy protective approach of one software platform differentiates it competitively from other platforms that arguably make it easier for developers to collect sensitive data. In resolving these policy tangles, the focus should be on what works best for consumers. Antitrust law by itself rightfully addresses consumer welfare—it does not seek to benefit competitors. So, if a platform has an offering that a consumer prefers over the offering of an independent developer, policymakers should ask whether the complaints of powerful competitors necessitate legislating away that choice.

App Association members collect data permitted by law/regulation and relevant platforms that is tailored to the functioning of the services they offer. App Association members also go to great lengths to use the latest technical protection mechanisms (e.g., end-to-end encryption) to protect any sensitive data they collect. Various platforms include features to allow for greater control of privacy by consumers themselves, such as Apple iOS, which the App Association supports and benefits from through greater trust by consumers. The App Association works with members to ensure that privacy

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<sup>13</sup> *E.g., Id.* at 43-45.

<sup>14</sup> We appreciate ACCC's discussion of dark patterns in its September 2022 interim report at pages 96-98, a topic the App Association has provided detailed views on publicly, which are appended to this comment and which we urge ACCC to consider.

policies used to communicate with consumers reflect three key principles: (1) the policy should be clear, transparent, and outline not only data collection practices, but also data protection practices; (2) the policy must be clear about any third parties that are worked with (like advertisers, analytics services, etc.) and explain the access they have to consumers' data and how they are expected to treat it; and (3) consumers should have the ability to access, change, and delete their data within reason.

d. Acquisitions and Mergers as a Pathway to Success for Small Business Digital Economy Innovators

In its discussion of market power in the September 2022 interim report, ACCC also discusses acquisitions.<sup>15</sup> App Association small business innovators are strategic and selective about the markets they enter, and they compete aggressively. Success for a startup or small business can take a variety of forms, including being purchased by a larger company that may have the resources and added expertise to enhance the product and/or bring the product to market for customers. Frequently, small businesses and startups are founded with the expectation that when their idea's potential has been sufficiently developed and demonstrated, the business will be acquired. Such an acquisition allows the creative minds behind these new technologies to move on to develop new businesses while their previous innovation is utilized to its full potential by the acquiring company. The Australian economy and consumers have benefitted tremendously from the creativity of individuals when combined with the resources and institutional knowledge of businesses that acquire their innovations. A merger that helps produce better products or services for consumers is both a natural and beneficial end for some companies and is healthy from a competition policy perspective, a fact that existing merger enforcement guidance reflects. We strongly urge ACCC's September 2022 interim report to be updated to reflect that ACCC positions on acquisitions and mergers stand to deeply impact our dynamic communities and how they realize success, and to inform any ACCC positions by an objective data-driven evidence base and avoid making policy-level decisions based on edge-use cases and hypotheticals. ACCC should be mindful to avoid framing mergers, especially vertical integrations, as inherently anticompetitive or as innately having a negative effect on consumers,<sup>16</sup> as such assumptions stand in stark contrast to both objective evidence and the experiences of our members. In this portion of the ACCC's September 2022 interim report, we further urge ACCC to appropriately maintain the distinction between vertical and horizontal mergers in enforcement guidance, as the incentives for, dynamics driving, and potential to impact competition of both vertical and horizontal mergers often differ significantly, and have long been categorized separately by other key antitrust enforcers.<sup>17</sup>

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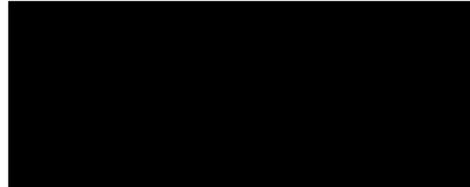
<sup>15</sup> *Id.* at 22-23.

<sup>16</sup> *Id.* at 65-70.

<sup>17</sup> *E.g.*, the U.S. Federal Trade Commission and U.S. Department of Justice: <https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/mergers/competitive-effects>.

The App Association appreciates the opportunity to provide its views to ACCC and urges for careful consideration of our interests. We are committed to working with ACCC to bring the benefits of the dynamic app economy to all Australian consumers and businesses through the development of balanced consumer protection and competition policies.

Sincerely,



Brian Scarpelli  
Senior Global Policy Counsel

Leanna Wade  
Policy Associate

ACT | The App Association  
1401 K St NW (Ste 501)  
Washington, DC 20005  
United States

**Nos. 21-16506 & 21-16695**

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**IN THE UNITED STATES COURT OF APPEALS  
FOR THE NINTH CIRCUIT**

EPIC GAMES, INC.,

*Plaintiff/Counter-Defendant  
Appellant/Cross-Appellee,*

*v.*

APPLE, INC.,

*Defendant/Counterclaimant  
Appellee/Cross-Appellant.*

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On Appeal From The United States District Court  
for the Northern District of California  
The Honorable Yvonne Gonzalez Rogers  
Case No. 4:20-cv-05640-YGR

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**BRIEF OF *AMICUS CURIAE* ACT | THE APP ASSOCIATION IN  
SUPPORT OF APPLE INC.**

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JAMES B. SPETA  
EIMER STAHL LLP  
224 South Michigan Ave.  
Suite 1100  
Chicago, IL 60604  
(312) 660-7600

ROBERT E. DUNN  
COLLIN J. VIERRA  
EIMER STAHL LLP  
99 South Almaden Blvd.  
Suite 642  
San Jose, CA 95113  
(408) 889-1690  
rdunn@eimerstahl.com

▪ *Counsel for Amicus Curiae*

## **CORPORATE DISCLOSURE STATEMENT**

Pursuant to Federal Rule of Appellate Procedure 26.1, the App Association states that it does not have a parent corporation and that no publicly held corporation holds 10% or more of its stock.

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**Cases**

*Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*,  
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*Ohio v. Am. Express Co.*,  
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*Twin City Sportservice, Inc. v. Charles O. Finley & Co.*,  
676 F.2d 1291 (9th Cir. 1982) ..... 10

*United States v. Microsoft Corp.*,  
253 F.3d 34 (D.C. Cir. 2001) ..... 3, 31

**Other Authorities**

*Competition Policy Priorities*, ACT | The App Association,  
<https://tinyurl.com/b5hvx3c5> ..... 19

David S. Evans & Richard Schmalensee, *Markets with Two-Sided  
Platforms*,  
1 Issues in Competition Law and Policy 667 (2008) ..... 17, 25, 29

Developer Plaintiffs’ Mot. for Preliminary Approval of Class Action  
Settlement with Apple Inc. (Dkt. 396), *Cameron v. Apple Inc.*, No. 4:19-  
cv-03074, at \*1 (N.D. Cal. Aug. 26, 2021) ..... 27

Dwight Silverman, *What’s Really Driving Android-to-iPhone Switchers?*,  
Forbes.com (Aug. 9, 2021), <https://tinyurl.com/yck36r33> ..... 30

Hal R. Varian, *Price Discrimination and Social Welfare*,  
75 Am. Econ. Rev. 870 (1985)..... 33

Hal R. Varian, *Price Discrimination*,  
1 Handbook of Industrial Organization 597 (R. Schmalensee & R.D.  
Willig eds. 1989)..... 33

J. Laugesen & Y. Yuan, *What Factors Contributed to the Success of  
Apple's iPhone?*, 2010 Ninth Int'l Conference on Mobile Business &  
2010 Ninth Global Mobility Roundtable (ICMB-GMR) 91, 94-95,  
<https://tinyurl.com/bdhzy2wd>..... 11

