INTEROPERABILITY

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CPI COMPETITION POLICY INTERNATIONAL™

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LETTER FROM THE EDITOR

Dear Readers,

This edition of the TechReg Chronicle® focuses on the issue of interoperability between technologies. Dating back to the 1970s and 1980s, regulatory remedies in technology-focused industries have often focused on "interoperability" in order to foster competition and address perceived foreclosure concerns deriving from the strength of incumbent companies. To this date, interoperability-type remedies are often mooted in order to address similar concerns.

The authors of the pieces in this edition of the Chronicle address the contemporary questions around the issue of interoperability as a remedy in modern tech markets.

Jay Ezrielev opens with a broad discussion of interoperability, noting that it is an essential mechanism of modern communication. However, he notes that not all interoperability is benign or efficiency-enhancing. Interoperability has an alternative role as a tool of regulatory policy for granting access to a closed network. Mandatory interoperability comes loaded with regulations that supplant market prices. Network access price regulation and the no self-preference rule are two such regulations. The resolution of this dilemma is key to understanding how interoperability can be implemented as a solution to the contemporary dilemmas where it is proposed today.

Although interoperability is usually associated with "Big Tech" markets such as operating systems or broader technology platforms, **Cheyney O'Fallon & Avi Gopstein** note that interoperability is also the last

significant barrier to the full participation of distributed energy resources in electricity markets and operations. Enhancing interoperability to ease energy systems integration could potentially open opportunities for operational improvements and value creation in such markets. Interoperability could enable legacy assets to enter subsequent markets by equipping technical solutions purchased to meet present needs to continue delivering value even as public policy, operations, and market paradigms evolve.

Returning to the classic domain of interoperability, i.e. "Big Tech," **Luke Hogg** notes how the concentration of the Internet economy behind the so-called "walled gardens" of select companies has led policymakers across the political spectrum to call for legislative action. In the author's view, however, most legislation proposed thus far takes an excessively punitive approach to Big Tech that is unlikely to create the conditions necessary for a truly competitive digital environment. In his view, a better way to promote competition in digital markets would be by encouraging upstart companies to interoperate with dominant platforms.

Mitch Stoltz, on the other hand, makes the case for interoperability remedies in antitrust enforcement actions against Internet services. His article explains the problem of "gatekeeper" firms in Internet-related markets, and describes the ways that Internet services can interoperate with one another, including through "competitive compatibility" achieved without permission from an incumbent firm. It then lays out a spectrum of remedies that antitrust enforcers or private litigants can pursue to promote interoperability, from mandates on an incumbent firm to bans on interfering with a bona fide interoperator.

Finally, **Cristian Santesteba**n notes how the U.S. Congress is currently considering legislation (in the form of the so-called "ACCESS Act") that mandates interoperability in an effort to stimulate competition in digital markets such as social networking. In his view, however, as currently written, the legislation is likely to fail in its objective. The author's key criticism is that it ignores one of the crucial forces that has allowed firms such as Meta (i.e. Facebook) to remain at the top of the social networking space: the indirect network effects from their rich streams of user-generated data that allow them to curate highly engaging content for their users.

In sum, the authors of the pieces in this week's Chronicle address the question of interoperability from a broad set of perspectives. Although interoperability as a regulatory remedy was developed in a particular tech-focused context, it has found broader application; and is now being reflected in recent proposed legislative rules that could potentially be of broader application. It is a question that will doubtless be raised time and again, and the authors of the pieces bring valuable contributions to the ongoing debate.

As always, many thanks to our great panel of authors.

Sincerely,
CPI Team

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Interoperability is being put forward as a structural remedy to resolve issues of market power in networks — particularly, social media. When network effects are present, this means that it is possible that having one or a few operators is not only what arises but also efficient at any given point in time. Regulators can only be assured that a situation is efficient if there is potential competition that can bolster innovation by incumbents. A degree of interoperability to make any centralised outcomes contestable even if it does not lead to lower concentration per se. For social media networks, it is suggested that the principle of allowing the portability of identity (similar to interconnection in telecommunications) would be an appropriate goal with respect to the practical implementation of interoperability.

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Interoperability is the last significant barrier to the full participation of distributed energy resources in electricity markets and operations. The opportunities for diverse and unconventional system participants to create value will continue to grow as the challenges of systems and market integration are mitigated. Enhancing interoperability to ease energy systems integration opens opportunities for operational improvements and value creation that exceed the horizons of any single installation or project. Today, interoperability can help lower barriers to initial market entry that arise from informational asymmetry. For potential market participants to design solutions they must have information about the value space and opportunities for improvement that exist in the system. Interoperability is a countervailing force against market fragmentation that divides and devalues critical network infrastructure according to these historical informational asymmetries. Interoperability can also ensure the ability to stack value streams associated with grid technologies, hedging against obsolescence as today's innovations age into tomorrow's legacy equipment. Going forward, interoperability can enable legacy assets to enter subsequent markets by equipping technical solutions purchased to meet present needs to continue delivering value even as public policy, operations, and market paradigms evolve.

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The concentration of the Internet economy behind the walled gardens of a select few companies has led policymakers across the political spectrum to call for congressional action. However, most legislation proposed thus far takes an overly punitive approach to Big Tech that is unlikely to create the conditions necessary for a truly competitive digital environment. A better way to promote competition in digital markets is by encouraging upstart companies to adversarially interoperate with dominant platforms. Large online platforms have weaponized the Computer Fraud and Abuse Act and other laws to ward off nascent competitors, making adversarial interoperability difficult. To open up the digital economy, lawmakers should turn their attention to reforming portions of the CFAA to prevent its abuse. By doing so, Congress would take a significant step toward reopening the Internet.

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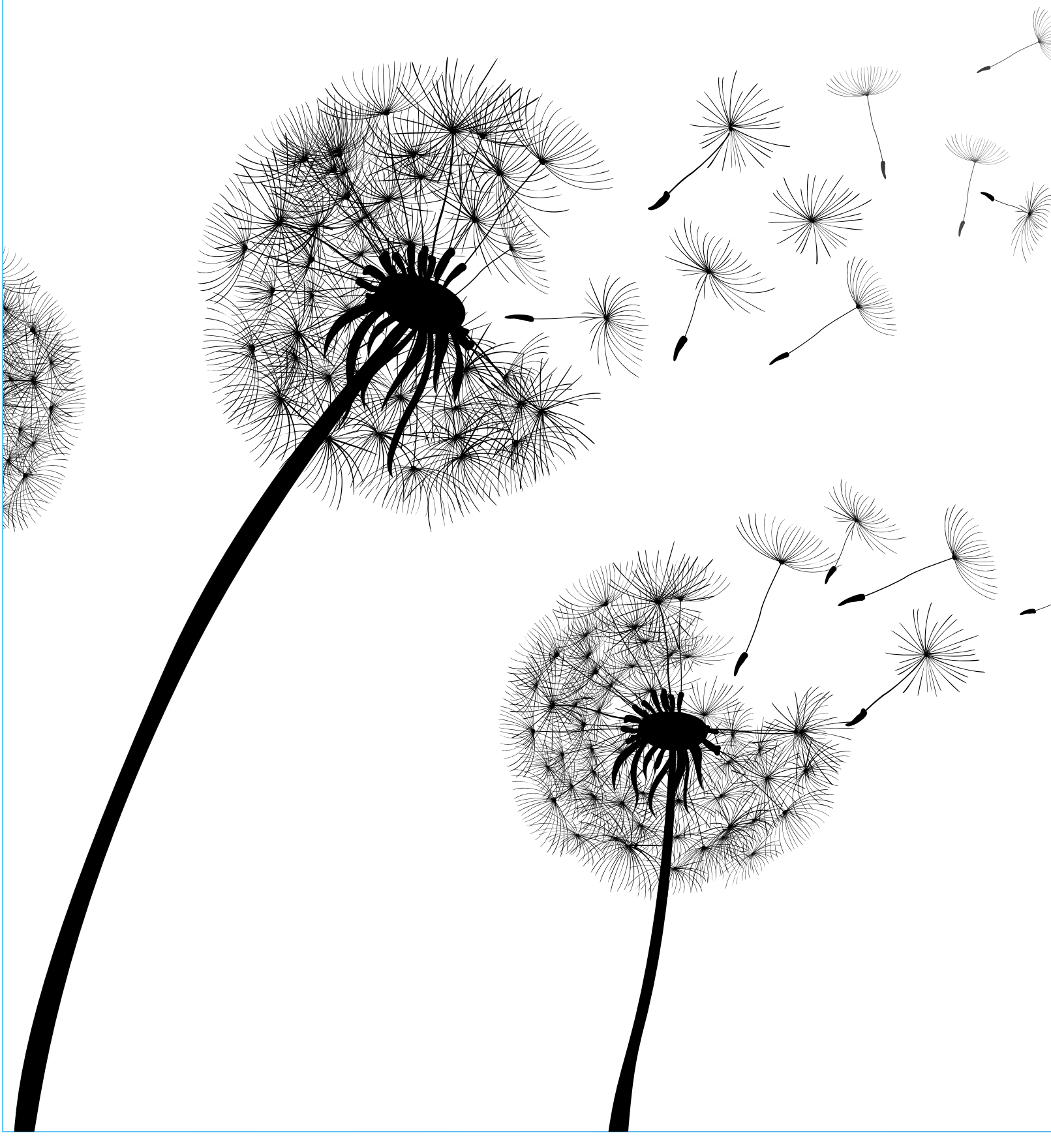
Interoperability between the products and services of different firms promotes competition by lowering switching costs. Requiring dominant firms to make their products interoperable, or reducing barriers to interoperability, are important components of competition policy for the digital age. This article makes the case for interoperability remedies in antitrust enforcement actions against Internet services. It explains the problem of "gatekeeper" firms in Internet-related markets, and describes the ways that Internet services can interoperate with one another, including through "competitive compatibility" achieved without permission from an incumbent firm. The article then lays out a spectrum of remedies that antitrust enforcers or private litigants can pursue to promote interoperability, from mandates on an incumbent firm to bans on interfering with a bona fide interoperator. Finally, the article explains how interoperability can be reconciled with the protection of users' privacy.

THE PROPOSED U.S. ACCESS ACT MANDATING INTEROPERABILITY WILL NOT UNLEASH COMPETITION IN SOCIAL NETWORKING: HERE'S HOW TO FIX IT

By Cristian Santesteban

Congress is considering legislation ("the ACCESS Act") that mandates interoperability in an effort to stimulate competition in digital markets such as social networking. However, as currently written, the legislation is likely to fail in its objective. The reason is that it ignores one of the crucial forces that has allowed firms such as Meta to remain at the top of the social networking space: the indirect network effects from their rich streams of user-generated data that allow them to curate highly engaging content for their users. Moreover, privacy considerations do not justify the strong restrictions on the use of data by firms that interoperate with dominant platforms. Targeted changes to the language of the bill that articulate what I call a "data symmetry principle" that considers privacy would allow entrant platforms to benefit from the rich types of data generated by dominant platforms. This would put would-be entrants on a more level playing field when it comes to scale advantages due to data.



THE INTEROPERABILITY **HOPE**

BY
JOSHUA GANS

Professor of Strategic Management, Rotman School of Management, University of Toronto and Senior Consultant, Charles River Associates. Some portions of this piece are drawn directly from Gans, Joshua. "Enhancing competition with data and identity portability." *The Hamilton Project* (2018): 1-28. All views remain my own.

01 INTRODUCTION

Social media was built for network effects. Launch a social media platform, and its entire success is built upon whether people use it to interact with other people (regardless of knowing them personally or not). From a media perspective, the content is (mostly) provided by users, but the attention garnered and a platform's ability to monetize it through advertising rivals all forms of old media where the content was created by skilled practitioners. The differ-

ence is that user-generated content has the potential to be 'two-way.' That is, I provide content intending that others will interact with it and vice versa. In this respect, a virtuous cycle, whereby people join a social network because others have joined it and so on, can be generated. The flip side is that once network effects have been ignited, they are hard to unravel.

With strong enough network effects, a platform can establish a dominant position in the market for attention. With every unit of attention they attract, advertisements can be offered. Moreover, if people tend to concentrate their attention on just one platform, then advertisers have limited options for placing ads in front of those people.

Regulators have, not surprisingly, become concerned about these effects. Facebook (known these days as Meta) has attracted particular notice. One reason is its ubiquity worldwide, with almost 3 billion monthly active users. Another is that it acquired two other platforms – Instagram and Whatsapp – that rival Facebook for attention. Combined, no other social network comes close. Both Twitter and Snapchat are in the 330 million user range. That said, in terms of user-generated content, YouTube with 2 billion and TikTok with 1 billion users attract considerable attention. The other reasons Facebook has attracted regulatory notice has to do with concerns about privacy and concerns about content (including political manipulation). Those concerns are hardly unique to Facebook, but its size makes it a natural target. And, as we will see, when it comes to network effects, these numbers matter.

The end result of this is that Meta and other social networks have some degree of market power and their exercise of it arguably sits outside the traditional instruments of antitrust policy. That, of course, does not prevent antitrust enforcers from trying to regulate Meta's power by challenging acquisitions and conducting privacy investigations. But there is a strong argument that if competition is to be promoted amongst such platforms, then the use of alternative regulatory approaches is warranted. One such hope is interoperability.

02
BEING CONFIDENT IN OUTCOMES

Before delving into the weeds of interoperability, it is useful to calibrate what a regulatory goal for competition in social media might be. When competition operates as a force that disciplines firms, then consumers have a choice as to where they spend; in this case, their time. The more frictionless that choice is, the more we can be confident that the social media platforms that exist are the most efficient; that is, produce the highest quality for the lowest cost.

Notice that this does not require there to be many social media platforms. One platform could be dominant, but so long as consumers can freely choose to switch to another, then we can be confident that the platform being used by many is what they all want.

This is an ideal of **contestable centralization**. If a market is contestable (that is, consumers have a frictionless choice), then we need not worry that it is centralized. Consider, for example, office applications. Microsoft is easily the most dominant firm (still) in providing office applications such as word processing, spreadsheets, presentation tools and email clients. I would gather that more people have Microsoft Office installed on their computers than have Facebook accounts. However, in contrast to twenty years ago, Microsoft does not attract regulatory attention. Why? Because there are numerous alternatives, both bundled and unbundled, for Microsoft's office products. There are free options from Google and Apple. And there are specialist apps like Ulysses and Scrivener that satisfy particular needs. Consumers do not complain about their choice because they can switch to alternatives frictionlessly.

Before delving into the weeds of interoperability, it is useful to calibrate what a regulatory goal for competition in social media might be

This is not true for social media networks. If you wanted to move away from Facebook because you were worried about its privacy, content, or use of the color blue, you could not easily gain the same functionality elsewhere. This is because your social network – that is, your friends, followers, and those you follow – would not be elsewhere. You would have to coordinate a move from them all, but this is unrealistic since networks are interlocking. Suffice it to say, there would have to be a pretty good reason for 3 billion people to switch to something new.

