No. 18-956

IN THE

Supreme Court of the United States

GOOGLE LLC,

Petitioner,

v.

ORACLE AMERICA, INC.,

Respondent.

ON PETITION FOR WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF OF THE R STREET INSTITUTE AND PUBLIC KNOWLEDGE AS *AMICI CURIAE* IN SUPPORT OF THE PETITION

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INTEREST OF *AMICI CURIAE*

The R Street Institute[1] is a non-profit, non-partisan public-policy research organization. R Street's mission is to engage in policy research and educational outreach that promotes free markets as well as limited yet effective government, including properly calibrated legal and regulatory frameworks that support economic growth and individual liberty.

Public Knowledge is a nonprofit organization that is dedicated to preserving the openness of the Internet and the public's access to knowledge, promoting creativity through balanced intellectual property rights, and upholding and protecting the rights of consumers to use innovative technology lawfully. Public Knowledge advocates on behalf of the public interest for a balanced patent system, particularly with respect to new and emerging technologies.

[1]Pursuant to Supreme Court Rule 37.2(a), all parties received appropriate notice of and consented to the filing of this brief. Pursuant to Rule 37.6, no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of the brief. No person or entity, other than *amici*, their members, or their counsel, made a monetary contribution to the preparation or submission of this brief.

SUMMARY OF ARGUMENT

It is unusual for a decision of copyright law to implicate nearly every key modern technology, to upset settled expectations of industry, and potentially even to frustrate the ability of the federal government to do its job. Yet that is the situation of the present case. Certiorari should be granted.

1. The decision of the Court of Appeals, that software interfaces are covered by a copyright that is categorically infringed by another's implementation of that interface, affects practically every modern communication technology. Software interfaces, being collections of named commands that serve as shortcuts for invoking segments of computer programs, are found ubiquitously in technical interoperability standards for communication technologies. Technical standards enable the Internet, computer communications, mobile phone services, television broadcasts, electronic documents, and other technologies that are all but unavoidable today. Use of those standards requires an act of implementation that is very difficult to distinguish from Google's implementation of the Java software interface in the present case.

If implementation of an interface is an infringement of copyright and categorically not fair use as the Federal Circuit held, the potential consequences are dramatic. The technology industry has a longstanding expectation that implementation of interfaces does not require a copyright license. Review of the analogous patent context demonstrates that upsetting that expectation could cause widespread disruption for all sorts of standards-dependent technologies and thus widespread disruption for the economy at large.

2. At stake are not just current technologies, however: The Federal Circuit's decision also stands to stymie important emerging technologies on the horizon. Burgeoning fields, from smart cities to electronic health records, depend on interoperability—the ability of devices made by unrelated manufacturers to communicate with each other—and interoperability requires consistency in software interfaces. These fields stand to face difficulties should copyright law potentially affect interoperability generally.

3. These consequences fall upon not just private parties, but also the federal government. The government often addresses collective action problems by effecting coordination among private actors—including interoperability requirements. For example, the government has chosen specific standards for transmittal and storage of electronic health records. Similarly, the government manages allocation of wireless broadcast channels by requiring the use of certain digital television standards.

In these cases and others, the government has adopted standards that include software interfaces, including particular collections of commands that regulated entities must implement. The possibility of copyright in those interfaces could thus force the government to choose between either ordering regulated entities to infringe copyright or taking costly and complex steps to mitigate its dependence on third-party standards.

The petition for certiorari demonstrates that the Federal Circuit's decision at a minimum creates uncertainty as to copyright in software interfaces. That uncertainty affects everyone from the government to the entrepreneur to the cell phone user—strong reason for this Court to provide clarity in this area of law.

ARGUMENT

I. The Federal Circuit's Decision Has Momentous Implications for Computer Technologies of Immense Economic Importance

Petitioner presents two questions relating to the applicability of copyright infringement to the act of implementing a software interface, which the petition (at *i*) correctly defines as "lines of computer code that allow developers to operate prewritten libraries of code used to perform particular tasks." It is of vital importance to reach national resolution on these questions. Software interfaces are prevalent to the point of ubiquity, as they are the basis for the many technical standards that underlie the Internet and nearly every computer communication system.