Julia Glum, *How Does Fortnite Make Money? All the Ways the Free Video  
Game Cashes in on Its 200 Million Players*, Money.com (Jan. 15, 2019),  
<https://tinyurl.com/2p9zbn8z>..... 34

Julian Wright, *One-sided Logic in Two-sided Markets*,  
3 Rev. Network Econ. 44 (2004) ..... 26, 29

Lars A. Stole, *Price Discrimination and Competition*,  
3 Handbook of Industrial Organization 2221 (2007)..... 33

Mark Rysman, *The Economics of Two-Sided Markets*,  
23 J. Econ. Persp. 125 (2009). ..... 11

Mobile App Download and Usage Statistics, buildfire (2022),  
<https://tinyurl.com/4a952te7> ..... 2

*Number of available apps in the Apple App Store from 2008 to 2021*,  
Statista, <https://tinyurl.com/yck2jmwe> (visited March 30, 2022)..... 24

Richard A. Posner, *The Chicago School of Antitrust Analysis*,  
127 U. Pa. L. Rev. (1979) ..... 33

Salvador Rodriguez, *Snap CEO Evan Spiegel: We're happy to pay Apple  
30%—without Apple we wouldn't exist* (May 21, 2021),

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<i>Subscriber share held by smartphone operating systems in the United States from 2012 to 2021</i> , Statista, <a href="https://tinyurl.com/ye2yravk">https://tinyurl.com/ye2yravk</a> (visited March 30, 2022) .....	30
Testimony of Morgan Reed, President ACT   The App Association, Before the U.S. House of Representatives Judiciary Committee, Subcommittee on Antitrust, Commercial and Administrative Law (2019), <a href="https://tinyurl.com/mrxwm6tu">https://tinyurl.com/mrxwm6tu</a> .....	2
<i>The Symbiotic Relationship Between App Developers and Platforms: A Ten-Year Retrospective</i> , ACT   The App Association (July 25, 2018), <a href="https://tinyurl.com/bde65bnm">https://tinyurl.com/bde65bnm</a> .....	20
<i>There’s a Simple, Obvious Reason ‘Fortnite’ Is the Biggest Game in the World Right Now</i> , Business Insider (May 3, 2018), <a href="https://tinyurl.com/8mj4spmz">https://tinyurl.com/8mj4spmz</a> .....	34
Vineet Kumar, <i>Making “Freemium” Work</i> , Harv. Bus. Rev. (May 2014), <a href="https://tinyurl.com/5ak8xcm4">https://tinyurl.com/5ak8xcm4</a> .....	35

## **INTEREST OF *AMICUS CURIAE*<sup>1</sup>**

Founded in 1998, ACT | The App Association (“App Association”) is an international not-for-profit grassroots advocacy and education organization representing more than 5,000 small business software application developers and technology firms that create the software applications used on mobile devices and in enterprise systems around the globe. Organization members leverage the connectivity of smart devices to create innovative solutions that make our lives better. Today, the ecosystem the App Association represents is valued at approximately \$1.7 trillion and is responsible for 5.9 million American jobs.<sup>2</sup>

As the App Association has explained in comments filed with the FTC and testimony before Congress, mobile platforms solve many of the

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<sup>1</sup> *Amicus* declares that no party’s counsel authored this brief in whole or in part; no party or party’s counsel contributed money intended to fund preparing or submitting the brief; and no person—other than the *amicus*, its members, or its counsel—contributed money that was intended to fund preparing or submitting this brief. All parties have consented to the filing of this brief.

<sup>2</sup> *State of the U.S. App Economy: 2020*, ACT | The App Association (7th ed. 2020), <https://tinyurl.com/nmc8mcwt>.

problems that developers faced in the early Internet economy.<sup>3</sup> Before mobile platforms, app developers were forced to pay publishers and other intermediaries and engage in time-consuming marketing campaigns to reach users.<sup>4</sup> These costs imposed formidable barriers to entry, resulting in higher prices and fewer choices for consumers.<sup>5</sup> Mobile software platforms, which provide one-stop shops where developers and consumers transact directly, lower these barriers to entry and thus free up substantial amounts of capital that startups can use to grow their businesses.<sup>6</sup> There are now several hundred thousand companies active in the mobile app market in the United States and more than 2 million apps available on major app platforms.<sup>7</sup>

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<sup>3</sup> See *Comments of ACT | The App Association to the Federal Trade Commission on Competition and Consumer Protection in the 21<sup>st</sup> Century (Question 3)* (Aug. 20, 2018) at 3–4, (hereinafter “*App Association FTC Comments*”) <https://tinyurl.com/2p88kb66>. See also Testimony of Morgan Reed, President ACT | The App Association, Before the U.S. House of Representatives Judiciary Committee, Subcommittee on Antitrust, Commercial and Administrative Law (2019), at 3-6 (hereinafter “*Reed Testimony*”), <https://tinyurl.com/mrxwm6tu>.

<sup>4</sup> See *id.*, at 3–4.

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

<sup>6</sup> *Id.*

<sup>7</sup> Mobile App Download and Usage Statistics, buildfire (2022), <https://tinyurl.com/4a952te7>.

Today, developers overwhelmingly use mobile platforms—such as the App Store and Google Play—to distribute their applications. A “mutually beneficial” relationship has developed between developers and platform companies.<sup>8</sup> Developers provide useful and enjoyable digital content, which draws consumers to the platform, while the platform provides developers with low overhead costs, simplified market entry, consumer trust, dispute resolution, data analytics, flexible marketing and pricing models, and strengthened IP protections.<sup>9</sup>

The App Association has a keen interest in the proper application of antitrust principles to software platforms. In fact, one of the first *amicus* briefs the App Association ever filed was in *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (en banc) (per curiam), which involved an effort to break up a company that provided a “platform[] for software applications.” *Id.* at 53. The App Association provides this brief to highlight the symbiotic relationship between these

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<sup>8</sup> See *App Association FTC Comments*, *supra* n.3, at 2, <https://tinyurl.com/2p88kb66>.

<sup>9</sup> *Id.*

developers and Apple and to explain how Apple's business model specifically benefits small app developers who use the App Store to reach millions of iPhone users.

## **INTRODUCTION AND SUMMARY OF ARGUMENT**

Although dressed up as an antitrust suit, this case is fundamentally a commercial disagreement between two highly successful companies. Apple requires all developers who wish to distribute apps for the iPhone to do so through the App Store and to use Apple's "IAP" functionality for transactions in digital content, for which Apple charges a commission. Epic, a software developer that reaps hundreds of millions of dollars annually from in-app purchases across a range of game-transaction platforms, seeks to void these requirements (though it does not seek to disturb similar restrictions imposed by other platform providers) so it can distribute apps to iPhone users through its own store and retain 100% of the revenues from in-app purchases its customers make on the iPhone. While that remedy would bolster Epic's bottom line, it would not enhance competition or benefit small app developers. Quite the opposite. A judicially imposed change to Apple's current business model relieving

Epic from all commissions would inevitably raise prices for small developers, resulting in a less valuable platform, less innovation, and decreased app output.

I. Among the many flaws infecting Epic's antitrust claims is its myopic focus on the App Store to the exclusion of the broader iPhone/iOS ecosystem, which provides the backbone of the platform where app developers and consumers meet. Most significantly, Epic ignores the many ways that Apple competes for application developers by investing in this ecosystem. The App Store is but one platform among many, and app developers can also reach iPhone users through the open web and avoid paying any commission. To induce developers to spend their engineering time and resources creating apps for the App Store, Apple has invested *billions of dollars* to improve the iPhone/iOS ecosystem. Developers need these investments to continue.