For regulators, with these frictions in place, they cannot be confident that what we see in the social media market is what is efficient. Maybe Meta is the best we can hope for, but the frictions mean we cannot be assured of that. Moreover, regulators cannot be assured that it isn't wholly inefficient, with many users compelled to use a platform

they don't like as it is the only way to connect with certain people.

03
CHILLING INNOVATION

When incumbents have advantages that entrants do not, this tends to lead to market power and all of its potentially detrimental consequences. The most familiar of these consequences is that lower entry leads to higher prices. For digital platforms, the problem is not higher prices *per se* – their main product is monetarily free. Instead, market power concerns could manifest in the form of higher prices to the other side of the market — to advertisers who might have few options for reaching customers through online platforms.[2] Of course, advertisers do have other options for reaching customers outside of online platforms.

It is more likely that the primary impact of exclusivity-related barriers to competition is on innovation. Innovation can take a variety of forms, but, in general, it is concerned with improving the quality of a platform's product for users. Some of these improvements take the form of increases in quality that are beneficial to all users, such as platform responsiveness or security. Another type of quality improvement takes the form of product innovations that appeal to some subset of consumers. Examples of such innovations include the platform's operation using different technologies (e.g. mobile vs. desktop) and the ways that algorithms serve up information to users, including what captures user attention, as well as the user, interface itself. This might also include variation in the balance between national news and local news, opinions and facts, videos and pictures, or information from family and information from friends. For instance, when Google launched its social network (Google+) it emphasized the ability of users to more easily curate who saw particular posts. In this respect, product innovation can raise welfare not because it improves the experiences of all users but because it improves quality for particular groups of users. Sometimes, however, innovations that initially appeal to niche groups can evolve to have broader appeal and to exert competitive pressure.[3]

How do switching costs impact innovation? In the presence of switching costs, entrants can attract market share only if they have something very significant to offer consumers that outweighs the difficulty of switching. In a market where consumer prices are already zero, overcoming switching costs can be very challenging. Indeed, a new entrant may face returns to innovation that are too low to justify the resources necessary for entry. This lack of innovative pressure from entrants means that incumbent firms are themselves less likely to invest in innovation.[4]

That said, in advertising-driven markets, the unit of competition is not the consumer *per se* but rather the consumer's attention. It is rare for an Internet-delivered service to capture the entirety of a consumer's attention over a substantial period of time, during which consumers can divide their attention between numerous platform activities. To compete, a new entrant must capture some attention from some consumers. When there are network effects, entrants may be unable to capture any attention even if their platform would otherwise have greater value for a subset of users. It is innovation on platforms with network effects that economic theory predicts will be most dampened by the presence of switching costs.

04
ELIMINATING NETWORK EFFECTS

Interoperability wades into this environment. But what is interoperability?

Let's start with what it is not. It is not data portability. Data portability refers to the ability of a user to remove their data from one platform and port it for use on another. Web-based email platforms offer tools for this (e.g. you can port all of your emails and email archive from Gmail to Outlook). Social media networks also allow you to download your data, and these can potentially be uploaded elsewhere. However, data portability only addresses one form of switching cost for users. The switching costs that accompany network effects are untouched by these capabilities.

2 Athey, Susan, Emilio Calvano, and Joshua S. Gans. 2016. "The Impact of Consumer Multi-Homing on Advertising Markets and Media Competition." Management Science 64 (4): 1574 – 90.

3 Gans, Joshua S. 2016. The Disruption Dilemma. Cambridge, MA: MIT Press.

4 Segal, Ilya, & Michael D. Whinston. 2007. "Antitrust in Innovative Industries." American Economic Review 97 (5): 1703–30.

Interoperability is designed to counter network effects. Recall that a network effect arises for a specific network when having more users on that network raises the value to others of using that network above other alternative networks. That increased value is a feature, but when it is tied to a specific network, it becomes a bug.

When local telephony was deregulated away from its original monopoly providers back in the 1990s, imagine what would have happened if, to reach a number on AT&T or British Telecom, you had to actually be a customer of those networks? The more users on one network, the more likely it is that you would want to call them and hence, join the same network. But that situation did not happen because regulators intervened and required networks – not just fixed but cellular as well – to be interconnected. That meant that you did not have to be on the same network as someone else to call or receive calls from them. To be sure, the more people who had phones, the more valuable it was to have a phone yourself. But it did not matter which network had more consumers or which one housed your friends and family. At least in so far as reaching them was concerned, there was no difference. (Initially, some incumbents tried to obtain network effects in through a back door by charging customers more if calls were made off-network, but these attempts were eventually curtailed).

Interoperability is the same goal but for non-telephony applications. But the question is: what does this mean for users of social media platforms? Recall that the goal is to make consumers indifferent about where people they are linked to or friends are.

We actually have a clue to what this would look like by examining how Meta interconnects its own networks of Facebook, Instagram, and Messages. It has linked the infrastructure of these networks so that, if a user wants to, they can post to a Facebook account from Instagram and vice versa. And when they comment on posts, that conversation can also take place through Messages. There are still frictions there, but there is less reason for a user to choose between those networks based solely on where their friends are.

> ***We actually have a clue to what this would look like by examining how Meta interconnects its own networks of Facebook, Instagram, and Messages***

05 MARKET-WIDE INTEROPERABILITY

For social networks, market-wide interoperability would allow posts and other messages to be made across different platforms. Basically, it would take what Meta tries to do internally and make it market-wide. In this case, suppose a new network was created. With interoperability, a user who joins that network would create posts and these posts would be posted to their friends or followers regardless of which network they were on. Similarly, if that user's friends posted or commented, that content would be relayed to the user on their new network. If this could be achieved, an entrant could attract users without those users necessarily missing the value of their social connections. Ideally, no one would be the wiser.

In this respect, interoperability in social media is quite familiar; it is exactly the same concept that we saw for interconnection in telecommunications. There, calls can be made and received, and consumers rarely know which network their connections are on. This eliminates any network-level network effects but preserves the value created by communication across the market.

For social media, the issue would be what would be the equivalent of a phone number that was associated with an individual and allows others to communicate with them. In a recent paper, I suggested that the equivalent would be some sort of *identity*.[5] Social networks already use identity as the substrate for how they organize their networks internally. The goal here would be to expand that concept for external use. In effect, consumers could port their identity from one network to another.

5 Gans, Joshua. "Enhancing competition with data and identity portability." *The Hamilton Project* (2018): 1-28.

06
GETTING TO INTEROPERABILITY

How might identity portability be implemented? One way would be for the government to set down a set of technical standards for interoperability that all social networks would have to comply with. However, that faces the challenge that there would be a potentially lengthy process of agreeing to and legislating such standards.

An alternative would be to establish a set of rights that social networks would have to provide as to an individual users' identity and verification if they change the platform they are using.[6] What this would mean is that if users on a particular platform give permission to send messages to Person A, then, should Person A change digital platforms, they can opt to have all messages forwarded to them on the new network. Because users were already sending messages to a person with a verified identity, that identity should persist along with the permissions that establish from whom to receive messages and to whom to send them.

An alternative would be to establish a set of rights that social networks would have to provide as to an individual users' identity and verification if they change the platform they are using

Under this proposal, should a user change to a new platform, the new platform will receive all of the messages sent by the user's friends and other correspondents on the old platform, and it will transmit to the old platform any messages sent by the user from the new platform, assuming that the parties concerned do not revoke their consents. For the user, the new platform will be used to read and compose messages. For the user's friends, nothing will change. It will be as if their friend continues to reside on the old platform. In each case, a user's platform will control how the information is presented to the user.

If any users make changes to their permissions, then the old platform will send these changes to the new platform, and vice versa. For instance, users on the old platform can opt to withdraw permission for their posts to be sent to the user, and the user can opt to withdraw permissions to users on the old platform. The reverse would be true for new permissions. Ideally, this process would be seamless — an extension of verification and permissions that platforms already provide to their users.

With identity portability, the network effects insulating digital platforms from competitive pressure will be mitigated. In effect, the switching cost associated with potentially losing connections will be fully mitigated. This means that individuals could switch between platforms based on their tastes and preferences as well as the innovations devised by different platforms. There would be no need for a coordinated move among users to recreate network effects on a new platform. Note that this change does not disadvantage incumbent platforms *per se* but places all platforms on an equal footing. Some incumbent platforms could benefit in terms of attracting users as much as new entrants.

The prize for attracting a user to a platform will be the ability to earn money from those users. For instance, users who do not like to see advertisements might be attracted to a platform that charges them fees instead of sending them advertisements. The point is that the ability to earn money from a user's attention will become more contestable as a result of identity portability.

07
SOME TECHNICAL CHALLENGES

Currently, social media platforms verify identity and have an internal means of ensuring the management of permissions. For identity portability, these techniques would have to be extended beyond a particular platform. How that would be best achieved is an open question.

One possibility is that platforms continue to manage identity verification and permissions, but with messages forwarded to other platforms. However, one important concern is that incumbent platforms might not manage the

6 This rights-based approach was already used in telecommunications with number portability rights; see Gans, Joshua S., Stephen P. King, & Graeme Woodbridge. 2001. "Numbers to the People: Regulation, Ownership and Local Number Portability." Information Economics and Policy 13: 167–80

receipt of messages in a neutral manner. They might, for instance, delay messages from people outside the network or give them reduced priority in a list of messages. This lack of neutrality has happened in other digital platforms, such as online travel bookings. This, however, would be verifiable ex post and can potentially be made subject to regulatory sanction.

Another possibility is that an independent entity could be vested with responsibility for the management of identity verification and permissions. There might be competitive options for providing this management, as occurs currently with credit reporting. Alternatively, decentralized verification might be possible using blockchain technologies. Yet another possibility is for a public organization to manage verification and permissions, as is already done in Estonia.[7] and in India with Aadhaar. Ultimately, this management may evolve into a set of open protocols like those that power the commercial Internet, such as TCP/IP, POP, IMAP, SMTP, and HTML.[8]

Given the uncertainty over what might be the best technical solution, I propose making identity portability a right and allowing market participants to determine the ideal approach to implementation. When market participants are forced to bear the costs of identity portability, participants are more likely to devise the lowest-cost technical solution.

Some companies might initially rely on their own solutions for identity portability. Facebook currently offers an identity management service called Facebook Connect that allows others to use Facebook to manage identity effectively. Facebook also has the ability to track identity across services, including browsers that users are logged in to. If a user switches services, Facebook Connect can provide a means of porting their identity to that service. That said, a user might prefer that a platform discontinue collecting data on them after they have exited the platform. As messages are sent between platforms, this data collection could occur. Here again, Facebook's services offer a potential solution; in this case, the company's privacy management services could help navigate these issues. In addition, Apple, Google, Twitter, and others (including third parties like OAuth) offer identity management services that could also perform these functions.

Another possibility is that an independent entity could be vested with responsibility for the management of identity verification and permissions

7 Heller, Nathan. 2017. "Estonia, The Digital Republic." New Yorker, December 18 and 25.

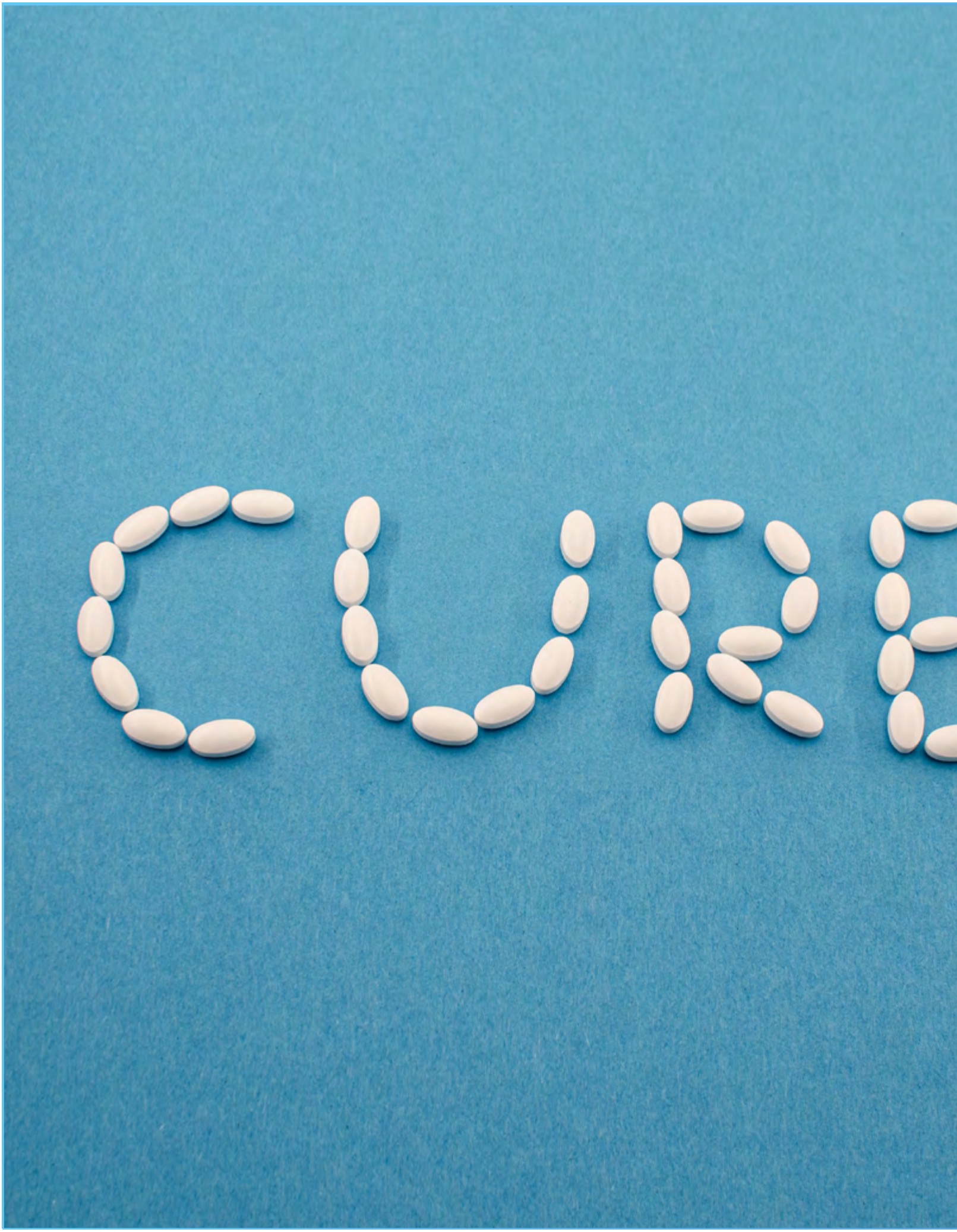
8 Greenstein, Shane. 2015. How the Internet Became Commercial: Innovation, Privatization and the Birth of a New Network. Princeton, NJ: Princeton University Press.

08
CONCLUSION

Interoperability is the great hope to deal with market power amongst social networks. It is attractive because it targets the heart of what gives networks power while preserving value amongst consumers. It frees up the market for new entry and new product experimentation. Put simply, it enables real competition.