To deem the implementation of an interface to be copyright infringement as a matter of law, as the Court of Appeals did, would throw into question the permissibility of an enormous range of technologies in current use. Given the tremendous economic value of those technologies today, it is essential to have clarity on this copyright issue.

A. Copyright in Software Interfaces Potentially Affects Ubiquitous Technologies such as Web Pages, Wireless Communications, and Electronic Documents

The decision of the Court of Appeals creates a cloud of copyright infringement over a wide range of important technologies. This is because many modern technologies

depend on technical interoperability standards, which are software interfaces on par with the interface in the present case. If it was an act of infringement for Petitioner Google to implement Respondent Oracle's Java interface, then one could plausibly claim that every standard-compliant technology, by virtue of implementing an interface defined in a technical standard, is an infringement of copyright as well.

Technical interoperability standards are "specifications that ensure that a variety of products from different manufacturers operate compatibly." *Microsoft Corp. v. Motorola, Inc.*, 795 F.3d 1024, 1030 (9th Cir. 2015). Common examples of technical standards in use today are the HyperText Transport Protocol (HTTP) used to transfer web pages from servers to user computers,[2] the Wi-Fi wireless communication protocol that most computers and mobile devices use to connect to the Internet,[3] the Universal Serial Bus (USB) standard used in computer peripherals ranging from keyboards to coffee cups,[4] and the Advanced Television Systems Committee (ATSC) standards mandated by law for broadcast television.[5]

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[2]*See* T. Berners-Lee et al., *Hypertext Transfer Protocol—HTTP/1.0* (Internet Eng'g Task Force, RFC 1945, May 1996), *available online*. Locations of authorities available online are shown in the Table of Authorities.

[3]*See* IEEE-SA Standards Bd., *IEEE Std. 802.11-2016, Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications* (2016), *available online*.

[4]*See* Apple Inc. et al., *Universal Serial Bus 3.2 Specification* (Sept. 22, 2017), *available online*.

[5]47 C.F.R. § 73.682(d) ("Effective October 11, 2011 transmission of digital broadcast television (DTV) signals shall comply with the standards for such transmissions set forth in ATSC" standards therein listed).

Each of the standards described above, and indeed nearly every technical standard in use,[6] includes one or more software interfaces that must be implemented largely in the same way that Google implemented the Java interface in the present case. Standards often comprise complex structures of commands sent between computing devices, and for a computer device to comply with a standard, the device must include "prewritten code used to perform particular tasks" corresponding to the standard's structure of commands. *See generally* Charles Duan, *Internet of Infringing Things: The Effect of Computer Interface Copyrights on Technology Standards*, 2019 Rutgers Computer & Tech. L.J. (forthcoming) (manuscript at 11–20), *available online*.

Amici have previously demonstrated that many well-known standards include software interfaces that would potentially fall within the scope of the Federal Circuit's reasoning. *See id.*; Brief of Public Knowledge as *Amicus Curiae* in Support of Defendant-Appellee at 6–15, *Cisco Sys., Inc. v. Arista Networks, Inc.*, No. 17-2145 (Fed. Cir. Dec. 23, 2017), *available online*. For purposes of the present case, this brief focuses on a handful of technical standards that are perhaps of interest to this Court, insofar as they are used in the daily operations of the Court itself.

1. *Web page formatting.* This Court operates a website laid out to its specifications. The fonts, colors, arrangement, and other aspects of that website are defined using a programming language called Cascading

[6] As a shorthand, the phrase "technical standard" will refer to interoperability standards. There are other types of standards, such as those for ensuring product safety or quality; these are not the subject of this brief.

Style Sheets, or CSS. *See Cascading Style Sheets Level 2 Revision 1 Specification* (Bert Bos et al. ed., W3C Recommendation June 7, 2011) [hereinafter *CSS 2.1 Specification*], *available online.* That language includes a complex, interrelated hierarchy of over 350 commands that form a software interface much like the Java interface. *See* Duan, *supra*, at 12–14 & fig.1. For example, the instructions for drawing a border around a box of text in CSS consist of a four-level hierarchy of specific words and punctuation—"`border-top-color: red`" for example—that must be followed precisely in order for the desired web page appearance to be achieved. *See CSS 2.1 Specification*, *supra*, § 8.5.