First and foremost, Apple invests heavily in its hardware, constantly improving the iPhone to provide the cutting-edge functionality developers require. Apple also produces and licenses thousands of application programming interfaces (APIs) and software development

kits (SDKs), which lower the cost of developing apps for the iPhone. Apple provides developers with engineering assistance, training seminars, and promotional support, including editorial content on the App Store. Apple has also spent years creating a secure and stable ecosystem, which allows customers to download apps from the App Store with confidence that those apps will not compromise their privacy or security. This built-in customer trust benefits all developers, and especially small developers who lack name recognition. Apple provides all these benefits to developers for a nominal \$99 annual licensing fee regardless of whether they use Apple's IAP functionality or generate any commissions for Apple. That is not the behavior of a monopolist; it is the behavior of a company engaged in fierce competition for developers' services. And the increase in output in creative and useful apps confirms that Apple's conduct is *pro-competitive*.

Epic nevertheless contends that Apple's business model is anticompetitive because Apple supposedly earns supra-competitive margins on the App Store. But that argument ignores economic reality. The *hundreds of millions* of dollars Apple spends annually to improve the

iPhone/iOS ecosystem and make its platform attractive to both developers and consumers may not be attributed to the App Store as an accounting matter, but they are plainly relevant to any analysis of market power—and both economists and the Supreme Court have cautioned against drawing conclusions about market power or anticompetitive conduct by looking only to prices on one side of a multi-sided platform. Because Epic ignores the sizeable investments Apple has made (and continues to make) to attract developers and consumers to the platform, Epic’s antitrust arguments based on Apple’s supposedly supra-competitive profits are fatally flawed.

**II.** Epic’s underlying gripe is that Apple monetizes these investments in part by charging commissions to developers who generate revenue through paid downloads or in-app purchases—a business model that has been especially profitable to game developers like Epic—while allowing other developers to create and distribute content for a nominal licensing fee. But Apple’s commission structure is similar to other platforms, and Apple’s pricing is disciplined by competition in the smartphone market. If Apple raises prices on developers, the number and

quality of apps in the App Store will suffer, making the iPhone a less desirable product.

Moreover, there is nothing inherently suspect about charging higher prices to those who derive the most value from a product. In fact, Epic engages in a similar type of price discrimination. Epic gives its games away for free and offers users the opportunity to make purchases within the game as they become more personally invested. Because the high-intensity users who generate most of Epic's revenue subsidize the large number of casual users who play for free, Epic is poorly positioned to complain about Apple's business model.

Epic's proposed remedy would be disastrous for small developers. If Apple is unable to monetize its investments in the iPhone/iOS ecosystem by charging a commission on in-app purchases, it will seek to monetize its investments in other ways. Any of the likely alternatives would harm the millions of developers who, unlike Epic, do not have resources to create their own competing distribution channels. Whether Apple were to raise its yearly licensing fee, charge a per-download fee, or develop proprietary apps that would crowd out third-party apps, small developers

would be the losers. Even if Apple were to seek to recover its costs exclusively from the other side of the market by raising iPhone prices, this would decrease the number of iPhone users and thereby diminish the value of the platform to developers.

Epic wholly disregards the potential harm such changes would inflict on small developers. In fact, Epic’s CEO admitted at trial that he does not know (or care) how his requested relief would impact other developers that distribute apps through the App Store. Trial.Tr.vol. 2, 345:19–346:16. This is because, as the district court found, Epic merely seeks to “protect its self-avowed interests in the ‘metaverse.’” 1-ER-27. Accordingly, the App Association urges this Court to affirm the district court’s rejection of Epic’s misguided antitrust claims.

## ARGUMENT

### **I. Epic’s Market Analysis Is Detached from the Commercial Realities of Application Development and Ignores the ways in which Apple Competes to Attract Developers to Its Platform.**

Epic claims that Apple operates single-brand markets for app distribution and in-app purchase and that it earns excessive margins in these “markets” because the revenue it generates from the App Store

greatly exceeds the costs of operating the store. But Epic’s narrow focus on the App Store does not reflect the “commercial realities” of the multi-sided market in which app developers and consumers interact. *Ohio v. Am. Express Co.*, 138 S. Ct. 2274, 2285 (2018) (“*Amex*”); see also *Twin City Sportservice, Inc. v. Charles O. Finley & Co.*, 676 F.2d 1291, 1299 (9th Cir. 1982) (“the relevant market [is] one in wh[ich] commercial reality exists.”).

As the Supreme Court explained in *Amex*, multi-sided “platforms differ from traditional markets” because the platform creator’s practices and pricing on one side of the market affect the other side. 138 S. Ct. at 2280–81. For example, investments that increase participation or quality on one side of the market create the value that is sought by the other side. “[T]he value of the services that a two-sided platform provides increases as the number of participants on both sides of the platform increases.” *Id.* A platform firm must therefore “be concerned not only

with its own quality and advertising, but also that of the vendors who operate over its network.”<sup>10</sup>

As even Epic admits, the App Store is a “two-sided” platform where developers and consumers interact. Epic.Br.22. But it was not always this way. “Initially, Apple did not allow third party software on [the] iPhone,” preferring instead to create proprietary apps.<sup>11</sup> It reversed that decision in 2008, in response to consumer demand for “quality software from third party service providers,” and its decision to allow developers to distribute apps on the App Store helped “fuel[] the success of the iPhone.”<sup>12</sup> Today, the App Store features millions of apps created and distributed by thousands of developers.

Epic contends that “Apple controls 100% of both iOS app distribution and payment solutions for in-app purchases of digital goods,” Epic.Br.23, but the App Store is not the only software platform in the

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<sup>10</sup> Mark Rysman, *The Economics of Two-Sided Markets*, 23 J. Econ. Persp. 125, 136 (2009).

<sup>11</sup> J. Laugesen & Y. Yuan, *What Factors Contributed to the Success of Apple's iPhone?*, 2010 Ninth Int’l Conference on Mobile Business & 2010 Ninth Global Mobility Roundtable (ICMB-GMR) 91, 94–95, <https://tinyurl.com/bdhzy2wd>.

<sup>12</sup> *Id.*

world, and Apple must compete vigorously to attract both consumers and developers to its platform. See 1-SER-51 (describing competitive landscape including Google Play, Samsung’s Galaxy Store, and Nintendo’s eShop); 1-ER-75 (describing competing platforms in the mobile gaming market). In addition to using other platforms, developers can reach consumers on the open web. For example, iPhone users can play the popular game Wordle through their web browsers without downloading an app. Given the availability of alternative distribution channels, platform providers must compete to induce developers to create apps for their platforms.<sup>13</sup> As the district court recognized, if Apple charged developers excessive prices or otherwise treated them unfairly, developers would either leave the platform or “reallocate[] engineering or marketing resources” to other channels. 1-ER-60.

Apple competes primarily by making the iPhone/iOS ecosystem attractive to developers. Indeed, while developers have at times expressed frustration with various aspects of the App Store, they are

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<sup>13</sup> Reed Testimony, *supra* n.3, at 3, <https://tinyurl.com/mrxwm6tu>.

drawn to the platform because (1) the iPhone offers novel and innovative functionality for apps, (2) Apple makes it easy to create apps for iOS, and (3) Apple's ecosystem protects consumer privacy and security, which builds consumer trust in the platform. Apple's investments in its hardware and software create immense value for both sides of the market, and especially for small developers who, unlike Epic, cannot create standalone distribution channels. The substantial cost of this work must be factored into the antitrust analysis even though it occurs outside the context of the App Store itself.