But interoperability is easier said than done. The good news is that we have antecedents in important industries such as telecommunications. The bad news is that this could take time to sort out standards and protocols. Thus, I have proposed using the principles of telecommunications interconnection and marrying them with new user-rights to identity portability to speed the process along. That may be the best way of turning the interoperability hope into reality.

It is attractive because it targets the heart of what gives networks power while preserving value amongst consumers


CURE

MANDATED INTEROPERABILITY: THE CURE IS WORSE THAN THE DISEASE

BY
JAY EZRIELEV

Jay Ezrielev is the founder of Elevecon.

01 INTRODUCTION

Roughly speaking, interoperability is the ability of different systems, devices, and applications to work together. Interoperability enables calls between users of Android and iOS cell phones and between customers of different cellular networks. It is also what allows Internet users to share data between different countries, operating systems, devices, and applications. Interoperability is an essential mechanism of modern communication. It works by adopting standard communication protocols that dif-

ferent systems or applications use to transmit and receive data.

However, not all interoperability is benign or efficiency-enhancing. Interoperability has an alternative role as a tool of regulatory policy for granting access to a closed network. For example, the FCC mandated interoperability to give long-distance carriers access to local exchange networks to spur competition in long-distance calling.[2] The Telecommunications Act of 1996 mandated interoperability that required incumbent local exchange carriers to give competitors access to local exchange networks.[3] A number of recent EU and U.S. legislative proposals include interoperability mandates as a regulatory solution to big tech competition. In particular, the Digital Markets Act ("DMA"), recently adopted by the European Parliament and the Council of the European Union, mandates interoperability in granting access to networks operated by designated "gatekeepers" or large online platforms.[4]

Mandated interoperability is very different from the type of interoperability that firms adopt voluntarily to facilitate communication among different systems, devices, and applications. The potential benefit of mandated interoperability is in enabling more firms to provide network services. However, this benefit comes at a great cost. Mandated interoperability comes with regulations that reduce efficiency.

Mandated interoperability is very different from the type of interoperability that firms adopt voluntarily to facilitate communication among different systems, devices, and applications

Interoperability has both costs and benefits. The benefits of interoperability include facilitating communication among different application, systems, and devices. The potential costs of interoperability include weakened incentives to innovate, less variety, entrenchment of incumbents, and loss of inter-network competition.[5] Interoperability may also result in loss of privacy and less secure networks.[6] The relative benefits of interoperability are small when multihoming costs are low and there is a high degree of differentiation across networks.[7] In addition to the downsides of interoperability, mandatory interoperability imposes significant regulatory costs that can harm consumers.

In this article, I consider two elements of mandatory interoperability: network access price regulation and the no self-preference rule. Network access price regulation is a necessary part of mandatory interoperability because it prevents the network operator from setting terms that would exclude outside (unaffiliated) firms from accessing the network. The no self-preference rule prohibits the network operator from favoring its affiliates over outside firms in providing network access. This rule is also necessary for mandatory interoperability because, by favoring its affiliates, the network operator may effectively exclude outside firms from accessing the network.

As I discuss below, network access price regulation and the no self-preference rule harm consumers. In particular, network access price regulation and the no self-preference rule may increase consumer prices, reduce output, stifle innovation, and degrade network service quality. Taken together, these two elements of mandatory interoperability are likely to produce far more harm than any potential benefit of mandatory interoperability.

2 See Howard A. Shelanski, The Case for Rebalancing Antitrust and Regulation, 109 MICH. L. REV. 683 (2011); and Laura Alexander & Randy Stutz, Interoperability in Antitrust Law & Competition Policy, CPI ANTITRUST CHRON. (June 2021).

3 See Verizon Communications, Inc. v. Law Offices of Curtis V. Trinco, LLP, 540 U.S. 398 (2004).

4 See Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on Contestable and Fair Markets in the Digital Sector and Amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act) at 14-15 [hereafter DMA].

5 See Jay Ezrielev & Genaro Marquez, Interoperability: The Wrong Prescription for Platform Competition, CPI ANTITRUST CHRON. (June 2021).

6 See Urs Gasser, "Interoperability in the Digital Ecosystem," July 6, 2015, https://ssrn.com/abstract=2639210; and Wolfgang Kerber & Heike Schweitzer, "Interoperability in the Digital Economy," JIPITEC 8, no. 1 (2017), https://www.jipitec.eu/issues/jipitec-8-1-2017/4531/JIPITEC_8_1_2017_Kerber_Schweitzer.pdf.

7 See Ezrielev & Marquez *supra* note 5.

02
NETWORK ACCESS PRICE REGULATION

Network access prices determine the compensation that connecting firms receive for providing network services. Throughout the article, I refer to the firms that access a network for the purpose of providing network services as connecting firms. Regulation of network access pricing is a necessary component of mandatory interoperability because, absent regulation, the network operator could make network access uneconomic for the connecting firms. Allowing network operators to exclude potential connecting firms would defeat the overarching goal of mandatory interoperability.

Consider a hypothetical transportation services network that matches providers of transportation services (drivers) to the consumers of transportation services (passengers), similar to the Uber network.[8] Note that this network is a multi-sided platform.[9] Suppose that a regulator mandates opening the transportation network by establishing interoperability protocols for accessing the network. Under the interoperability protocols, connecting firms may supply drivers or passengers to be matched through the network. The mandatory interoperability regime also requires establishing pricing terms for network access. These terms would determine the connecting firms' compensation for supplying drivers and passengers to the network. For example, the regulator may set network access terms where any firm supplying a driver to the network would receive a 10 percent commission, to be paid by the network operator, on any fees that the driver receives for driving a passenger matched by the network.

Implementing an effective interoperability regime implies network access terms that would allow the connecting firms to earn sufficient margins to induce their participation in the network. However, any compensation for the connecting firms in excess of the minimum necessary to induce their participation would increase the cost of network services for consumers without necessarily producing any offsetting benefits. Finding the right balance between inducing network participation and reducing user costs can be a challenging problem for regulatory policy.

How should the regulator determine the optimal network access prices? The regulator's assessment of optimal pricing may be informed by inputs from interested parties, including potential connecting firms. However, advocacy by interested parties is unlikely to yield reliable information for determining the optimal network access pricing. Moreover, there is inherent uncertainty about the connecting firms' future costs of and revenues from providing network services. Because of this *ex ante* uncertainty, the connecting firms' *ex post* margins (for any given set of network access prices) may be either excessive or insufficient to induce participation in the network.

> ***Implementing an effective interoperability regime implies network access terms that would allow the connecting firms to earn sufficient margins to induce their participation in the network***

Suppose that the regulator sets an *ex ante* compensation level for the connecting firms.[10] The connecting firms' *ex post* margins may exceed the minimum necessary to induce participation in the network. But what if the *ex post* margins are insufficient to induce participation? The regulator would need to increase the connecting firms' compensation *ex post* to induce the firms to offer network services. This policy would overcompensate the connecting firms relative to the minimum necessary for participation because the regulator would only adjust the *ex post* compensation one way: upwards. There is no *ex post* downward adjustment if the connecting firms' margins are in excess of the level necessary to induce participation. Under this policy, the connecting firms may also lack incentives to invest in becoming more efficient if they expect the regulator to adjust compensation *ex post* to ensure their participation. The investments may reduce the connecting firms' *ex post* regulatory compensation.

Now suppose that the regulator sets the connecting firms' compensation *ex post* to levels that are just sufficient (but not any higher) to induce their participation

8 I discuss the transportation services network example for illustrative purposes. The insights from analyzing this network apply to other types of networks.

9 See Jean-Charles Rochet & Jean Tirole, Platform Competition in Two-Sided Markets, 1 J. EUR. ECON. ASS'N 990 (2003).

10 Here, *ex ante* means prior to the connecting firms' entry as suppliers of network services.

in the network.[11] In this case, the connecting firms would lack incentives to make *ex ante* investments to reduce their costs or to improve service quality.[12] In the absence of regulations, these investments would result in higher margins for the connecting firms. However, under the policy of *ex post* compensation adjustment, the investments would reduce the connecting firms' regulatory compensation to levels where their margins are just sufficient to ensure participation (but not higher). This policy would lead to underinvestment in cost-reduction and quality improvement, resulting in diminished efficiency, lower service quality, less innovation, and higher prices for consumers.

> ***Now suppose that the regulator sets the connecting firms' compensation ex post to levels that are just sufficient (but not any higher) to induce their participation in the network***

A further complicating factor is the heterogeneity in efficiency levels among potential connecting firms. Firms that achieve greater efficiency would require less compensation to participate in a network. Whether firms are able to achieve relatively high efficiency levels may depend on whether they are able to achieve significant scale. Consider the following example. Suppose that a firm that supplies drivers to the hypothetical transportation services network achieves a relatively high level of efficiency (through scale economy). This firm incurs an average cost of $1 per driver supplied. It requires compensation of $1.25 per driver to induce its participation in the network. Other connecting firms cannot achieve scale and efficiency and would incur an average cost of $3 per driver supplied. These firms require compensation of $3.50 per driver to induce their participation in the network. The regulator may set the compensation level at $1.25 per driver, which would induce only one firm to participate in the network as a supplier of drivers. Alternatively, the regulator may set the compensation level at $3.50 per driver, which would induce a large number of firms to participate in the network as suppliers of drivers, including many relatively inefficient firms.

The higher compensation for the connecting firms would allow more firms to participate in the network, but it would also raise prices for consumers. Even though the lower compensation level would induce only one firm to participate in the network, it would result in lower costs for passengers. Nonetheless, regulators may see participation by only one firm as a failure of policy. Many regulators may prioritize broader participation by connecting firms, which would imply higher compensation levels but also higher costs for consumers.[13]

Network access price regulation also affects the network operator's margins. Regulations that limit the network operator's margins (through price controls) after the network achieves success effectively undermines the network operator's property rights. Such regulations are tantamount to a tax on innovation. The regulations would weaken innovators' incentives to develop new networks, resulting in diminished dynamic competition.[14] The regulations would also weaken incentives to develop new network features and improve network quality.[15] Reducing network operators' margins via price controls may decrease consumers' short-term costs, but it would also reduce investments in innovation and quality improvement. This would ultimately harm consumers.

The foregoing demonstrates the policy challenges in regulating network access prices. Supplanting market prices with regulated prices can harm consumers. Regulators do not have a strong record of generating benefits for consum-

11 Here, *ex post* means after the connecting firms' entry as suppliers of network services.

12 The regulator may also need to make some *ex ante* compensation level commitments to induce the connecting firms' initial investments in providing network services.

13 Note that the DMA's stated purpose is "to contribute to the proper functioning of the internal market by laying down harmonised rules ensuring for all businesses, contestable and fair markets in the digital sector across the Union where gatekeepers are present, to the benefit of business users and end users." (DMA at 27)

14 See United States v. Aluminum Co. of America, 148 F.2d 416, 430 (2d Cir. 1945) ("The successful competitor, having been urged to compete, must not be turned upon when he wins.").

15 Sharing the benefits of investment with connecting firms would lead to free-rider effects and would diminish investment incentives. See Paul A. Samuelson, The Pure Theory of Public Expenditure, 36 REV. ECON. STAT. 387 (1954).

ers through price regulation.[16] As Justice Breyer explained, "[r]egulation is viewed as a substitute for competition, to be used only as a weapon of last resort-as a heroic cure reserved for a serious disease."[17]

03
NO SELF-PREFERENCE RULE

The no self-preference rule prohibits the network operator from favoring its affiliates in the choice of network service providers. This rule is necessary for effective mandatory interoperability because, absent this rule, the network operator could keep the connecting firms from accessing the network by only using affiliated network services.[18]

Determining whether a network operator is favoring an affiliate is not a simple matter. Consider the hypothetical transportation services network from the previous section. Suppose that the network operator identifies a passenger who requests to be driven from point A to point B. The network operator has identified two drivers willing to drive the passengers for $20. One of the drivers is from the network operator's affiliate, and the other one is from a connecting firm. If the network operator chooses the connecting firm's driver, the network operator will pay the connecting firm a $2 a finder's fee (under the network access price regulations). The network operator does not incur this fee when choosing the affiliate's driver.

Which driver should the network select under the no self-preference rule? The regulator may apply two different versions of the no self-preference rule. Under the first version, the network operator may take account of the additional $2 cost when choosing between the affiliate and the connecting firm. This version of the no self-preference rule would allow the network operator to choose the affiliate's driver (assuming all other aspects of the two bids are the same). Under the second version of the no self-preference rule, the network operator cannot take the connecting firm's finder's fee into account when choosing the driver.

The first version of the no self-preference rule may pressure the connecting firms to forgo at least some portion of their finder's fee compensation. Forgoing the finder's fee compensation (or some portion thereof) would frustrate the regulator's goal of compensating the connecting firms sufficiently to induce their participation in the network. Without the finder's fee compensation, the connecting firms may face a "margin squeeze" and may be forced to exit the network.[19] For these reasons, regulators are likely to avoid this version of the no self-preference rule. However, the second version of the no self-preference rule has significant drawbacks. This version would force the network operator to incur higher costs. The network operator would pass these costs to passengers, which would lead to higher prices for passengers, lower demand, and lower compensation for drivers.

Another important question for the enforcement of the no self-preference rule is whether the rule can properly account for differences in quality. Could the no self-preference rule allow the transportation services network operator to consider service quality in deciding between the two drivers? Would the no self-preference rule allow the network operator to select the more costly driver from the affiliate over the less costly driver from the connecting firm when the affiliate's driver is one minute closer to the passenger or is driving a slightly nicer car or has a slightly higher user rating? How would the no self-preference rule determine the tradeoff between the cost and quality of driver services? How would the rule assign weights to each quality attribute?

It would be infeasible to design the no self-preference rule

16 See Steven & Morrison Clifford Winston, The Economic Effects of Airline Deregulation (1986); Thomas Gale Moore, U. S. Airline Deregulation: Its Effects on Passengers, Capital, and Labor, 29 J. L. & ECON. 1 (1986); Dennis W. Carlton & Randal C. Picker, Antitrust and Regulation, in Economic Regulation and Its Reform: What Have We Learned? (Nancy L. Rose ed., 2014); and Shelanski *supra* note 2.

17 Stephen G. Breyer, Antitrust, Deregulation, and the Newly Liberated Marketplace, 75 CALIF. L. REV. 1005, 1007 (1987)

18 It is worth noting that the interoperability mandate under the DMA is paired with a no self-preference rule. See DMA at 15. ("The gatekeepers should, therefore, be required to ensure, free of charge, effective interoperability with, and access for the purposes of interoperability to, the same operating system, hardware or software features that are available or used in the provision of its own complementary and supporting services and hardware. Such access can equally be required by software applications related to the relevant services provided together with, or in support of, the core platform service in order to effectively develop and provide functionalities interoperable with those provided by gatekeepers.")

19 See Dennis Carlton, Should "Price Squeeze" be a Recognized Form of Anticompetitive Conduct?, 4 J. COMPET. LAW ECON. 271 (2008).

that would fully account for all the potential quality differences between services of each provider.[20] There are too many potential quality attributes to enumerate in the rule. Enumerating all potential quality attributes would be impractical. Quality attributes are often unquantifiable. Their assessment is subjective. It would be impossible to account for such quality attributes without arbitrarily assigning value to each attribute. Some service quality attributes may be unobservable to the regulator, making it infeasible to consider these attributes in applying the no self-preference rule.