**A. Apple Competes for Developers by Constantly Improving the iPhone with Advanced Functionalities that Developers can Incorporate into their Apps.**

One of the primary ways in which Apple competes for developers is by making the iPhone a world-class device on which to run apps. Because the App Store gives developers access to consumers who use only one type of smartphone—unlike the Google Play store, where developers can distribute apps to consumers who use a variety of smartphones—Apple must ensure that its *hardware* is state of the art. Developers will not invest their time and resources to create apps for the App Store if the

iPhone lacks the functionality to run them. Apple invests tens of billions of dollars *annually* into R&D, much of which goes toward improving the functionality and performance of the iPhone. 1-ER-116 (\$18.8 billion in 2020 alone). In addition to benefitting iPhone users, these investments *directly benefit developers* by enhancing their ability to create compelling and useful apps.

For example, Apple has integrated a gyroscope that detects motion along a three-dimensional axis so that a user can rotate and turn the iPhone and have that information interface with the software. 1-SER-221. That functionality can be used in racing games by allowing a player to “tilt [the] iPhone along the axis left and right” to steer, lean the iPhone forward to accelerate, and lean it back to break, Trial.Tr.vol.11, 2879:13–17. It can also be employed in mapping, stargazing, and myriad other types of apps. This functionality substantially increases the value of the platform to app developers. Apple’s innovations in display technology also benefit developers who require excellent graphics to run games, stream videos, and perform other functions. *Id.* 2879:21–2880:21. Apple also pioneered the Taptic Engine in 2014, which uses haptic technology

to make the iPhone vibrate without a bulky mechanical actuator. *Id.* 2881:7–12. Developers can incorporate haptics into their apps so that when a user presses the screen the iPhone gives physical feedback. *Id.* 2881:14–16. Apple has improved the iPhone’s processing capabilities and integrated LiDAR sensors, which assist developers in creating augmented reality apps. *Id.* 2883:11–2884:14. The iPhone has also been engineered to take advantage of developments in data connectivity to support 2G, 3G, 4G, 5G, Bluetooth and Wi-Fi connectivity on a single device. *Id.* 2886:1–2888:10. This capability allows developers to design apps that require a fast and stable web connection.

These are but a few of the *many* ways in which Apple’s investments in the iPhone have increased the device’s functionalities and expanded the range of creative possibilities for app developers. *See* 4-SER-1054. When app developers incorporate these cutting-edge features into their apps, the iPhone becomes more valuable to end users. Apple’s investments in the iPhone thus create value on both sides of the market and demonstrate that Apple is engaged in competition for both consumers *and* developers.

**B. Apple Competes for Developers by Producing and Licensing Software that Makes it Easy and Inexpensive to Create Apps for the iPhone.**

In addition to its relentless hardware innovation, Apple competes for developers by creating and licensing extensive software tools that developers can use to create apps that run on the iPhone. These software investments benefit developers by enabling them to efficiently create apps for iOS.

Once a developer signs the Developer Program License Agreement (“DPLA”) and pays the \$99 fee to enroll in Apple’s developer program, it receives access to application program interfaces (APIs) and a software development kit (SDK) that it can incorporate into its apps.<sup>14</sup> These APIs and SDKs allow apps to run seamlessly on iOS and unlock various iPhone features, such as location awareness functionality, media applications, video playback, retina display, camera, internet connectivity through 4G and 5G networks, and numerous other tools to enhance the developer’s

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<sup>14</sup> Even this nominal fee is waived for government institutions, education institutions, and non-profit groups. 2-SER-517.

ultimate product. 1-ER-31. Apple currently produces and distributes over 150,000 APIs and a comprehensive library of SDKs. 1-ER-117.

These APIs and SDKs significantly reduce app development costs. As recognized experts on multi-sided markets have explained, “[s]oftware platforms facilitate a market for applications by reducing duplicative costs. ... Rather than each application developer writing the code for accomplishing each task, the software platform producer incorporates code into the platform ... through an application program interface. The user benefits from this consolidation as well since it reduces the overall amount of code required on the computer, reduces incompatibilities between programs, and reduces learning costs.”<sup>15</sup>

Developers who sign the DPLA also receive access to TestFlight and other tools that assist developers in managing apps on the App Store, running marketing campaigns, and getting data analytics about their apps’ performance. 2-ER-429. Developers get access to all these features and Apple’s IP regardless of the size of the team, how many apps the

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<sup>15</sup> David S. Evans & Richard Schmalensee, *Markets with Two-Sided Platforms*, 1 *Issues in Competition Law and Policy* 667, 673 (2008).

developer puts on the App Store, or whether they have any prospect of generating commissions for Apple. 2-ER-429–430. Thus far, approximately one million developers have enrolled in the Apple DPLA, and countless App Association small business developers participate in this program today. 2-ER-428.

Apple provides other benefits to developers that further reduce the cost of app development. For example, it runs conferences to educate developers about how to use Apple’s APIs and SDKs. 2-SER-517. Apple holds about 200 training sessions per year, and those sessions are videotaped and shared for free with any interested developer. 2-SER-517. Up to 50 million people have viewed some of these streams. 2-SER-518. Apple also provides “hands-on sessions where a developer can literally bring their code on a drive and sit down with an [Apple] engineer and be consulted on how to solve problems or design some new interface.” 2-SER-518. Apple is building a facility at Apple Park in Cupertino designed entirely to support developers who need assistance in developing their applications. 2-SER-519. Similar facilities have been created around the world as part of Apple’s “Developer Accelerator,” where more advanced

developers can take part in programs that help them improve their apps and take advantage of Apple’s newer technologies. 2-SER-518–520.

Apple provides all these services—which cost millions of dollars a year—for free. It does not do this out of charity, of course. Rather, Apple gives away APIs, SDKs, and engineering support because it needs developers to create apps for iPhone customers. And while these services are all provided *outside of the App Store*, 2-SER-518–20; 2-SER-525–26, they are plainly relevant to developers’ decisions as to whether to create apps for distribution *through the App Store*.<sup>16</sup>

**C. Developers Also Derive Substantial Value from Apple’s Efforts to Create a Safe and Secure Ecosystem.**

One of the core services that platform companies provide developers is “customer trust.”<sup>17</sup> Customer trust is “fundamental for competitors in

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<sup>16</sup> This is not to say the services Apple provides directly through the App Store are insignificant. They are not. For example, small developers receive free promotional assistance from Apple, including advertising and “spotlighting” on the App Store to help users discover their apps. 1-ER-99. Absent such assistance, small app developers would have to spend significant amounts to market their apps. *See App Association FTC Comments, supra* n.3, at 3, <https://tinyurl.com/2p88kb66>.

<sup>17</sup> *Competition Policy Priorities*, ACT|The App Association, at 1, <https://tinyurl.com/b5h3c5>.

the app economy, especially for smaller firms that may not have substantial name recognition,”<sup>18</sup> because customers will not download and use apps if they cannot confidently “disclose essential information to [the developer].”<sup>19</sup> In the early days of software development, each developer had to earn customer trust itself, but now “platforms are the trusted product,” and “Platforms’ trusted brands allow developers to clear the critical hurdle of achieving trust from consumer adoption.”<sup>20</sup>

Apple’s creation of a reliable and secure mobile ecosystem took years and billions of dollars of investment.<sup>21</sup> Today, iPhone users can download millions of apps from the App Store with confidence that these apps will not crash their phones, compromise their confidential

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<sup>18</sup> *Id.* at 2; see also *The Symbiotic Relationship Between App Developers and Platforms: A Ten-Year Retrospective*, ACT|The App Association (July 25, 2018) at 3 (hereinafter “*Symbiotic Relationship*”), <https://tinyurl.com/bde65bnm>.

<sup>19</sup> *App Association FTC Comments*, *supra* n.3, at 5, <https://tinyurl.com/2p88kb66>.

<sup>20</sup> *Id.* at 6; see also *Symbiotic Relationship*, *supra* n.18, at 3, <https://tinyurl.com/bde65bnm>.

<sup>21</sup> *Symbiotic Relationship*, *supra* n.18, at 3 (“Consumer trust requires constant maintenance and vigilance because loss of trust hurts both the platforms and the developers who depend on them.”), <https://tinyurl.com/bde65bnm>.

information, expose their children to inappropriate material, spy on them, or otherwise defraud them. 1-SER-164–65. Developers distributing their apps through the App Store can leverage this “built-in customer trust” to reach a far larger number of consumers than they would otherwise be able to reach.<sup>22</sup> Apple’s substantial investments in the following areas thus have the effect of *lowering costs* for app developers:

*Privacy and Security.* A majority of consumers regard privacy and security as an important aspect in deciding to purchase an iPhone. 1-ER-114. To keep its ecosystem safe, Apple provides a highly effective preliminary layer of defense against malicious apps. Rather than permitting users to download malicious apps in the hope that the last line of defense—iOS itself—will block the app’s activities, Apple’s app review process screens apps for malware *before* they can be listed in the App Store. 1-SER-169–70. Apple provides further protection by preventing apps from requesting unnecessary permissions that could jeopardize user privacy. *Id.*; 2-SER-575–76.

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<sup>22</sup> Reed Testimony, *supra* n.3, at 4, <https://tinyurl.com/mrxwm6tu>.

Apple's app review process thus solves a collective action problem. Although a few unscrupulous developers might prefer to exploit users' private information for gain, allowing such apps on the App Store would erode consumers' trust in (and willingness to use) the platform. 2-SER-577–78; 3-SER-611–12. To preserve the value of the platform, Apple scrutinizes *all apps* on the App Store to protect users' privacy and security. 3-SER-594–96; 1-SER-179. As the district court found, “Apple proactively requires ... measures to protect data security, privacy, data collection and storage” “much to some developers' chagrin.” 1-ER-40.

*Content Propriety and Safety.* Apple also screens out apps that have inappropriate content. This includes not only content that is inappropriate for users of a certain age, 2-SER-332, but also content that encourages illegal or dangerous activity, 2-SER-318; 2-SER-331–33. Without these measures, parents would be less likely to purchase iPhones for their children, which would reduce the size of the app-using population and thereby decrease the value of Apple's platform to developers.

*Data Manageability and Migration.* Because all apps on the iPhone must be purchased through a consumer's account with the App Store, and all in-app purchases must be made through Apple's in-app payment system, it is easier for consumers to manage their data and subscriptions, including by moving them to new devices, sharing them with family members, reviewing their purchase histories, and implementing parental controls. 1-SER-153; 2-SER-422-23; 2-SER-553. Besides providing convenience, this centralization helps protect consumers against subscription and data fraud and other violations that could result from sharing their financial information with unscrupulous developers. 1-SER-153. Consumers are thus willing to download more apps and spend more money on in-app purchases than they would if they had to manage their data and subscriptions across numerous platforms created by different developers. *Id.*

In short, Apple's rigorous standards, app review process, and in-app payments build "consumer trust," which allows even small app

developers to distribute their apps widely through the App Store.<sup>23</sup> Trial.Tr.vol.13, 3421:14–3422:7 (because users trust the App Store, they are “very free about trying out new software, about trying new apps, about downloading lots of things. And that’s helped build this really unprecedented scale of activity for developers”). This built-in consumer trust attracts developers to Apple’s platform and has led to consistent growth in the number and quality of apps available on the App Store.<sup>24</sup> The “commercial realities” of the two-sided platform at issue here thus belie Epic’s claim of monopolization and anti-competitive conduct.

**D. Epic’s Contention that Apple Earns Excessive Margins on the App Store Ignores Economic Reality.**

Epic asserts that the “supra-competitive” margins Apple supposedly earns on the App store are direct evidence of market power, an error echoed in part by the United States, which suggests that these margins are circumstantial evidence of market power. However, because

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<sup>23</sup> Reed Testimony, *supra* n.3, at 4, <https://tinyurl.com/mrxwm6tu>.

<sup>24</sup> *Number of available apps in the Apple App Store from 2008 to 2021*, Statista, <https://tinyurl.com/yck2jmwe> (visited March 30, 2022) (hereinafter “App Data”); *see also App Association FTC Comments, supra* n.3, at 5.

Epic's calculations ignore the substantial investments Apple has made on both sides of the market to attract consumers and developers, its calculations of Apple's margin are economically meaningless.

Epic contends that Apple earns a 75% margin on the App Store, which it calculates based only on certain App Store costs while ignoring the broader costs (i.e., investments) that Apple incurs to make the iPhone/iOS ecosystem attractive to developers. *See, e.g.*, Epic.Br.17, 24, 35, 40. Epic concludes, as does the United States, that such accounting margins show market power. Epic.Br.57; U.S.Br.20–24. However, as the leading economists (in work cited in *Amex*) state: “Price equaling marginal cost (or average variable cost) on a particular side is not a relevant economic benchmark for two-sided platforms for evaluating either market power, claims of predatory pricing, or excessive pricing. ... [I]t is incorrect to conclude, as a matter of economics, that deviations between price and marginal cost on one side provide any indication of pricing to exploit market power or to drive out competition.”<sup>25</sup> Professor

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<sup>25</sup> Evans & Schmalensee, *supra* n.15, at 689.

Julian Wright likewise identifies the fallacy of concluding that “a high price-cost margin indicates market power” in the context of a two-side market.<sup>26</sup>

As noted above, Apple has made (and continues to make) substantial investments in the entire ecosystem that support the App Store. *See supra*, Part I.A–C. These investments provide substantial value to app developers, even though they are not attributed to the App Store as an accounting matter. Accordingly, even if it costs Apple relatively little to operate the App Store itself, the substantial costs of *ensuring the competitiveness of the platform* must be factored into the analysis. Epic’s flawed calculation of the App Store’s margin is thus hardly dispositive to show Apple’s alleged market power or show that Apple is engaging in anticompetitive conduct.

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<sup>26</sup> Julian Wright, *One-sided Logic in Two-sided Markets*, 3 Rev. Network Econ. 44, 47 (2004) (“[I]t is not true that competition, even perfect competition, will necessarily drive the price charged to each type of user to cost.”).

## II. **Apple’s Commission Structure is Subject to Market Discipline and Increases App Output, and Any Court-Ordered Change in Apple’s Business Model Would Harm Small Developers**

Epic’s goal is to *eliminate* the commission Apple charges for in-app purchases. But there is no evidence that most developers share Epic’s view that the commission is inherently anticompetitive. 1-ER-39. To be sure, app developers would prefer lower commissions to higher commissions, and they have pressured Apple to lower its rates, which it did temporarily in 2020 through its App Store Small Businesses Program and extended in 2021 through the *Cameron* settlement.<sup>27</sup> But developers recognize that commissions on paid downloads and in-app purchases allow Apple to monetize the investments that make the entire platform possible. For example, the CEO of Snap explained just last year that the company is “happy” to pay Apple its commission “in exchange for all the

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<sup>27</sup> See Developer Plaintiffs’ Mot. for Preliminary Approval of Class Action Settlement with Apple Inc. (Dkt. 396), *Cameron v. Apple Inc.*, No. 4:19-cv-03074, at \*1 (N.D. Cal. Aug. 26, 2021).

amazing technology that [Apple] provide[s] to us in terms of the software but also in terms of their hardware advancements.”<sup>28</sup>

Moreover, Apple’s ability to charge excessive commissions on developers is subject to competitive constraints. If Apple treats developers unfairly, they will turn to other channels to distribute their apps, which will make the iPhone less attractive to consumers and undercut Apple’s ability to compete in the smartphone market. Indeed, the fact that app output has exploded over the past decade, as Epic’s experts conceded, confirms that Apple’s commission structure is not anticompetitive. *See* 2-SER-382–83; 2-SER-468; 2-SER-473.<sup>29</sup> Epic’s proposed remedy, by contrast, would harm competition by prompting Apple to change its business model to monetize its investments in other ways that would likely harm smaller developers and reduce output.