Moreover, quality attributes of services often evolve rapidly because of innovation, changes in service features and capabilities, changes in market conditions, or actions taken to address customer complaints. To account for quality differences of services in a practical way, the no self-preference rule would have to evolve rapidly to keep up with the evolving marketplace. Given the slow pace of adoption and implementation of regulations, it is highly unlikely that the no self-preference rule could keep up with the pace of technological changes in network operations or changes in network services.[21]

Considering the general infeasibility of fully accounting for service quality differences in applying the no self-preference rule, it is inevitable that, in some instances, the rule will force the network operator to choose a lower quality connecting firm over the higher quality affiliate (even when the affiliate does not cost more). Ultimately, the no self-preference rule would degrade network quality.

The quality of network services may also suffer if the no self-preference rule prevents the network operator from rejecting service bids that may harm the network. In the case of the transportation services network, the connecting firms may offer drivers that have poor driving records or even criminal records. The network operator may be unaware of the red flags in the drivers' backgrounds if the connecting firms do not share this information with the network operator. Using drivers with criminal or poor driving records may degrade the whole network if passengers do not feel safe in using the network for driver services.[22] Degrading the quality of the transportation services network would harm passengers and reduce demand for drivers, which would likely result in lower compensation for drivers.

Quality attributes of services often evolve rapidly because of innovation, changes in service features and capabilities, changes in market conditions, or actions taken to address customer complaints

20 See Sanford J. Grossman & Oliver D. Hart, The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration, 94 J. POLIT. ECON. 691 (1986); and Oliver Hart & John Moore, Property Rights and the Nature of the Firm, 98 J. POLIT. ECON. 1119 (1990).

21 See Joseph Farrell & Garth Saloner, Coordination Through Committees and Markets, 19 RAND. J. ECON. 235 (1988).

22 A connecting firm may be willing to supply low quality drivers that harm the network because the connecting firm does not have a financial interest in the network. The supply of network services can lead to a negative externality when the no self-preference rule prevents the network operator from rejecting poor quality service offerings. In this case, the connecting firm receives the benefit from supplying low quality services, but the consequence of low quality services are borne by the entire network. See Jeremy Greenwood & R. Preston McAfee, Externalities and Asymmetric Information, 106 Q. J. ECON. 103 (1991).

04
CONCLUSION

Market-based (voluntary) interoperability is very different from mandatory interoperability. Market-based interoperability is the result of arm's length negotiations where parties mutually agree on pricing terms and communication protocols. In contrast, mandatory interoperability comes loaded with regulations that supplant market prices. Although mandatory interoperability creates new competition in the supply of network services, this competition is of limited benefit to consumers because the terms of this competition are fixed through regulation.

Network access price regulation and prohibition against self-preference are critical elements of a mandatory interoperability regime. Without these regulations, a mandatory interoperability regime would not be operational. However, network access price regulation and prohibition against self-preference would harm consumers. These regulations would increase costs for consumers of network services, weaken innovation incentives, degrade the quality of network services, reduce efficiency, and reduce output levels.

Network access price regulation and prohibition against self-preference are critical elements of a mandatory interoperability regime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REDUCING BARRIERS TO ENTRY AND HEDGING AGAINST OBSOLESCENCE WITH SMART GRID INTEROPERABILITY

BY CHEYNEY O'FALLON

& AVI GOPSTEIN

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Interoperability is the last significant barrier to the full participation of distributed energy resources ("DER") in electricity markets and operations. The shrinking scale of technology and associated per-unit investment costs, the reduced engineering and environmental issues for siting and permitting of small-scale commodity energy technologies, and the emergence of energy service companies to manage procurement and installation challenges allows

the non-institutional participant to invest in and provide resources to energy markets as never before. Technical innovation and the inherent modularity of modern energy technologies have already substantially addressed barriers previously associated with energy market participation. The opportunities for diverse and unconventional system participants to create value will continue to grow as the challenges of systems and market integration are mitigated.

There is a pressing need for strategic responses to the threats posed by climate change, cyber adversaries, economic inequality, and growing competition for scarce natural resources. The perception that innovative energy resources pose a threat to traditional grid operations[2] must be overcome, and the barriers and frictions that dissipate value brought by new market entrants should be reduced to maximize the societal return on grid modernization investments. Many of these market barriers and frictions generally arise from a lack of interoperability and can emerge as additional and unnecessary integration or operating costs.[3] And while these barriers are often perceived as protecting existing business models,[4] the associated costs harm both the emergent DER owners and incumbent operators with whom they might otherwise cooperate.[5]

Like many commodity industries that provide value through their inputs to other economic sectors,[6,7,8] the electric grid has historically created more societal value than is captured through the sale of electricity. The value not captured by electric sector utilities, vendors, and system operators is instead realized through the productive actions of stakeholders throughout the economy who benefit from abundant and affordable energy — to say nothing of the concomitant societal benefits brought by reliable and equitable energy access. For sectors like electric power, where network effects are strong, eliminating market failures that benefit few and disadvantage many is key to maximizing economic and societal benefits.[9]

Enhancing interoperability to ease energy systems integration for new resources opens opportunities for operational improvements and value creation that exceed the horizons of any single installation or project. As interoperability requires ongoing attention, and backwards compatibility is not inevitable, firms and stakeholder groups need to become more comfortable with the process of maintaining high levels of interoperability for these emerging opportunities to remain open in the future. So maintained, interoperability and systems integration cultivate a persistent benefit that is revisited upon stakeholders each time new technologies emerge from research and laboratories to find their place on rooftops, utility poles, and servers. Thus, interoperability can also ensure the ability to stack value streams associated with grid technologies, hedging against obsolescence as today's innovations age into tomorrow's legacy equipment.

While there will always be uncertainty regarding the future of the electric power sector, early obsolescence of today's investments as operations and markets evolve is not a foregone conclusion. Interoperability helps equip infrastructure solutions purchased to meet present needs to continue delivering value even as public policy, operations, and market paradigms evolve.

While there will always be uncertainty regarding the future of the electric power sector, early obsolescence of today's investments as operations and markets evolve is not a foregone conclusion

2 George S Day & Paul JH Schoemaker, *Scanning the periphery*, 83 Harvard business review (2005).

3 Steven C Salop & David T Scheffman, *Raising rivals' costs*, 73 The American Economic Review (1983).

4 Julian Birkinshaw, *Ecosystem businesses are changing the rules of strategy*, 8 Harvard Business Review (2019).

5 Harold Demsetz, *Barriers to entry*, 72 The American economic review (1982).

6 Stefan Heck, et al., *Creating value in the semiconductor industry*, 1 McKinsey on Semiconductors (2011).

7 Jacques Bughin, *The web's! 100 billion surplus*, 2 McKinsey Quarterly (2011).

8 Severin Borenstein & Nancy L Rose, *How airline markets work… or do they? Regulatory reform in the airline industry*, *in* Economic regulation and its reform: What have we learned? (2014).

9 Francis M Bator, *The anatomy of market failure*, 72 The quarterly journal of economics (1958).

Information asymmetry is a central challenge to the emergence of new energy services and products.[10] For potential market participants to design solutions they must have information about the value space and opportunities for improvement that exist in the system. Incumbent suppliers have made considerable investments to better understand the needs of their customer base, the constraints of their infrastructure networks, and the cost structures of their generating fleets and delivery technologies; this information is not generally available to new entrants. That some participants are closer to the market and have some informational advantage may be the unavoidable, and perhaps desirable, outcome of prudent investment. However, it is in the interest of economic competitiveness that informational advantage earned through sound investment strategies does not unnecessarily preclude other stakeholders from making complementary investments in shared systems. Where coordinated action can create new value streams or reduce system costs, greater interoperability of data and communication stands to benefit the many segments of the economy served by energy infrastructure.

For many energy service providers that are capable of designing and installing DERs for non-institutional participants, the requisite information on customer needs and use patterns has been historically collected and protected by utilities.[11] This defense of the data against disclosure serves both pecuniary and regulatory imperatives of doing business in the electric power sector. Expectations for data sharing and cooperation have increased as utilities have adapted to threats to the safe and cost-effective operation of their systems. Initial improvements in system performance have come from customers making informed choices regarding their energy consumption patterns as utilities have implemented better metering systems and made that data available to end users. Standardization of data recording and communications between utilities and customers enables utilities to realize new internal efficiencies. As interoperability improves, third-party service providers are aggregating customer-based contributions to grid operations that were previously too small or scattered to be worth pursuing.[12] Interoperability is a countervailing force against the market fragmentation that divides and devalues emerging resources and our critical network infrastructure.

For many energy service providers that are capable of designing and installing DERs for non-institutional participants, the requisite information on customer needs and use patterns has been historically collected and protected by utilities

Interoperability improvements targeting greater consistency in data access strategies across service territories and political boundaries can harmonize market access strategies and reduce the market fragmentation that limits opportunities for developing DER installations and energy service solutions for non-utility market participants. By increasing the scale of the economic prize to be obtained through product and service development, transaction and soft costs can be spread thinner over more customers, thereby reducing individual burdens of participation. As interoperability improves throughout the electric power sector, the complexity of porting effective strategies from peer communities is also reduced, and so more people will benefit from lessons learned and value created in adjacent settings. Information asymmetries that arise from the complexity of data access present an excellent target for interoperability improvements. This is especially true of improvements that create value by reducing barriers to entry for end use energy consumers, the utilities that serve them, and those third-party firms that can innovate cooperative strategies when reliable high-quality data is available, communicable, and actionable.

Many of the most energy intensive appliances and grid assets commonly found across the country are, for sensible reasons, designed with sufficient robustness to outlive their place at the top of the technological merit order. For example, just a few years after purchase, a conventional water heater installed in a home will in many cases no longer constitute the most efficient or cost-effective technology for producing warm water for household use when it is needed. Tankless heat pump water heaters are presently much more efficient at using energy to meet hot water requirements for many homes. Nevertheless, replacing heavy and expensive durable equipment that must be decommissioned and physically removed from plumbing

10 Wayne P Olson, *Lessons from the new institutional economics*, 10 The Electricity Journal, 46, 54-55 (1997).

11 See Avi Gopstein, et al., NIST framework and roadmap for smart grid interoperability standards, release 4.0 59 (Department of Commerce. National Institute of Standards and Technology. 2021).

12 Eva Niesten & Floortje Alkemade, *How is value created and captured in smart grids? A review of the literature and an analysis of pilot projects*, 53 Renewable and Sustainable Energy Reviews (2016).

systems comes at a cost that can be a barrier to energy efficiency retrofits. Present labor market conditions and rising costs of capital further limit the opportunities for many to retrofit such systems, exacerbating technology lock-in throughout the sector.

Although technical advances can leave energy consuming devices installed in a home or business cost-inefficient compared to the most modern offerings, the costs of replacing technology before the end of its useful life often deprioritizes modernization investments as much of the value to be gained from the new technology could be dissipated in the replacement process. Interoperability can change how we use technologies that are no longer strictly the most efficient at their original use case, yet are still more than capable of delivering value. Interoperability and direct load control may enable older devices to escape the stranded asset trap of early obsolescence by changing the way we use them.

Interoperability can help to enable devices—like these water heaters—that were sensibly installed in the recent past avoid obsolescence through the stacking of new value propositions. Conventional water heater tanks constitute thermal energy storage in a house. Such water heaters operate on a duty cycle, and do not draw their rated load at all times in order to meet homeowner or business operator needs. For conventional tank-based water heaters, interoperability to enable direct load control could enable the user to add to the original hot water supply value proposition by including the emergent value stream of demand response for grid stability. In this way, both the utility and the customer can benefit from the value created as interoperability enables new functionality for legacy assets.

Interruptible water heaters that are able to coordinate with similar devices across a service territory and are interoperable with utility or service aggregator signals can deliver demand-side flexibility to help system operators to manage the grid and better ride through periods of physical or financial stress.[13] By reducing the cost of meeting loads, through reducing demand for energy to heat water when the marginal cost of electricity generation and delivery is high, older yet interoperable water heaters create value for the system with no inconvenience to the customer.

While the value propositions tied to a single device is small in uncoordinated isolation, once aggregated across many similar devices the obtainable value becomes meaningful to both the system and the consumer. Demand response becomes meaningful when marginal energy uses can be paused for the betterment of system operations without visiting outsized costs or value destruction on end use customers. And beyond the relatively simple water heater example provided here, the ability to interoperate with and coordinate the actions of diverse and distributed resources can bring about additional value propositions across the full range of long-lived conventional grid assets, resources, and loads.

Interoperability can help to enable devices—like these water heaters—that were sensibly installed in the recent past avoid obsolescence through the stacking of new value propositions

13 Gopstein, et al., 41. 2021.

Energy sector executives and households across the world are confronting a decision-making environment described by rising costs of inputs as the complex global economy continues to reconfigure itself in the shadow of threats to public health, energy and cyber security, resource production, and energy delivery. Strategies predicated on the ability to eliminate uncertainty are untenable and will most likely lead to suboptimal future states. Interoperability can improve the set of options at decision makers' disposal when confronting events ranging from garden variety economic shocks to the low probability, high impact events that readily overcome even the best laid plans. Interoperability is foundational to the development of more inclusive grid institutions as it works to dissolve barriers to entry for new participants who can contribute to the value creation process of complex systems like the electric grid and prevent early obsolescence from eroding these gains as technologies and the demands we place on them rapidly evolve.

> ***While the value propositions tied to a single device is small in uncoordinated isolation, once aggregated across many similar devices the obtainable value becomes meaningful to both the system and the consumer***

TEARING DOWN WALLED GARDENS: ENCOURAGING ADVERSARIAL INTEROPERABILITY TO PROMOTE COMPETITION

BY
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01 INTRODUCTION

As it emerged from its embryonic phase of government-supported experimentation, the Internet was open and protocol-driven. Looking at new commercial frontiers, upstart companies built radical new technologies and iterated on each other's successes. This adversarial environment was hyper-competitive in a way that few markets have ever been, and it matured through boom-and-bust cycles. But today, the concentration of the Internet's tech stack among a few large companies has created a closed ecosystem of walled gardens and points of control, causing many policymakers

to ask how the government can begin bringing competition back to digital markets. Following a wave of increased scrutiny, antitrust enforcement agencies have filed numerous lawsuits against large online platforms, and lawmakers are considering legislation intended to strictly regulate or break up Big Tech firms.

Most of the attention on addressing online market concentration has focused on imposing new restrictions on Big Tech. However, such a punitive approach will not necessarily result in the expansion of competition for which proponents wish. Rather than restricting incumbents, policymakers should seek ways of allowing startups to challenge dominant firms, such as the promotion of adversarial interoperability: the process of interoperating with a product or service without permission. Any successful attempt to promote adversarial interoperability will need to address one of the primary tools that technology companies have used to destroy competitors: the Computer Fraud and Abuse Act ("CFAA").