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<sup>28</sup> Salvador Rodriguez, *Snap CEO Evan Spiegel: We’re happy to pay Apple 30%—without Apple we wouldn’t exist* (May 21, 2021), <https://tinyurl.com/2dmmvawk>.

<sup>29</sup> *See also* App Data, *supra* n.**Error! Bookmark not defined..**

**A. Competition on the Consumer Side of the Market Disciplines Apple’s Ability to Charge Excessive Commissions.**

As the Supreme Court has recognized, there are feedback loops in multi-sided markets that allow one side to impose market discipline on the other. *Amex*, 138 S. Ct. at 2280–81. “Raising the price on side A risks losing participation on that side, which decreases the value of the platform to side B. If participants on side B leave due to this loss in value, then the platform has even less value to side A—risking a feedback loop of declining demand. “Two-sided platforms therefore must take these indirect network effects into account before making a change in price on either side.” *Amex*, 138 S. Ct. at 2281.<sup>30</sup> A court analyzing allegations of anti-competitive conduct should not “us[e] one-sided logic in [a] two-sided market[],”<sup>31</sup> but must instead consider the competitive discipline imposed by each side of the market.

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<sup>30</sup> “[T]he effect of an increase in price on one side is a decrease in demand on the first side because of the direct effect of the price elasticity of demand and on both sides as a result of the indirect effects from the externalities.” Evans & Schmalensee, *supra* n.**Error! Bookmark not defined.**5, at 674.

<sup>31</sup> Wright, *supra* n.26, at 45.

That insight applies here because Apple faces fierce competition for smartphone customers from other manufacturers that use the Android operating system. 1-SER-128; 2-SER-557–78; 1-ER-54–55, 94. Although Apple’s customers are quite loyal, the number of iPhone consumers, over any meaningful period, is not constant.<sup>32</sup> Apple competes in the smartphone market in many ways, including by continuing to improve the iPhone’s hardware; maintaining its reputation for stability, security, and privacy;<sup>33</sup> and *increasing the number and variety of high-quality apps available in the App Store*. 1-SER-92, 123, 129, 132; 2-SER-392–93; 4-SER-872; Part I.A-C. Indeed, the “rise of smartphones is inextricably linked to apps because apps give value to platforms on smartphones.”<sup>34</sup>

Apple cannot charge developers excessive “prices” without *reducing* the number of high-quality apps available on the App Store. And having

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<sup>32</sup> See *Subscriber share held by smartphone operating systems in the United States from 2012 to 2021*, Statista, <https://tinyurl.com/ye2yravk> (visited March 30, 2022).

<sup>33</sup> Dwight Silverman, *What’s Really Driving Android-to-iPhone Switchers?*, Forbes.com (Aug. 9, 2021), <https://tinyurl.com/yck36r33>.

<sup>34</sup> *Symbiotic Relationship*, *supra* n.18, at 4, <https://tinyurl.com/bde65bnm>.

fewer apps available would reduce the value of the iPhone to consumers, thus leading to fewer iPhone purchases. Apple's vigorous competition in the smartphone market therefore imposes a discipline on any harmful actions it might take vis-a-vis developers. *Compare Microsoft*, 253 F.3d at 55–56.

This market discipline also demonstrates why Epic's attempt to fit this case within the *Eastman Kodak* single-brand model is misguided. *See Eastman Kodak Co. v. Image Tech. Servs., Inc.*, 504 U.S. 451 (1992); Epic.Br.43, 59–63. In *Eastman Kodak*, the Supreme Court reasoned that it might be appropriate to consider a single-brand market for Kodak copiers if purchasers did not engage in lifecycle pricing—*i.e.*, if they did not consider the cost of repair services over the life of the copier when making purchasing decisions—because such pricing would be necessary to constrain Kodak's actions in the repair services aftermarkets. *Cf. id.* at 473-75. But regardless of whether smartphone purchasers explicitly consider the future cost of apps, they consider *the quality and number of apps available* at the time of purchase. *See* 1-SER-92, 123, 129, 132; 2-SER-392–93; 4-SER-872. Apple's pricing on the developer-side of the

market is thus disciplined by its competition on the consumer side. Epic's antitrust theory ignores this central economic feature of multi-sided markets.

**B. Apple's Commission Structure Increases Output and Thus is Pro-Competitive.**

Apple utilizes a common form of price discrimination to generate revenue from the App Store. Specifically, Apple licenses its IP for a nominal fee to all developers and charges a commission only when developers monetize their applications through paid downloads or in-app purchases.<sup>35</sup> Apple further discriminates by charging a lower commission to developers who generate modest revenue through Apple's IAP,<sup>36</sup> while charging a higher commission to developers whose applications yield greater revenues. Apple generates the majority of its App Store commissions from gaming downloads and in-app purchases on games

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<sup>35</sup> Developers have a range of options for monetizing their apps without paying Apple a commission, including selling advertisements that appear within their apps and selling credits through other platforms that purchasers can access when using the app on the iPhone. 1-ER-32–36; 4-SER-1030–32.

<sup>36</sup> Apple charges developers with up to \$1 million in revenue a 15% commission. 2-SER-48. Apple agreed to maintain this reduced commission rate for these developers for at least another three years as part of the settlement in *Cameron*. See *supra* n.25.

created by a small handful of successful developers, including Epic. 1-ER-43. This arrangement makes sense because gaming applications use the iPhone's features very intensively and gamers derive substantial value from the iPhone and iOS ecosystem.

There is nothing inherently anticompetitive about price discrimination. All companies—regardless of whether they have monopoly power—would prefer to charge higher prices to those consumers who most highly value their products and services.<sup>37</sup> Such price discrimination strategies can *increase* output by permitting lower value (or lower income) users to enter the market.<sup>38</sup>

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<sup>37</sup> See generally Hal R. Varian, *Price Discrimination*, 1 Handbook of Industrial Organization 597, 598-600 (R. Schmalensee & R.D. Willig eds. 1989).

<sup>38</sup> See, e.g., Richard A. Posner, *The Chicago School of Antitrust Analysis*, 127 U. Pa. L. Rev. 935, 926 (1979) (“price discrimination is a device by which the monopolist in effect seeks to serve additional consumers, ... who might be deterred by the single monopoly price”); Hal R. Varian, *Price Discrimination and Social Welfare*, 75 Am. Econ. Rev. 870 (1985) (price discrimination can increase output and thereby increase total welfare); Lars A. Stole, *Price Discrimination and Competition*, 3 Handbook of Industrial Organization 2221 (2007) (discussing price discrimination and increased output in the context of imperfectly competitive markets).

Epic can hardly complain about Apple’s pricing structure, as it uses *the same strategy* to segment the market and charge a premium to high-intensity, high-value users. For example, Epic’s *Fortnite* is “free” for the basic game but players can purchase V-bucks, which are used to purchase customizations, and Battle Passes, which unlock rewards based on seasonal play. Epic thus earns the most revenue from users who most enjoy the game and play it most intensely.<sup>39</sup> As the district court recognized, many other game developers use the same model, and consumer spending is “primarily concentrated on a narrow subset of consumers: namely, exorbitantly high spending gamers.” 1-ER-46; see also 1-ER-47 (noting that “game spend is highly concentrated’ among certain gaming consumers”).

This is the essence of the well-established “freemium” business model, which has been a boon for developers of gaming apps. “Over the

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<sup>39</sup> See, e.g., Julia Glum, *How Does Fortnite Make Money? All the Ways the Free Video Game Cashes in on Its 200 Million Players*, Money.com (Jan. 15, 2019), <https://tinyurl.com/2p9zbn8z>; Ben Gilbert, *There’s a Simple, Obvious Reason ‘Fortnite’ Is the Biggest Game in the World Right Now*, Business Insider (May 3, 2018), <https://tinyurl.com/8mj4spm>.

past decade ‘freemium’—a combination of ‘free’ and ‘premium’—has become the dominant business model among internet start-ups and smartphone app developers.”<sup>40</sup> This model promotes entry by “allow[ing] a new venture to scale up and attract a user base without expending resources on costly ad campaigns or a traditional sales force.”<sup>41</sup> Freemium can also enhance consumer value by offering consumers a wide variety of paid options. Like other forms of price discrimination, the freemium model is output enhancing. And digital game transactions on Apple’s platform have skyrocketed as gaming developers have adopted it. 2-SER-441–43; 4-SER-1037.

The output-enhancing nature of this pricing model—and Epic’s own use of it—should make the Court wary of Epic’s claims that Apple’s commission structure is anticompetitive. In *Amex*, the Supreme Court explained that “[m]arket power is the ability to raise price profitably *by restricting output*,” and it found that Amex’s fee structure was not

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<sup>40</sup> Vineet Kumar, *Making “Freemium” Work*, Harv. Bus. Rev. (May 2014), <https://tinyurl.com/5ak8xcm4>.

<sup>41</sup> *Id.*

anticompetitive because it *increased* output. 138 S. Ct. at 2288 (quoting Areeda & Hovenkamp, *Fundamentals of Antitrust Law* § 5.01 (4th ed. 2017)). As the Court explained, “[w]here ... output is expanding at the same time prices are increasing, rising prices are equally consistent with growing product demand.” *Id.* (quoting *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 237 (1993)). Here, Apple’s prices have *not* risen (on the contrary, they have decreased over time), while output of both apps and gaming transactions has exploded. 1-SER-91, 195, 2-SER-557, 1-ER-39. There is thus no basis for finding that Apple’s commission structure is anticompetitive.

**C. Any Court-Ordered Change to Apple’s Pricing Model Would Likely Harm Small Developers**

As *Amicus* has explained, Apple has invested billions to create the iPhone/iOS ecosystem that makes the App Store possible. Apple uses its pricing “model to monetize its intellectual property against the entire suite of functions as well as to pay for the 80% of all apps which are free and generate no direct revenue stream from the developers other than the annual \$99.00 developer fee.” 1-ER-69. Despite having reaped hundreds of millions of dollars from transactions on Apple’s platform,

Epic now seeks to free-load off Apple’s investments by keeping 100% of the revenue it generates through in-app purchases for itself.

That result would deprive Apple of its primary revenue stream on the developer side of the market and likely prompt Apple to change the way it monetizes its investments. *See, e.g.*, Apple.Br.99 n.12 (suggesting that Apple may change “its business model ... in response to” laws interfering with Apple’s IAP requirement). Epic has suggested, for example, that Apple could substantially increase the \$99 annual fee for developers or charge all developers a per-download fee. Mot. for Prelim. Injunction (Dkt. 61), *Epic Games, Inc. v. Apple Inc.*, No. 4:20-cv-05640, at \*22 (N.D. Cal. Sept. 4, 2020). Those changes would increase barriers to entry and hinder developers’ ability to use the output-enhancing freemium model. Alternatively, Apple could focus on developing its own proprietary apps, which would likely crowd out third-party apps. Trial.Tr.vol.16, 4160:20–4161:14; 1-ER-30.

At minimum, Apple might cut back on the many free services it provides to up-and-coming developers, many of which Epic itself has previously enjoyed. For example, after Epic signed the DPLA in 2010,

Apple prominently featured its games at Apple events and invited Epic to take the stage at an iPhone launch to promote its game, *Infinity Blade*, which Epic released on the iPhone because of its “amazing 3D capabilities.” 2-ER-310. Apple invited Epic back for the subsequent iPhone event in 2011. Trial.Tr.938:21–25; 3-ER-512. In 2018, Apple collaborated with Epic on a large promotion for *Fortnite* and aggressively marketed the game outside the store. Trial.Tr.939:18–941:14; 1-SER-202. Apple also helped Epic operationalize cross-platform and cross-wallet play, which allows gamers to purchase in-app content from Epic through other platforms (where Apple does not receive a commission) and access that content while playing on the iPhone. 1-SER-218; 2-SER-532–33; 1-ER-16–17, 87, 135. All this promotional and engineering support, which Apple provided for free, Trial.Tr.940:9–11, helped Epic become one of the most recognized names in mobile gaming. Yet after having massively benefited from Apple’s business model for over a decade, Epic now seeks to upend that model regardless of the collateral damage such changes would have on smaller developers that have not yet achieved Epic’s level of success.

The inevitable result of shifting the costs of the platform onto smaller developers would be a *decrease* in the output of useful apps. The fact that Epic’s proposed remedy would reduce output—while Apple’s current pricing model has consistently increased output—is strong evidence that Epic’s antitrust theory is meritless and that the district court rightly rejected it.

### CONCLUSION

For the reasons set forth above, this Court should affirm the district court’s judgment on Epic’s antitrust claims.

March 31, 2022

Respectfully Submitted,

/s/ Robert E. Dunn

ROBERT E. DUNN  
COLLIN J. VIERRA  
EIMER STAHL LLP  
99 South Almaden Blvd.  
Suite 642  
San Jose, CA 95113  
(408) 889-1690  
rdunn@eimerstahl.com  
cvierra@eimerstahl.com

JAMES B. SPETA  
EIMER STAHL LLP  
224 South Michigan Ave.  
Suite 1100  
Chicago, IL 60604  
(312) 660-7600  
jspeta@eimerstahl.com

*Counsel for Amicus Curiae*

UNITED STATES COURT OF APPEALS  
FOR THE NINTH CIRCUIT

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## CERTIFICATE OF SERVICE

I hereby certify that on March 31, 2022, I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit by using the CM/ECF system. I certify that all participants in this case are registered CM/ECF users and that service will be accomplished by the CM/ECF system.

/s/ Robert E. Dunn  
ROBERT E. DUNN



May 29, 2021

Rebecca Kelly Slaughter  
Acting Chair  
Federal Trade Commission  
600 Pennsylvania Avenue NW  
Suite CC-5610 (Annex B)  
Washington, D.C. 20580

*Re: Comments of ACT | The App Association re the Federal Trade Commission's Request for Comment Regarding Topics to be Discussed at Dark Patterns Workshop*

Dear Acting Chair Slaughter,

ACT | The App Association (App Association) respectfully submits its views to the Federal Trade Commission (FTC) on its request for public comment in relation to its "Bringing Dark Patterns to Light" workshop. The App Association appreciates the Commission's interest in this important topic and urges the Commission to focus on outright deceptive design decisions as the Commission seeks to establish greater oversight of dark patterns going forward.