This law was originally intended to prevent hacking by making unauthorized computer access a federal crime, but companies have consistently abused the civil component of the CFAA to sue competitors out of existence for adversarially interoperating. Now that policymakers are seeking ways to rein in Big Tech, it is time to reform the civil provision of the CFAA and encourage more adversarial interoperability.

02
BIG TECH AND ANTITRUST IN THE SPOTLIGHT

In recent years, the rapid decline of public trust in large technology companies has spurred a radical shift in how regulators and policymakers approach Big Tech.[2] Once the exemplars of American ingenuity and innovation, some of Silicon Valley's biggest success stories are now seen as "enemies of the people."[3] While Democrats and Republicans disagree about many perceived issues with Big Tech, many lawmakers on both sides of the aisle agree that market dominance of a select few online platforms is problematic.

The mammoth 2021 House Judiciary Committee report on competition in digital markets typifies Democrats' approach to Big Tech.[4] Chairman Jerry Nadler's (D-NY) introduction states in no uncertain terms that Amazon, Apple, Facebook, and Google each serve as gatekeepers over portions of our digital economy and "each platform uses its gatekeeper position to maintain its market power."[5] Many Republicans share this perspective. As Sen. Chuck Grassley (R-IA), Ranking Member of the Senate Judiciary Committee, stated at the introduction of the American Innovation and Choice Online Act:

As Big Tech has grown and evolved over the years, our laws have not changed to keep up and ensure these companies are competing fairly. These companies have continued to become a larger part of our everyday lives and the global economy, controlling what we see and how we engage on the internet. Big Tech needs to be held accountable if they behave in a discriminatory manner.[6]

Bipartisan coalitions in the Senate have introduced legislation that would impose new restrictions on the business practices of online platforms. For example, the American Innovation and Choice Online Act ("AICOA") sponsored by Sen. Amy Klobuchar (D-MN) and co-sponsored by Sen. Chuck Grassely (R-IA) would prohibit large online platforms from preferencing their own products and services over those of third parties.[7] The Open App Markets Act, sponsored by Sens. Klobuchar and Marsha Blackburn (R-TN), would require tech companies to allow third-party applications and app stores to be side-loaded and would prohibit these companies from controlling in-app payment systems as a condition of distribution.[8] The Tougher Enforcement Against Monopolists ("TEAM") Act from Sen. Mike Lee (R-UT) would codify the consumer welfare standard and create

2 Ina Fried, *Americans' trust in tech companies hits new low*, Axios (April 7, 2022), https://www.axios.com/2022/04/07/trust-tech-companies-new-low-americans.

3 *Big Tech Companies Are 'Enemies of the People': Heritage President Kevin Roberts on Newsmax, WMAL*, Heritage Foundation (Feb. 14, 2022), https://www.heritage.org/press/big-tech-companies-are-enemies-the-people-heritage-president-kevin-roberts-newsmax-wmal.

4 Staff of H. Comm. on the Judiciary, 116th Cong, Investigation of Competition in Digital Markets, (Comm. Print, 2020).

5 *Id*. at 6.

6 Press Release, Sen. Amy Klobuchar, Klobuchar, Grassley, Colleagues to Introduce Bipartisan Legislation to Rein in Big Tech (October 14, 2021), https://www.klobuchar.senate.gov/public/index.cfm/2021/10/klobuchar-grassley-colleagues-to-introduce-bipartisan-legislation-to-rein-in-big-tech.

7 American Innovation and Choice Online Act, S. 2992, 117th Cong. § 2 (2021).

8 Open App Markets Act, S. 2710, 117th Cong. § 2 (2021).

a statutory presumption against mergers that would result in market share of over 33 percent.[9]

Concerns about the growing market dominance of Big Tech are not confined to Congress alone. President Biden's Executive Order on Promoting Competition in the American Economy affirmed that it is the policy of his administration to "combat the excessive concentration of industry, the abuses of market power, and the harmful effects of monopoly and monopsony," especially among online platforms.[10] The elevation of Lina Khan — a woman who rose to fame on the back of a *Yale Law Review* article criticizing the anticompetitive dominance of Amazon — to head the Federal Trade Commission ("FTC") is further evidence that the tide has shifted against Big Tech.[11]

Federal regulators have already begun focusing their attention on Big Tech. The FTC filed a lawsuit against Facebook (now Meta) alleging that the company has monopolized the market for social media through an "illegal buy-or-bury scheme."[12] The Department of Justice is litigating an antitrust suit against Google that alleges the company used anticompetitive practices to maintain a monopoly in the online search and advertising markets.[13] Apple[14] and Amazon[15] are both reportedly being investigated for antitrust violations and facing potential federal enforcement actions.

> ***Concerns about the growing market dominance of Big Tech are not confined to Congress alone***

Congressional intent with all these proposals is twofold: punish and restrict "Big Tech," and allow for more innovation and entrants into digital markets. But creating the conditions under which new market entrants can thrive and compete against entrenched incumbents is far more difficult than levying massive fines or increasing the costs of regulatory compliance.[16] The current approach is analogous to playing whack-a-mole; once a certain business practice is banned, large companies have the resources to pivot and find novel ways of maintaining dominance, while new entrants are left determining how to comply.

The fundamental issue that few lawmakers seem willing to grapple with is that the United States' policies allowed, if not created, a closed Internet ecosystem. When the Internet was in its infancy, it was a deeply decentralized place built on open protocols. Over time, entrepreneurs were able to centralize various aspects of the digital economy, earning fortunes that enabled them to further consolidate.[17] These companies used their newfound power to create an array of walled gardens: the move toward centralized platforms and cloud hosting has given a few large players enormous control over what happens in online markets.

Policymakers are right to be skeptical of the control exerted by large online platforms. But the punitive approach to Big Tech could harm both consumers and markets by overly restricting products and services that consumers enjoy. Rather than running this risk, policymakers should seek ways of encouraging competitors to build off the success of major incumbents. The best way to do this is by deregulating to remove barriers to adversarial interoperability.

9 Tougher Enforcement Against Monopolists (TEAM) Act, S. 2039, 117th Cong. § 1 (2021).

10 Exec. Order No. 14,036, 86 Fed. Reg. 36,987 (July 14, 2021).

11 Lina M. Khan, *Amazon's Antitrust Paradox*, 126 Yale L.J. 3, 710-805 (2017).

12 Press Release, Federal Trade Commission, FTC Alleges Facebook Resorted to Illegal Buy-or-Bury Scheme to Crush Competition After String of Failed Attempts to Innovate (August 19, 2021), https://www.ftc.gov/news-events/news/press-releases/2021/08/ftc-alleges-facebook-resorted-illegal-buy-or-bury-scheme-crush-competition-after-string-failed.

13 Press Release, Department of Justice Office of Public Affairs, Justice Department Sues Monopolist Google For Violating Antitrust Laws (October 20, 2020), https://www.justice.gov/opa/pr/justice-department-sues-monopolist-google-violating-antitrust-laws.

14 Josh Sisco, *Apple faces growing likelihood of DOJ antitrust suit,* Politico (August 26, 2022), https://www.politico.com/news/2022/08/26/justice-department-antitrust-apple-00053939.

15 Leah Nylen, *FTC's Antitrust Probe of Amazon Picks Up Speed Under New Boss,* Bloomberg (May 31, 2022), https://www.bloomberg.com/news/articles/2022-05-31/ftc-s-antitrust-probe-of-amazon-picks-up-speed-under-new-boss.

16 Carl Benedikt Frey and Giorgio Presidente, *The GDPR effect: How data privacy regulation shaped firm performance globally,* Centre for Economic Policy Research (March 10, 2022), https://cepr.org/voxeu/columns/gdpr-effect-how-data-privacy-regulation-shaped-firm-performance-globally.

17 See generally, *Consolidation in the Internet Economy,* Internet Society (2019), https://future.internetsociety.org/2019/wp-content/uploads/sites/2/2019/04/InternetSociety-GlobalInternetReport-ConsolidationintheInternetEconomy.pdf.

03

ADVERSARIAL INTEROPERABILITY

Interoperability is the ability for different products or services to work with each other. Sometimes interoperability is indifferent or even intentional, as was the case with the advent of the standards for Bluetooth technologies: any two devices that are Bluetooth enabled can interact with each other. But such intentional and harmonious interoperability is the exception, rather than the rule. More often than not, major competitive innovations have come from adversarial relationships in which developers create products and services that work with existing systems against the wishes of the incumbent company.

The early days of the Internet were marked by competitive adversarial interoperability:

Scratch the surface of most Big Tech giants and you'll find an adversarial interoperability story: Facebook grew by making a tool that let its users stay in touch with MySpace users; Google products from search to Docs and beyond depend on adversarial interoperability layers; Amazon's cloud is full of virtual machines pretending to be discrete CPUs, impersonating real computers so well that the programs running within them have no idea that they're trapped in the Matrix. Adversarial interoperability converts market dominance from an unassailable asset to a liability.[18]

Adversarial interoperability is an essential component of a competitive Internet ecosystem. It lowers barriers to entry for new firms by allowing them to access the network effects of incumbent players.

Consider author Cory Doctorow's example of Facebook.[19] Facebook's early success was due in no small part to its ability to build on the success of MySpace. Allowing its own users to link their Facebook and MySpace accounts, and even send messages from Facebook to MySpace, made it simple for users to switch back and forth. Facebook did this in spite of MySpace's safeguards. Now that Facebook has achieved success on the back of MySpace, it and other Big Tech firms have been able to use the law to prevent other firms from taking advantage of the very kind of adversarial interoperability that made them successful.

> ***Adversarial interoperability is an essential component of a competitive Internet ecosystem***

At least one court has recognized the power of adversarial interoperability to increase competition. In the early 1990s, the company Accolade bought and disassembled a Sega Genesis video game console for the purpose of creating compatible games. Sega sued Accolade under copyright law, but the Ninth Circuit Court of Appeals ruled in favor of Accolade. In its opinion, the court held that Accolade's work "led to an increase in the number of independently designed video game programs offered for use with the Genesis console."[20]

Thought leaders in technology policy, such as Stanford professor Francis Fukuyama, also recognize the importance of adversarial interoperability in maintaining healthy digital markets. What Fukuyama dubs middleware — "software, provided by a third party and integrated into the dominant platforms, that would curate and order the content that users see" — could reinvigorate competition in a stagnating social media ecosystem:

Middleware facilitates competition. It offers a new and distinct layer of potential competition for consumer loyalties and opens a pathway for innovations in managing information, including commercial information that might benefit firms otherwise disadvantaged by the platforms' business models. It could also open lucrative markets both for technology companies that can improve platform functionality and for civic organizations that want to participate in political and social discourse.[21]

Social media sites are not the only digital market where adversarial interoperability can increase competition. The U.K.'s Digital Competition Expert Panel, for example, released a prominent report in 2018 finding that digital markets are especially susceptible to tipping, "in which a winner will take most of the market" and then vehemently protect that

18 Cory Doctorow, *Adversarial Interoperability: Reviving an Elegant Weapon From a More Civilized Age to Slay Today's Monopolies*, Electronic Frontier Foundation (June 7, 2019), https://www.eff.org/deeplinks/2019/06/adversarial-interoperability-reviving-elegant-weapon-more-civilized-age-slay (Doctorow is an author and special advisor to the Electronic Frontier Foundation).

19 *Id.*

20 *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992).

21 Francis Fukuyama, Barak Richman, Ashish Goel, Robert R. Katz, A. Douglas Melamed, Marietje Schaak, *Middleware for Dominant Digital Platforms: A Technological Solution for a Threat to Democracy* (Stanford University Cyber Policy Center), 3, 6, https://fsi-live.s3.us-west-1.amazonaws.com/s3fs-public/cpc-middleware_ff_v2.pdf.

market.[22] The report also noted that government policy and regulations have a limited ability to increase competition in digital markets. To address these challenges, the report, in one of its primary recommendations, urged the government to "use data openness as a tool to promote competition."[23]

It is only natural for companies to attempt to impede adversarially interoperative competition. Most large tech companies devote significant resources into protecting their platforms through technical means. However, incumbent firms have taken advantage of laws, most of all the CFAA, to prevent adversarial interoperability.

04

THE COMPUTER FRAUD AND ABUSE ACT

Signed into law by President Reagan in 1986, the CFAA was one of the federal government's first legislative attempts to address the threat of computer hacking. The law is divided into two parts: criminal and civil. The criminal component allows the Department of Justice to prosecute individuals for intentionally accessing a computer without authorization with the intent to defraud, extort, obtain information, or transmit information.[24] It also allows individuals or companies damaged by an activity covered by the CFAA to obtain compensatory damages and, perhaps more importantly, injunctive relief against the violator in federal civil court.[25]

The law had an unlikely inspiration: the 1983 film *WarGames*, in which a high school student played by Mathew Broderick inadvertently hacks into a military supercomputer, nearly causing a thermonuclear war with the Soviet Union.[26] According to author Fred Kaplan, the movie greatly concerned President Reagan. After hearing from then-Chairman of the Joint Chiefs of Staff Gen. John W. Vessey, Jr. that "the problem is much worse than you think," the president turned to Congress for immediate legislative action.[27] The movie even came up in congressional discussions about the bill that would become the CFAA.[28]

While the criminal component of the CFAA has been the subject of public policy debates since its passage, it is not the most important passage for companies seeking to overwhelm their competition. More significant from the standpoint of hampering adversarial interoperability is the civil provision. One company that has used this provision to devastating effect is the same company currently tussling with federal antitrust enforcers over anticompetitive practices: Facebook.

05

A CASE STUDY IN CFAA ABUSE: *FACEBOOK vs. POWER.COM*

In December of 2008, Facebook — then a fledgling social media company — filed a rather unique lawsuit that would become crucial to the struggle between two competing visions of the Internet.[29] A tech startup, Power.com, built an online platform that allowed users to aggregate disparate social media accounts in one place. Essentially, Power had adversarially built a system that allowed users to interoperate with Facebook and other social media sites independently from their native ecosystems by scraping and proxying those websites. Users could see their contacts and post to their different social media accounts all from Power's dashboard.

22 Digital Competition Expert Panel, Unlocking digital competition: Report of the Digital Competition Expert Panel, 4-6 (March 2019), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785547/unlocking_digital_competition_furman_review_web.pdf.

23 *Id.* at 9.

24 Computer Fraud and Abuse Act, Pub. L. No. 99-474, 100 Stat. 1213 (1986) (codified as amended at 18 U.S. Code § 1030).

25 *Id.*

26 Fred Kaplan, *'WarGames' and Cybersecurity's Debt to a Hollywood Hack,* N.Y. Times (February 19, 2016), https://www.nytimes.com/2016/02/21/movies/wargames-and-cybersecuritys-debt-to-a-hollywood-hack.html.

27 *Id.*

28 H.R. Rep. No. 98-894, at 10 (1984).

29 Complaint, *Facebook, Inc. v. Power Ventures, Inc.*, No. 08-5780, (N.D. Cal. Oct. 22, 2009) *aff'd* in part 844 F.3d 1058 (9th Cir. 2016).

Power received little publicity until it began a promotional campaign in 2008. To attract customers, Power incentivized its users to send messages to their friends through Facebook encouraging them to join Power. When Facebook learned of the campaign, it initiated an internet protocol ("IP") block and sent Power a cease and desist letter. Power persisted, changing its IP address and ignoring the cease and desist. Facebook then sued Power for violating the CFAA, among other claims.

After years of litigation against the defunct social media company and its founder, the Ninth Circuit Court of Appeals upheld a lower court ruling in Facebook's favor in 2016.[30] Most notably, the court held that Power had gained unauthorized access to Facebook's system after receiving the cease and desist and thus was civilly liable under the CFAA.

The Ninth Circuit's opinion asserted that "initially, Power users arguably gave Power permission to use Facebook's computers to disseminate messages."[31] By signing up for Power's service, users gave authorization for Power to access Facebook's servers on the user's behalf. But, in the Court's view, Facebook's cease and desist letter "expressly rescinded that permission," turning authorized access into unauthorized access.[32] The fact that Facebook took active measures to prevent Power from accessing its servers through an IP block bolstered this interpretation. The Ninth Circuit further explained: "The consent that Power had received from Facebook users was not sufficient to grant continuing authorization to access Facebook's computers after Facebook's express revocation of permission."[33] The implication was that under the CFAA, a user's data is not theirs to do with as they wish. It is, at least in part, owned and controlled by Facebook.

After nine years of litigation in federal court, Facebook was awarded a mere $79,640.50 in compensatory damages.[34] But money was never the point. Facebook also received a permanent injunction against Power. Facebook's case against Power was not about material harm to Facebook; it was about using the law and courts to kill a potential competitor. In that effort, Facebook clearly succeeded. *Facebook v. Power.com* demonstrates that the CFAA — a law intended to prevent cybercrime — can be used to squash competition.

06

REFORMING THE CFAA TO ENCOURAGE ADVERSARIAL INTEROPERABILITY

As discussed above, lawmakers concerned with the market dominance of large online platforms have focused their attention on debating legislation to break up Big Tech. Few, if any, have considered how existing laws enable these companies to secure their walled gardens. One of the best ways policymakers can encourage competition in digital markets is by eliminating some of the tools that have been used to thwart competition. Two policy proposals that have been put forward in recent years deserve attention for their attempt to encourage a more open Internet ecosystem and more adversarial interoperability by addressing flaws in existing law.

In 2015, Sen. Ron Wyden (D-OR) and Rep. Zoe Lofgren (D-CA) introduced companion legislation known as Aaron's Law that intended to clarify the meaning of unauthorized access in the CFAA.[35] Aaron's Law would have replaced the term "exceeds authorized access" with "access without authorization," defining the new term as obtaining information on a protected computer that the accessor lacks authorization to and knowingly circumventing measures designed to prevent unauthorized access. It also would have removed some redundancies from the CFAA and limited some penalties for violation.

While Aaron's Law may have clarified what constitutes unauthorized access, it would have done little to open up digital markets to adversarial interoperability. Tech companies implement firewalls and other systems to prevent unauthorized access. Truly competitive adversarial interoperability of the type Power was engaged in requires going a step further and finding ways around measures intended to keep competitors out. Such activity likely would still be banned under Aaron's Law. In any case, the Supreme Court recently narrowed the interpretation of what activity "exceeds authorized access" to exclude many of the activities that would have been allowed under Aaron's Law, rendering the proposal mostly moot.[36]

30 *Facebook, Inc. v. Power Ventures, Inc.*, 844 F.3d 1058 (9th Cir. 2016).

31 *Id.* at 1067.

32 *Id.* at 1067.

33 *Id.* at 1068.

34 *Facebook, Inc. v. Power Ventures, Inc., et al.*, 252 F.Supp.3d 765 (2017).

35 Aaron's Law Act of 2015, S. 1030 and H.R. 1918, 114th Cong. § 1 (2015).

36 *Van Buren v. United States,* 593 U.S. ___, 141 S.Ct. 1648 (2021).

A more recent proposal from Sen. Mark Warner (D-VA) and Rep. Mary Scanlon (D-PA-5) takes a more burdensome approach to promoting interoperability. The Augmenting Compatibility and Competition by Enabling Service Switching ("ACCESS") Act would mandate data portability and interoperability.[37] It would direct all large communications platforms to maintain accessible application programming interfaces that allow interoperable communication with other large platforms and allow users to transfer their data to competing platforms.

One strength of the ACCESS Act is its delegatability provision, which directs large platforms to maintain open interfaces that allow users to delegate management of their interactions, content, and account settings to a third party. Such a provision would help realize the future envisioned by Fukuyama, in which content is managed by a suite of third-party applications built on top of existing platforms. However, the ACCESS Act also contains restrictions stipulating that no third party can use the mandated programming interfaces for commercial purposes. Entrepreneurs will not create new products if they are barred from capitalizing on their efforts.

The legislative efforts fall short of encouraging an open and adversarial online marketplace. What is needed is an approach specifically tailored to prevent platforms from using the CFAA as a weapon to hinder competition. One way to achieve this would be to establish a safe harbor from civil action for entities that are adversarially interoperating with large online platforms without causing damage to the existing platform.

Large platforms will claim that such a proposal creates a cybersecurity risk. However, the criminal provisions of the CFAA would still apply to any activity that might be covered by a safe harbor. In other words, nefarious hacking such as exfiltrating data, installing malware, or accessing trade secrets would still be illegal. Only building a product upon or complementary with an existing product would be granted protection from civil action. Indeed, the Department of Justice recently announced a major revision to its policy for prosecuting cases under the CFAA. The new policy explicitly states that "good-faith security research should not be charged."[38] It is not a stretch to similarly treat incorporated entities attempting to compete with large platforms and acting in good faith.

Another approach to creating such a safe harbor could be similar to the Platform Transparency and Accountability Act proposed by the Stanford Cyber Policy Center. One part of this proposal would grant journalists and researchers a safe harbor from civil liability for gathering information from online platforms so long as they take reasonable steps to protect the privacy of the platform's users, avoid misleading users, and do not materially burden the platform's operation.[39] Such a framework, in which policymakers articulate the "rules of the road" for good-faith interoperation could help spur a flourishing of competition in digital markets.

07
CONCLUSION

CFAA reform is not a silver bullet, correcting every problem facing digital markets. Big Tech companies will not open interfaces or welcome competitors with open arms; in fact, they are trending in the opposite direction. Lawmakers must still grapple with questions surrounding issues such as data privacy that adversarial interoperability alone is unlikely to address. But large online platforms should not be allowed to abuse the law to inhibit competition. Regardless of what other efforts might be necessary, eliminating a significant impediment to adversarial interoperability by reforming the CFAA is low-hanging fruit for lawmakers concerned with the dominance of Big Tech.

"Large platforms will claim that such a proposal creates a cybersecurity risk

37 Augmenting Compatibility and Competition by Enabling Service Switching Act, S. 4309 and H.R. 3849, 117th Cong. § 2 (2021).

38 Press Release, Department of Justice Office of Public Affairs, Department of Justice Announces New Policy for Charging Cases under the Computer Fraud and Abuse Act (May 19, 2022), https://www.justice.gov/opa/pr/department-justice-announces-new-policy-charging-cases-under-computer-fraud-and-abuse-act.

39 Tara Wright, *The Platform Transparency and Accountability Act: New legislation addresses platform data secrecy*, Stanford University Cyber Policy Center (December 9, 2021), https://cyber.fsi.stanford.edu/news/platform-transparency-and-accountability-act-new-legislation-addresses-platform-data-secrecy.

INTEROPERABILITY AS A REMEDY IN ANTITRUST CASES

BY

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Interoperability has always been a powerful pro-competitive tool in high-tech markets. The ability to build new products and services that are compatible with established products gives consumers more choices and helps competitors avoid entry barriers. That's why so many iconic exercises of competition policy can be seen as interoperability remedies, from the Federal Communications Commission's 1965 *Carterfone* order, to the conditions imposed on Microsoft to settle the U.S. Department of Justice's antitrust suit in 2001. In 2022, legislative proposals to address monopoly power in Internet-related markets have also included interoperability requirements, including the EU's Digital Markets Act and U.S. bills such as the ACCESS Act (H.R. 3849). But even without legislative changes, remedies in antitrust cases can be crafted to promote competition through interoperability.

This article makes the case for interoperability requirements as antitrust remedies: why they should be included, how to craft them, and how to reconcile interoperability with user privacy.

01
THE LANDSCAPE OF GATEKEEPER PLATFORMS

There is widespread concern about increases in market concentration, the presence of monopoly power, and greater centralization of services in Internet-related markets. Policymakers and opinion leaders have placed particular emphasis on persistent market power among "gatekeeper platforms" — Internet services that play an outsized role in the digital lives of U.S. consumers. These include the various online offerings of Meta Platforms (formerly Facebook), Google, Apple, Amazon, and perhaps Microsoft. Other firms that control significant market share in particular Internet-related markets such as online gaming may also be gatekeepers, or could become so.

Although the core services offered by each of these companies differs, the policy concerns they raise are similar: each one effectively controls access to a large share of customers for other Internet apps and services, including nearly all businesses that could potentially compete with the giants in their core services. For example, Meta and Google together control about half of the market for online advertising, which is a primary revenue source for online publishing. Ongoing antitrust suits accuse Meta of having a dominant position in social networking. Amazon and Microsoft provide a dominant share of the cloud services used by businesses of all sorts.

Many of the gatekeeper platforms have wielded market power to the detriment of consumers. For example, Facebook made repeated public commitments to maintain users' privacy in particular ways, and repeatedly reneged on those commitments. Facebook's conduct suggests that as its market share grew and rivals like MySpace and Google Plus exited the market, the company was able to make its service less privacy-protective without losing users — evidence of monopoly power and of consumer harm.

Recognizing these harms, federal and state antitrust enforcers, along with private plaintiffs, have brought numerous antitrust suits against the gatekeeper platforms over the past several years. In Europe, significant antitrust enforcement against these companies by the European Commission and state enforcers began several years earlier and remains strong.

The remedies sought in legal actions to date have primarily been monetary recovery and fines. Although fines have increased over time, they may still be inadequate to cause significant changes to the gatekeepers' business practices. The recent European Commission fine of $4.12 billion against Google for the company's practices to exclude competing search engines and browsers was just 1.5 percent of the company's 2021 global revenues. Compared to the potential value of maintaining a firm's position as a gatekeeper to consumers, even multi-billion-dollar fines may simply become a cost of doing business.

Injunctions or negotiated settlements designed to promote interoperability between the products of a firm with market power and other firms' products are an alternative remedy that enforcers can employ.

02
TYPES OF INTEROPERABILITY

Pro-competitive interoperability between digital products and services takes different forms in practice. At its most comprehensive, the services of an incumbent and a challenger can share data, and invoke each other's functionality, through their common use of open standards created by an independent standards body. Email is an example of this, along with most of the protocols that underlie the basic functions of the Internet, such as the Hypertext Transfer Protocol ("HTTP").

Incumbent firms also invite makers of complimentary goods and services to interoperate by giving them access to proprietary specifications (often called Application Programming Interfaces or APIs) controlled by the incumbent. Makers of mobile operating systems, such as Apple's iOS and Google's Android, have enabled markets for third-party mobile apps by exposing their APIs to developers.

Interoperability frequently happens without significant coordination between an incumbent firm and a challenger. Many entrepreneurs build new products or services to be compatible with existing ones by reverse-engineering the existing product and deriving the technical requirements for interoperability, often without permission from the incumbent. Many important innovations have come from such "competitive compatibility." For example, Cydia was a long-running alternative app store for Apple devices that featured software programs that were not available from Apple or Apple-authorized developers. Using Cydia, and the apps it supplied, required "jailbreaking" an Apple device — defeating some of its security measures to permit loading software not authorized by Apple. Many features that today are

incorporated into iOS itself began as apps or modifications available on Cydia, including copy/paste functions, interactive alerts, and alternative keyboards.

One important form of competitive compatibility is the creation of alternative user-side apps for interacting with an incumbent platform. For example, independent developers have created alternative client programs for users of Facebook, Instagram, Slack, and various instant messaging platforms. Some of these are complete drop-in replacements for an incumbent platform's own app, while some are browser plug-ins or customized browsers. Alternative clients can allow users to customize their experience of an incumbent platform through custom ordering and filtering of posts, blocking advertisements, hiding "likes" and other social feedback, or combining data from multiple platforms. Sometimes this is achieved entirely within an alternative app or browser running on the end user's device, and sometimes it may involve use of third-party servers or cloud computing resources.

03
PRO-COMPETITIVE EFFECTS OF INTEROPERABILITY

In Internet-related markets, probably the most important effect of interoperability is its potential to reduce users' cost of switching between platforms. Taking Facebook as an example, many users continue to spend significant time on the platform not because its features and design best suit their needs, but because it's where their social connections reside. If Facebook is the place a user has to go to see messages or posts from her friends, announcements from the businesses or clubs they frequent, photos of their family, and so on, then she will spend more time on Facebook than on potential rival apps, even if an alternative might be more privacy-protective or have curation and editorial practices that she prefers. This tendency gives Facebook an advantage deriving from the size of its user base rather than the quality of its offerings, and engenders an anticompetitive market failure.

Now imagine that a user can leave Facebook for an alternative social network — call it User Republic — that interoperates with Facebook. She can view posts and news stories published on Facebook, but those posts are prioritized and filtered according to the algorithmic policies of User Republic rather than Facebook. Private messages sent on one service can reach users on the other, if users consent to be reached in that way. The user now has a feasible alternative that avoids many of the most-criticized features of an incumbent like Facebook, such as poor privacy practices and an editorial model that promotes false or divisive content. This is a "federated" model of interoperability.

Some of these benefits can also be realized with alternative client apps, sometimes called "delegability." As described above, an alternative app could interact with the Facebook servers on behalf of a user in place of Facebook's own app and website. This could allow for better user control over the personal data sent to Facebook's servers. It can also allow for reordering or filtering data feeds, and for combining messages and posts from different platforms within a single interface. Although alternative apps don't provide a way for users to leave an incumbent platform entirely, as a federated model could, the app approach can still put competitive pressure on the incumbent to improve its service vis-a-vis other services that can be accessed through the same app.

These forms of interoperability can lead to lower switching costs for users. If users can more easily leave an incumbent platform, the incumbent will face market pressure to improve its services, including better safeguarding users' privacy. If competing services offer compelling alternatives to the incumbents' content moderation and curation, then the incumbents will be driven to improve their own. Security, too, could become a source of competitive pressure: if switching to alternative platforms is easy, we can expect that well-publicized security breaches or other betrayals of users' trust will lead to larger, sustained movement of users to other services.

Intensifying this dynamic, network effects may amplify the impact of users leaving a platform. Migration of users may cause a market to "tip" to another leader, creating an accelerating trend. This occurred between 2009 and 2011, when users began to move from then-leading social network MySpace to Facebook. The shift began, in part, because of dissatisfaction with MySpace's privacy practices, and Facebook's offer of better privacy. Once begun, the shift became self-sustaining, until MySpace faded into irrelevancy. Attempting to avoid this dynamic will place even greater pressure on incumbent platforms to move towards better privacy, security, and user empowerment.