## **I. Introduction and Statement of Interest**

The App Association represents approximately 5,000 small business software application development companies and technology firms globally that create the technologies driving internet of things (IoT) use cases across consumer and enterprise contexts. Today, the App Association represents an ecosystem valued at approximately \$1.7 trillion and is responsible for 5.9 million American jobs. Our members create innovative solutions that drive the world's rapid embrace of mobile technology. Their products power consumer and enterprise markets across modalities and segments of the economy.

The App Association serves as a leading resource in the privacy space for thought leadership and education for the global small business technology developer community.<sup>1</sup> We regularly work to keep our members up to speed on the latest policy and legal developments and to translate those into practical and useable guidance to ease the burden of compliance.<sup>2</sup> Furthermore, through our Innovators Network Foundation Privacy Fellowship, we support thought-leadership that covers a wide range of privacy issues,

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<sup>1</sup> See e.g., ACT | The App Association, *What is the California Consumer Privacy Act (January 2020)*, available at: <https://actonline.org/wp-content/uploads/What-is-CCPA.pdf>

<sup>2</sup> See e.g., ACT | The App Association, *General Data Protection Regulation Guide (May 2018)*, available at: [https://actonline.org/wp-content/uploads/ACT\\_GDPR-Guide\\_interactive.pdf](https://actonline.org/wp-content/uploads/ACT_GDPR-Guide_interactive.pdf);



including dark patterns.<sup>3</sup> Relevant output from current fellows that touches on dark patterns include Lourdes Turrecha's work exposing the deceptive design choices that undermine user privacy within the Clubhouse app,<sup>4</sup> as well as Lorrie Cranor's research into the design choices that make it difficult for consumers to exercise their privacy choices on many websites.<sup>5</sup>

## II. Introduction and Statement of Interest

Generally, the App Association agrees with conceptual framework posed in Harry Brignull's oft-cited definition of dark patterns, though we advocate for a more expansive scope. Brignull writes that, "Dark Patterns are tricks used in websites and apps that make you buy or sign up for things that you didn't mean to."<sup>6</sup> He further refines his definition through a taxonomy of 12 different types of dark pattern, including "roach motel" and "confirmshaming", which helpfully elucidate the breadth and depth of the manipulation and deception under question.<sup>7</sup> Yet while these categorizations are a useful starting point, "dark patterns" remains a frustratingly elusive concept to define and arguably includes a far greater range of players than currently recognized.

Dark patterns are by no means a design tactic relegated exclusively to the domain of cutting-edge startups or mobile applications. Cranor's research found inconsistent and at-times misleading user opt-out controls for email communications within a sample of 150 websites drawn from Alexa's ranking of global top 10,000 websites. The list includes websites from industries as diverse as finance, health, media, sports, and of varying sophistication and user design prowess.<sup>8</sup>

It is also important to recognize that dark patterns are extensions of tactics used in the physical world. Brignull's "roach motel" category includes design choices that require users to take exhaustive steps to effectuate a preference that may conflict with the business' preference. As an example, when examining the email opt-out procedure at the *New York Times* Cranor and Habib found that, "deleting the data they'd gathered on us required completing 38 different actions, including finding and reading the privacy policy, following a link to the data deletion request form, selecting a request type, selecting up to 22 checkboxes, filling in eight form fields, selecting four additional confirmation boxes,

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<sup>3</sup> ACT | The App Association, *Innovators Network Foundation Announces 2020-21 Privacy Fellows* (December 2020), available at: <https://actonline.org/2020/12/08/innovators-network-foundation-announces-2020-21-privacy-fellows/>

<sup>4</sup> Lourdes Turrecha, "When FOMO Trumps Privacy: The Clubhouse Edition", February 19, 2021. <https://medium.com/privacy-technology/when-fomo-trumps-privacy-the-clubhouse-edition-82526c6cd702>

<sup>5</sup> Hannah Habib and Lorrie Cranor, "An Empirical Analysis of Data Deletion and Opt-Out Choices on 150 Websites", *Soups 2019*, August 2019. <https://www.usenix.org/system/files/soups2019-habib.pdf>

<sup>6</sup> Harry Brignull, "What are Dark Patterns." <https://www.darkpatterns.org/>

<sup>7</sup> Harry Brignull, "Types of Dark Patterns." <https://www.darkpatterns.org/types-of-dark-pattern>

<sup>8</sup> Lorrie Cranor and Hannah Habib, "An Empirical Analysis of Data Deletion and Opt-Out Choices on 150 Websites", *Soups 2019*, August 2019. <https://www.usenix.org/system/files/soups2019-habib.pdf>



and completing an “I am not a robot” test.”<sup>9</sup> Of course, the roach motel model was pioneered and perfected for years outside of the website and app context. Casino designers, for example, are notorious for constructing floor plans that intentionally disguise exits with the goal of manipulating guests into spending extra time within the facility. Few would call that a dark pattern because it occurs within the physical world, yet it seems equally manipulative to the opt-out practices at the *New York Times*.

It might also be more useful to think of dark patterns as design choices in *any* type of business-to-user interaction that cause the consumer to purchase or sign up for things they didn’t mean to. For example, the use of dark patterns in political advertising and fundraising, often conducted over email rather than through a website or app, is extremely well-documented. Examining a corpus of over 100,000 emails sent during the 2020 U.S. election cycle, researchers found manipulative tactics in 43 percent of communications, with 99 percent of campaigns using such tactics at least occasionally.<sup>10</sup> Insofar as the FTC seeks to bolster its monitoring of the marketplace for examples of dark patterns, it should remain aware that the practice is widespread, cross-cutting between industries, and endemic to many types of communication technologies.

Clearly, part of the issue in defining dark patterns stems from an ongoing migration of markets from analogue to digital spaces, across industries. Some dark patterns, such as “confirmshaming”, are clearly holdovers from longstanding face-to-face sales tactics in which salespeople employ behavioral nudges in order to close a sale or upsell a service. As with such sales tactics, confirmshaming should be understood to encompass a wide range of activities that run from innocuous to outright deceptive, the latter of which should be the main source of attention from regulators. Confirmshaming, as currently understood, could include a prompt as simple as “are you sure you wish to opt-out”, a necessary piece of developer due diligence that could be construed as guilt-tripping a customer. While certainly starker when presented plainly on a website or app than when spoken aloud in a sales context, such a prompt hardly seems out of place in the broader marketplace and surely does not constitute an unfair or deceptive trade practice. The App Association would urge the FTC to focus its attention on examples of dark patterns that clearly deceive and bring harm to a user.

### III. Conclusion

The App Association urges the commission to carefully consider a definition of dark patterns. While there is a great opportunity to clarify and rid the market of harmful practices, an ambiguous or overinclusive definition may harm app developers simply seeking to do the right thing. The most prudent path may be to define dark patterns as

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<sup>9</sup> Lorrie Cranor and Hannah Habib, “It’s shockingly difficult to escape the web’s most pervasive dark patterns”, *Fast Company*, November 4, 2019. <https://www.fastcompany.com/90425350/its-shockingly-difficult-to-escape-the-webs-most-pervasive-dark-patterns>

<sup>10</sup> Hamin et al., “Manipulative Tactics are the Norm in Political Emails”, Princeton University Center for Information Technology Policy, October 5, 2020. <https://electionemails2020.org/assets/manipulative-political-emails-working-paper.pdf>