04
POSSIBLE APPROACHES TO COMPETITION REMEDIES

In antitrust and consumer protection cases involving online platforms with market power, enforcers can propose in-

junctive or negotiated remedies that promote these forms of interoperability. These remedies can include affirmative *obligations* on an incumbent firm to allow third parties to interoperate, *prohibitions* on the use of various legal or technological measures to prevent interoperability, or some combination of these.

Affirmative obligations can be stated broadly in terms of a desired outcome — for example, ordering an incumbent platform to achieve interoperability for specific applications or features (such as the ability to send and receive private messages) with other firms that request it. Stating a required outcome rather than a means of achieving it keeps the court or enforcement agency out of the technical details, and may create a fix that is more resilient in the face of technological change. It may, though, require monitoring and revision if the set of features that must be interoperable to meet user demand changes — for example, if users shift from text-based private messaging to video messages, an interoperability requirement for private messaging might have to be expanded to include video.

This is largely the approach taken by the Digital Markets Act ("DMA"), passed this year by the European Union. The DMA requires that covered companies make their messaging services — likely including Facebook Messenger, Instagram direct messaging, WhatsApp, and Apple's iMessage, interoperable with other messaging services on request. The regulation requires that text messaging be interoperable on request within the coming year and video within two years.

This approach probably requires a significant amount of monitoring by enforcement agencies or private litigants, and additional adversarial proceedings when circumstances change, or parties disagree about whether the requirements have been met. It may also require ongoing investigative powers (such as the right to review documents) to test the parties' claims.

A related but narrower approach is to require the incumbent to interoperate with third parties through an existing technical standard or protocol, either one created by a formal standards organization or through a private collaboration. Requiring the use of an existing standard can make compliance easier to ascertain and limit the scope of future enforcement conflicts. But this approach means that the set of interoperable features may become obsolete and less relevant to users. If that happens, the requirement would fail to promote user mobility and drive competition.

The other approach to an interoperability remedy is one stated in terms of a prohibition: an incumbent firm can be forbidden to interfere with or block interoperators through various legal and technical means. When challengers engage in competitive compatibility — building compatible products and services through reverse engineering — incumbents often respond with legal threats. These threats can be grounded in various legal theories: patent, copyright, laws like the federal Computer Fraud and Abuse Act, and business tort theories such as tortious interference with contractual relations. An injunction against asserting these types of claims against bona fide interoperators may be enough to let adversarial interoperability flourish, for products and services that are reasonably susceptible to reverse engineering. In circumstances where meaningful compatibility can't be done without proprietary information from the incumbent, such as cryptographic keys, an additional requirement to share such information might be needed.

Either type of interoperability remedy — positive requirements or bans on interfering with competitive compatibility — can also be imposed to protect alternative client apps that access an online service. This is sometimes called *delegability* because it protects users' ability to delegate their interactions with a platform to a third-party intermediary.

05

SQUARING INTEROPERABILITY WITH PRIVACY

Interoperability in Internet-related markets can raise privacy risks. A competitor who has access to users' data and communications through interoperating with an established platform may misuse that data carelessly or maliciously. An incumbent platform can claim to protect its customers' privacy by refusing to interoperate with third-party companies, or by limiting that interoperability. After Facebook faced the uproar regarding Cambridge Analytica's misuse of data collected on its platform, its primary response was to shut down the "Platform API" used by third-party apps to access Facebook user data, while continuing to collect the same data for its own use.

Protecting privacy, though, doesn't justify a complete refusal to interoperate. Giant incumbent platforms do have a market incentive to protect their users, but that incentive is frequently overcome by other commercial interests. Apple frequently uses its efforts to protect user privacy as a selling point, but the company also prevents users from taking steps to enhance their own privacy when doing so conflicts with Apple's interests. For example, Apple bans virtual pri-

vate network (VPN) apps and other privacy-enhancing tools from its app store for users in China.

For purposes of an interoperability remedy, the most effective solution is comprehensive consumer privacy legislation. The European General Data Privacy Regulation ("GDPR") and the California Consumer Privacy Act are attempts at this, although none has yet been passed at the federal level in the U.S. A "baseline" guarantee of consumer privacy that is applicable to all firms in a market would remove the biggest policy obstacle to interoperability.

That said, interoperability remedies don't need to wait on comprehensive privacy regulation. They can be designed to allow the incumbent platform to limit or even refuse interoperability with a specific app or service when the platform can identify a concrete privacy risk, such as evidence that an app or service is misusing data obtained through its link with the incumbent platform. In emergency circumstances, such as the discovery of a serious security vulnerability, the platform should be able to switch off the interfaces used for interoperability quickly and without prior approval from the court or antitrust enforcer, but the platform should be required to justify their actions after the fact, and to tailor a cut-off as narrowly as possible to the affected app. Outside of these circumstances, allowing complimentary products and services to interoperate with the incumbent should be the norm, even if those products and services are also competitors.

The Federal Communications Commission's 1968 *Carterfone* order illustrates how to craft a rule that harmonizes security (and privacy) with the procompetitive effects of interoperability. At the height of its monopoly control over telecommunications, AT&T argued that reliable operation of the telephone network required their "absolute control over the quality, installation, and maintenance of all parts of the system," and therefore banned all third-party devices from its network. To "divide the responsibility for assuring that each part of the system is able to function effectively," argued AT&T, would inevitably create a poorer experience for customers. When Carterfone, a competing maker of specialized telephone equipment, asked to be allowed to connect to the phone network, the FCC rejected AT&T's broad presumption that any interoperability would create inherent risks to the operation of the network. AT&T could only refuse to interoperate, the FCC ruled, in specific cases where it could show actual harm.

Requirements for interoperability — or requiring a firm not to stand in the way of it — are important tools that should be in every antitrust enforcer's toolbox. Crafted carefully, they can unlock competition to better serve technology users.

That said, interoperability remedies don't need to wait on comprehensive privacy regulation

THE PROPOSED U.S. ACCESS ACT MANDATING INTEROPERABILITY WILL NOT UNLEASH COMPETITION IN SOCIAL NETWORKING: HERE'S HOW TO FIX IT

BY

CRISTIAN SANTESTEBAN

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01 INTRODUCTION

In a rare bipartisan effort, Congress is considering legislation ("the ACCESS Act") whose purpose is to stimulate competition in digital markets by facilitating the successful entry of new platforms. Over time, the idea is that interoperable networks would erode the significant market power of dominant incumbent platforms such as Meta's Facebook.[2] While I applaud this effort, and I think that interoperability in this space could be beneficial for

2 Section 4a of the House bill lays out this general mandate: "(a) In General.—A covered platform [*e.g.* Facebook] shall maintain a set of transparent, third-party-accessible interfaces (including application programming interfaces) to facilitate and maintain interoperability with a competing business or a potential competing business that complies with the standards issued pursuant to section 6(c)."

generating greater competition, the problem with both the House and Senate bills as written is that they restrict too severely what entrant platforms can do with the data that is shared with them by the dominant platforms. I focus in this article on the social networking space. (For clarity and simplicity, in much of this article I will speak of Meta's social network, Facebook, as a proxy for a dominant social networking platform or in the language of the bill, a "covered platform.")

In particular, Section 4.f.2 of the House version of the ACCESS Act imposes the following strict "data minimization" requirement on any entrant platform seeking to interoperate with a covered platform (Section 4f.2):

> *"(2) NON-COMMERCIALIZATION OF DATA ON A COVERED PLATFORM .—**A business user [i.e., an entrant platform seeking to interoperate with a covered platform] shall not collect, use, or share the data of a user on a covered platform** except for the purposes of safeguarding [the] security of such data or maintaining interoperability of services." (emphasis mine)*[3]

The legislation as written does not explicitly allow for new entrants to benefit from the rich data generated by Facebook users at all. While I do not object to the restriction on *sharing* the data obtained from the covered platform with third parties, I believe that a strong restriction on *collecting* and *using* that data would severely impede the ability of new networks to recommend engaging content for its users and establish themselves as viable competitors to Facebook and other dominant platforms.[4]

02

INDIRECT NETWORK EFFECTS FROM USER-GENERATED DATA

In understanding this point, it is worth exploring what currently makes successful entry so difficult for an upstart social network. The dominant platform, Facebook, enjoys two key competitive advantages over any entrant. First, it enjoys direct network effects on the user side. It is valuable to be on Facebook because so many other users are on Facebook. This is a familiar story and the one that motivates most discussions of interoperability in social networking. As Section 6.c.1 of the House version of the bill makes clear, it is also the motivating argument for the ACCESS Act. This section specifies the Federal Trade Commission's ("FTC's") mandate when adopting standards to implement this legislation:

> *"the Commission shall seek to encourage entry by reducing or eliminating the network effects that limit competition with the covered platform…"*

The legislation as currently written reduces the proprietary direct network effects enjoyed by covered platforms such as Facebook because consumers would be able to switch from Facebook to a new social network and still maintain their friends on Facebook. New users of any interconnected platform would also be able to make friends with Facebook users. As such, a consumer can benefit from a large network of friends that transcends a particular platform. The legislation would help to spread what previously had been proprietary direct network effects to the whole market (at least to the set of firms in the market interconnected with one another). This should be helpful for new entrants in overcoming the direct network effects currently enjoyed by Facebook. All firms that interoperate with Facebook (and with one another) would benefit from this demand enhancing force.

However, there is a second, less commonly discussed force at work that allows Facebook to remain a dominant

3 The text does mention that one exception to this restriction is the maintenance of interoperability of services. However, that is extremely vague and could be interpreted simply as the passive transmission of information so that two competing networks could interconnect. More detail as to what data can be collected and used by the interconnecting platforms needs to be specified, in part in the bills themselves, and also by the technical committee that will have to implement this bill. This article attempts to provide guidance for both modifying the legislation and assisting the technical committee.

4 Of course, there cannot be a complete restriction on the use of data from the covered platform even as it is written now or the entrant platform would not be able to show content from Facebook users to its users. Further, some restrictions on the collection and use of data from the covered platform may be warranted, e.g. if the covered platform's users have made strict choices on how they want their data to be used on the covered platform itself.

social network: the indirect network effects arising from the learning that occurs from additional user-generated data, or, alternatively, the increasing returns to scale to data in complex AI applications.[5] And this last term doesn't entirely do justice to the competitive advantages arising from having access to a large continuous stream of rich user data since increasing returns in economics has tended to focus on output. In the context of digital platforms, the notion of increasing returns to data refers more broadly to other dimensions of competition such as increased product differentiation and higher quality and more personalized content. New successful firms such as TikTok are powered almost entirely by recommendation systems running off user-generated data. The direct network effects due to many of one's friends being on the network are minimal. And this is increasingly the case also for Instagram, and its video feature, Reels.

> ***In understanding this point, it is worth exploring what currently makes successful entry so difficult for an upstart social network***

Facebook's billions of users generate a tremendous amount of rich data - likes, comments, posts, searches, click-throughs, and less obvious information such as the amount of time users hover over a post or video. This detailed information allows Facebook (through its AI algorithms) to learn about and accurately predict the preferences of its users.[6] Indeed, user engagement metrics such as the ones listed above are how the news feed is optimized, which is its most important feature and what keeps Facebook users addicted and scrolling for more. Large amounts of user data allow Facebook to directly observe what individual users like and how they respond to content in their feeds and elsewhere on their platform. In addition, the rich user data allows Facebook to match users with others who have liked and reacted similarly to the same content in the past. This allows Facebook to predict how these users will react when faced with new content that their matched counterparts already interacted with. In fact, Facebook appears to consider "over 100,000 highly personalized factors when determining what's shown to a user."[7] Furthermore, Facebook engages in experimentation on a massive scale in a way only possible with the huge amount of data at its disposal. This allows Facebook to experiment with "what the user sees and interacts with on a page" in a way that is "intended to make the content more compelling for all users and allows for more personalized content for each user."[8] All of this allows Facebook to generate an engaging feed that keeps users on its site.[9] A small network without a lot of users and their user-generated data cannot and will not be able to do this very well. As my co-author and I put it in another article, an entrant faces a chicken and egg problem: "Without a critical mass of data, potential entrants cannot compete along the critical dimensions to attract users; and

5 See, e.g. Cristian Santesteban & Shayne Longpre, *How Big Data Confers Market Power to Big Tech: Leveraging the Perspective of Data Science*, 65 ANTITRUST BULLETIN 3, 2 (2020) ("In these cases, the primary competitive dimension is directly contingent upon the scale and quality of data. A rival firm could match or even exceed the incumbent's product on a number of competitive dimensions (user-interface design, marketing, business strategy, and engineering), but without access to the incumbent's data or user base, their data-dependent applications will not be competitive.") See, also, Fiona Scott Morton et al, *Equitable Interoperability: The "Super Tool" of Digital Platform Governance*, Policy Discussion Paper No. 4, Digital Regulation Project, Yale Tobin Center for Economic Policy, July 13, 2021 at p. 15 ("Although interoperability can eliminate proprietary direct network effects, there remain indirect network effects even in a social network. For example, the more other users on the platform who are similar, the better the quality of their feeds will be (if the network learns from the behavior of other users and applies those results). If these forces are large, a small network may not be able to match the quality of a large one.")

6 From a data science perspective, Facebook's newsfeed is a type of information filtering system. A system "designed to capture consumer attention through personalization features… These systems broady describe any application that filters only the most relevant/interesting information to a user, whether that be news, social media posts, movies, restaurants, apps, videos, or other products." (Santesteban & Longpre, *supra* note 5, at 15)

7 Josh Constine, *How Facebook News Feed Works*, TECHCRUNCH.COM (September 6, 2016), https://techcrunch.com/2016/09/06/ultimate-guide-to-the-news-feed/ (last visited Oct. 5, 2022).

8 Santesteban & Longpre, *supra* note 5, at 16.

9 Facebook has been rightly criticized for explicitly promoting content that leads to user addiction and extreme polarization. See, e.g. Ariel Hsieh et al, *Addictive Social Media: Why We Need Regulation and Competition for Digital Platforms*, PROMARKET (October 27, 2020), https://www.promarket.org/2020/10/27/addictive-social-media-need-regulation-competition-digital-platforms/ (last visited Oct. 9, 2022). This is in large part an effect of its advertising-driven business model and not a natural consequence of Facebook's access to a lot of data. Without advertising, Facebook could use its rich data to provide feeds to its users that were in line with its users' preferences, rather than in line with the goals of its advertisers. So, for example, if a user valued more moderate and reasonable language, a data-rich algorithm, not driven by purely commercial concerns, would generate a feed that contained a lot of moderate and reasonable language. This leads to a better matching of content to user, untainted by the advertising objective. Of course, other competing social networks that might wish to interoperate with Facebook might also rely on an advertising model and, as such, the danger exists that more data might lead to more addictive and polarizing content. However, the goal of interoperability is to generate choice for the consumer in terms of business models, and if enough users value a non-advertising model in social networking, interoperability would allow them to make that choice.

without sufficient users, they don't have the data (and in fact, the data may be "in use" by its incumbent rival)."[10]

This phenomenon is something altogether different from the direct network effects due to one's friends all being on the same network. Most modern social networks have evolved to be entertainment focused, not depending nearly as much on friend networks. Examples of these types of networks are TikTok, YouTube, Spotify, Reddit, and of course, as I mentioned above, increasingly Instagram and Reels. Even if we allow for friends to remain connected on separate networks, in the short to medium run at least, Facebook will continue to benefit from having an incredibly large network of users who are constantly generating data for Facebook to learn from and improve the quality of what it offers its users. Opening up Facebook's network without allowing entrant platforms to benefit from the vastness and richness of Facebook's data is a massive missed opportunity that will likely lead to a disappointing outcome for competition in social networking and will result in a lack of faith in regulatory intervention going forward. Moreover, this could have an adverse effect not just on competition in social networks as we know them now on digital computer and phone screens, but also in the future when social networking expands to new realms such as the metaverse. A Meta controlled social media landscape now could lead to an entrenchment of its market power in the future as well.[11]

03
RECOMMENDATIONS

For an interoperability intervention to be successful, it must directly target both of these forces: direct network effects and increasing returns to data. As mentioned earlier, the current language of the ACCESS Act addresses only the former, and, in fact, explicitly impairs the ability of entrant platforms from exploiting the full benefits of being interconnected with the largest social networks in the world.

The language restricting the collection and use of data from the covered platform may have been included in a well-intentioned effort to allay privacy concerns.[12] However, to better balance the benefits to competition (and ultimately to consumers) with privacy considerations, this restriction should be relaxed and complemented by a plan to deal specifically with privacy issues. As written, the legislation would deny entrant platforms the possibility of unleashing more of the power of their AI algorithms and prevent them from offering higher quality services that could have a better chance of pulling users away from dominant platforms.

I recommend relaxing the language of Sec. 4.f.2 to read simply: "***A business user shall not share the data of a user on a covered platform…***" Further, I suggest that the bills make explicit that the entrant platform *should* be able to collect and use the data generated by users of the covered platform to improve its algorithms and develop better services for its users, subject to specific limitations arising from a "data symmetry principle" that I describe below.[13] Language along these lines could be as follows:

> "***A business user will be granted permission to collect and use the data of a user on a covered platform for purposes of learning about and generating content for its own users according to a 'data symmetry' principle described in Sec. XYZ below.***"[14]

Further Section 6.c.1 of the House bill should be altered to explicitly reflect the goals of the FTC in implementing this legislation. In particular, the twin goals should be to transform the proprietary nature of the direct (user-based) and indirect (data-based) network effects and render them accessible to all interconnected firms in the market. I suggest revising the text of Section 6.c.1 to:

> *"the Commission shall seek to encourage entry by reducing or eliminating the* ***proprietary di-***

10 Santesteban & Longpre, *supra* note 5, at 18.

11 See, e.g. Cristian Santesteban, *How to Prevent Big Tech from Hindering Pathbreaking Innovation in the Metaverse*, PROMARKET (March 17, 2022), https://www.promarket.org/2022/03/17/big-tech-innovation-metaverse-competition/ (last visited October 5, 2022)

12 More cynically, it may have been added there by knowing lobbyists to the dominant platforms that did not want to empower their interconnected rivals with the full force of their data.

13 The FTC will have to develop a legal or regulatory framework to ensure that all interoperating firms abide by these limitations.

14 I agree that neither the interconnecting entrant platform nor the covered platform should be able to share with other entities the data it obtains from other platforms, at least not without the user's consent. A detailed description of how to design an interoperability regime that allows for data sharing with third parties and that takes into account privacy is laid out in a separate piece co-authored with Shayne Longpre. See Cristian Santesteban & Shayne Longpre, *Invigorating Competition in Social Networking: An Interoperability Remedy that Addresses Data Network Effects and Privacy*, CPI CHRONICLE (June 15, 2021), https://www.competitionpolicyinternational.com/invigorating-competition-in-social-networking-an-interoperability-remedy-that-addresses-data-network-effects-and-privacy-concerns/ (last visited October 5, 2022).

rect (user-based) and indirect (data-based) *network effects that limit competition with the covered platform…"*

These changes to the text of the legislation (along with an articulation of the data symmetry principle as I show below) would make the interoperability regime better able to target the dual forces that currently allow Facebook to remain the dominant social network in the marketplace. By allowing all users to be connected regardless of platform and the data those users generate to be used by all interconnected platforms (subject to privacy limitations described below), we transform the proprietary forces that made dominant firms like Facebook so formidable into market-level forces that will strengthen not just one firm in this sector, but the social networking space as a whole. This would be a win for consumers who will benefit from greater choice, more innovation, and higher quality offerings.

04

PRIVACY CONSIDERATIONS AND THE DATA SYMMETRY PRINCIPLE

An entrant social network should be able to benefit from the data generated by some, but not all, of the users of a covered platform - this is not supposed to be a free-for-all for interconnecting platforms. In particular, the interoperability regime should follow a "data symmetry" principle. This principle says any content generated by Facebook users that a user on Facebook can potentially interact with (subject to those users' privacy restrictions), should be made available for an entrant platform to collect and use, were that user to reside instead on the entrant platform, rather than on Facebook itself.[15]

To clarify, imagine a Facebook user called A. Facebook generates a feed for User A based on that user's interactions with content generated by other Facebook users (as well as other data Facebook collects). These Facebook users may be friends of User A, friends of friends, or anyone on Facebook, depending on the privacy settings of those users. Now imagine that User A leaves Facebook, switches to an entrant network interoperating with Facebook, and retains or reestablishes all of their friends on Facebook. What user-generated data is the entrant platform able to collect and use from Facebook for purposes of learning about User A?[16] The data symmetry principle would grant an entrant platform the ability to collect and use whatever content from Facebook users User A would have been eligible to interact with, had User A remained a Facebook user.[17] Another way of looking at this is that as long as a user on an interconnecting platform is interacting with content from Facebook users (which should mean that the privacy choices of the Facebook users allow that user to interact with the content), the interconnecting platform should be able to collect and use that user-generated data to learn about its own users' preferences.[18]

I therefore propose adding the following clause to the legislation that articulates the data symmetry principle that sets bounds on the ability of the entrant platform to collect and use data from a covered platform:

"Section XYZ: Data Symmetry Principle. A business user can collect and use any data generated by users of a covered platform that would be eligible to be shown to a user

15 To the extent that a user on a covered platform can restrict their own platform from using that data in any way while at the same time allowing other users on that platform to interact with their data, then the user's preferences on the use restrictions would apply to the entrant platform as well.

16 If a user moves to a new platform that interoperates with a covered platform, the user's profile could in principle be ported over to the new platform, and the new platform would not be starting from scratch in understanding the preferences of the user (unless the user chooses to not have their data ported). This would be a stricter requirement than what I'm calling for here. It would require having some form of universal ID for an individual that would be valid across networks.

17 My proposal is simply that on a going-forward basis, when a user switches from Facebook to a new entrant that interoperates with Facebook, Facebook should have to share with the new platform any data that the user interacts with that is generated by Facebook users. Further, the data symmetry principle should apply to Facebook as well in the sense that Facebook should be able to collect and use content from User A (now on the entrant platform) that Facebook users interact with.

18 The data symmetry principle as stated in the text could be thought of as a weak data symmetry principle. There is a question of whether a stronger version should apply. The issue is whether Facebook should also share data about Facebook users "similar" to the user on the interconnecting platform, who are not at all related to that user. It is clear that the behavior of similar users influences what Facebook includes on a user's feed. Those similar users need not be at all related to the user in question in terms of being friends or having friends in common. In those situations, should Facebook be forced to share data on the behavior of those similar users even if the user on the entrant platform never directly interacts with this content? A strong data symmetry principle would suggest yes, but I'm open to further discussion and research on this topic. More generally, a strong data symmetry principle would state that whatever kinds of data from users on its network a covered platform currently relies on to generate content for a particular user on its platform, that data should be shared with an entrant platform if that particular user were to reside on an entrant platform.

of a covered platform, if that user were instead to be part of the business user's platform."

This would allow a new entrant with few initial users to benefit from much more user-generated data than the data generated simply by its own users. Modifying the bill in this manner could add a multiplier effect on the order of 10-100x to the amount of data that the entrant platform would use to learn and improve its recommendation algorithms. The amplification effect depends on how many friends on covered platforms the entrant platforms' users have.

To make this more concrete, I describe how an entrant platform could learn from the data generated by Facebook users under the data symmetry principle. Suppose we have three users of social networks: Cristian, Frank, and Fatima. Cristian is a user on an entrant platform that has chosen to interoperate with Facebook; it also competes with Facebook for users and attention. Cristian is *directly* linked to Frank, a Facebook user, because they have become friends.[19] Another Facebook user, Fatima, is *indirectly* linked to Cristian because she is friends with Frank but not with Cristian. Based on the data symmetry principle, the entrant platform should be able to collect and use any data that anybody on Facebook generates that a user on the entrant platform could view and respond to.[20] At a minimum, this includes, but should not be limited to, the following cases:

1. Suppose that Cristian from the entrant platform posts some content. Suppose further that Frank responds to it, and this response appears on Cristian's feed. Since Frank is Cristian's friend, the data from Frank's response should be allowed to be collected and used by the entrant platform to learn about Cristian's preferences.
2. Now suppose Frank posts something on Facebook. That post could be shared with all of Frank's friends on the new platform. The new platform would be able to collect and use the data from Frank's post to observe how its own users interact with it. Let's say Cristian likes the post.[21] It would not be very useful for the new platform to just observe that one of its users liked some content. It must be able to observe the actual content that its user liked. That makes it crucial for the new platform to be able to collect and use the data from Frank's post to be able to decipher what its own user Cristian was responding to.
3. Further, imagine that Facebook user Fatima comments on a post generated by Frank, and Cristian likes Fatima's comment. The entrant platform should be able to learn about Cristian's preferences because Cristian has interacted with content generated by Fatima, who's only indirectly linked to Cristian as a friend of a friend. The entrant platform should be able to collect and use Fatima's comment so that it can interpret its own users' response to it, here Cristian's like. As in the prior example, if the new platform could not collect and use the data from Fatima, then it would only be able to observe that Cristian liked some content, but not be able to see what content the like was in response to. This would severely impair the new platform's algorithms from learning much of anything about Cristian's preferences.
4. Finally, suppose Facebook user Fatima posts something on Facebook. Her friend Frank responds to it. This content wouldn't normally appear on Cristian's feed; however, Cristian could seek it out by going to his friend Frank's profile. Typically, Fatima can choose in her Facebook setting whether her posts are public or restricted only to friends (or a subset of friends). If Fatima chooses to restrict her posts to be viewed only by friends, then Cristian should not be allowed to interact with this content, and neither should the entrant platform be allowed to collect and use this data. On the other hand, if Fatima chooses to make her posts public, then Cristian could choose to go to Frank's feed (or Fatima's) and interact with this post. In this case, Fatima's content should also be eligible for the new platform to collect and use in order to learn more about Cristian's preferences.

"To make this more concrete, I describe how an entrant platform could learn from the data generated by Facebook users under the data symmetry principle

19 Cristian and Frank could also be directly related if the two belong to the same Facebook group. In any interoperability proposal, a member of an entrant network should be able to join a group created in Facebook. The group's invitations could extend to users beyond Facebook's platform boundaries.

20 As long as a user on an interconnecting platform is viewing content from Facebook users, the interconnecting platform should be able to collect and use that information from Facebook users to learn about its own users' preferences. This is NOT equivalent to saying that the entrant platform should be able to collect and use the same information that Facebook does for any of its users to learn about their preferences. That would be following a strong data symmetry principle that I do not currently advocate in this piece. See discussion in *supra* note 18.

21 Even if Cristian doesn't directly like the post or comment on it, the entrant platform could still learn about Cristian's preferences. Recall that how long a user lingers over a post is also relevant data that social media platforms collect and learn from.

I now turn to the implications for privacy of relaxing the restrictions on collection and use of data by interoperating platforms. Legislators are rightly concerned about the possibility that a new entrant interconnecting with a covered platform might violate the covered platform users' privacy. Such a violation could be accomplished if an entrant platform were to share covered platform users' information with unlicensed third-parties or by selling it to advertisers. The example of Cambridge Analytica and Facebook is often brought up as the nightmare scenario. However, allowing platforms that interoperate with covered platforms such as Facebook to collect and use the data from Facebook users as I described above, would not raise these kinds of privacy concerns for the following three reasons:

1. Facebook would not simply be sharing data with any platform. All platforms that wish to interconnect with Facebook would have to be reviewed and licensed by a technical body chosen by the FTC before being able to interconnect with Facebook. This should ensure that platforms with intentions simply to exploit user data for profit and not to provide legitimate services to its users would not be able to interoperate. For example, this would exclude firms set up solely for the purpose of harvesting user data from interconnecting with covered platforms.
2. No data from Facebook would be allowed to be monetized by any interconnecting platforms in the form of targeted advertising (but these firms could use that data to optimize their recommendation algorithms to show organic content to their users; that is the key point of this article).[22]
3. No data from Facebook would be allowed to be shared with third-party firms.

Of course, there exist privacy concerns beyond those involving sharing of data with third parties. As mentioned above, Facebook users can limit the users who can interact with content that they post online. Consistent with the data symmetry principle, whatever restrictions on the use of personal data a user has on their home platform should also apply to any interconnected platform.[23] (This is illustrated in Case 4 above.) If Facebook user Fatima posts content and only shares it with her friends, current Facebook policy would prohibit other Facebook users who are not Fatima's friends from viewing or responding to Fatima's post. The data symmetry principle would extend to these privacy restrictions and require an entrant platform to adhere to the privacy preferences of the Facebook users whose data it may obtain. In other words, entrant user Cristian would not be able to see and interact with content posted by Fatima if her settings are such that only friends can view her posts. Correspondingly, the entrant platform should not be able to collect and use Fatima's posts for purposes of learning about Cristian's preferences, as the two of them are not friends.

05
CONCLUSION

In sum, allowing entrant platforms that interoperate with dominant incumbent platforms to collect and use the data generated by users on those dominant platforms as discussed above will empower them to learn about the preferences of its own users more effectively and thus generate more relevant and engaging content. This would increase the competitive viability of the entering networks and allow them to be stronger competitors to the dominant incumbents. In this manner, the indirect network effects from data only enjoyed by Facebook and other dominant firms would be spread to all the firms that choose to interoperate with them. This could be transformative in altering the competitive dynamics in the social networking space for the benefit of consumers.

I now turn to the implications for privacy of relaxing the restrictions on collection and use of data by interoperating platforms

22 This is stricter than an earlier proposal of mine with co-author Shayne Longpre that would have allowed monetization as long as i) the Facebook user allowed it on Facebook, and ii) the entrant platform allowed monetization of at least some of its own users' data. Santesteban & Longpre, *supra* note 14.

23 This raises the case of what to do if a user has a profile on two interconnected social networking platforms. Could a user become friends with themselves? What if the user has strict privacy restrictions on one platform and loose ones on the other? One response based on the data symmetry principle is that a network receiving the data shared by the strict (loose) platform must maintain strict (loose) privacy controls on that data.

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ANNOUNCEMENTS

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