If a copyright exists in the Java interface and Google's Android product implementation infringes that copyright, then there is a good argument that copyright infringement lies in any web browser that properly displays this Court's web pages. *See* Duan, *supra*, at 14–15. In order to properly display those pages, a web browser such as Mozilla Firefox or Microsoft Internet Explorer must include a library of prewritten code responsive to instructions such as "`border-top-color: red`" and the many other code shortcuts defined in CSS. Just like Android, the web browser must copy exactly the words "border," "top," "color," "red," and hundreds of others in order to work as expected; a browser programmed to expect something like "`upper-edge-hue: rouge`" would fail to work and does not exist.

Importantly, CSS exhibits the exact same features in which the Federal Circuit found "creativity" amenable to copyright protection in the present case. The Federal Circuit relied heavily on the fact that Google had "multiple ways to express" the command names in its

Android software interface. Pet. App. 163a. So, too, are there multiple ways to express the top-border-color command (e.g., "`upper-edge-hue`"). Indeed, just as the Federal Circuit repeatedly remarked on the "creative process" of creating the Java interface, *id.* at 140a, the designers of CSS made similar "creative" choices to make the language "human readable and writable." *CSS 2.1 Specification*, *supra*, § 2.4; *see also* Bruce Lawson, *CSS: It Was Twenty Years Ago Today—An Interview with Ha kon Wium Lie*, Dev.Opera (Oct. 10, 2014), *available online*. There is little room to distinguish the Federal Circuit's views on the Java interface from ubiquitous technologies such as CSS.

In short, if this Court expects its own web page to display properly on millions of computers, then it expects millions of web browsers to implement the CSS software interface in much the same way that Android implements the Java interface—which, according to the Court of Appeals, is a per se infringement of copyright. That universal impact alone is of sufficient gravity to warrant review in this case.

2. *Fonts.* Supreme Court Rule 33.1(b) specifies the fonts that must be used for briefs filed with this Court. The Court's electronic filing rules also require briefs to be presented electronically in Adobe PDF format, and the Court's opinions are issued in that format. Adobe PDF demands that fonts be specified according to certain forms, most commonly the Type 1 standard. Adobe Sys. Inc., *32000-1:2008*, *Document Management—Portable Document Format—Part 1: PDF 1.7*, § 9.6.2, at 254 (2008), *available online*.

The Type 1 standard defines complex software interfaces for fonts, and font files themselves are an

implementation of those interfaces—akin to Android's implementation of Java. As just one example, consider that a font must include a large collection of computer code segments for drawing letters[7] in the style of the font. For example, to draw the letter "ï" the font must contain software code to cause the drawing of two dots and a serifed vertical line.

In order for printers and computer screens to draw letters from a font, the font file must give each of these code segments a name that identifies the letter to be drawn. Most fonts will follow Adobe's standard, which provides 586 letter identifier names—including "`idieresis`" for the example above. *See* Adobe Sys. Inc., *Adobe Glyph List For New Fonts* l. 175 (ver. 1.7, 2008), *available online*; Adobe Sys. Inc., *Adobe Glyph List Specification* § 6 (ver. 2.8, 2018) [hereinafter *Glyph List Specification*], *available online*. The font file associates its blocks of drawing software code with these Adobe standard names so that users of the font can select the letters they desire by name. In other words, the letter identifier name is a shortcut to a library of code, defined in the font file, for drawing individual letters.

Adobe's choice, selection, and arrangement of names for characters illustrates precisely the widespread negative impact that the present case could have. Just as Oracle argues that Google was free to choose a software interface different from Java's, a font designer is free to use letter identifiers different from Adobe's list (e.g., "`two-dots-over-i`"), and indeed in many respects the resulting font would still work. But software programs

[7]The term "letter" is used colloquially to refer to the graphical shape of a character in a font; the proper but more arcane term would be "glyph."

expect fonts to follow Adobe's letter naming convention in order to extract text out of PDF files or to search those files for words. Adobe's specification explains:

> Following the naming conventions . . . will currently enable copying text and searching text in PDF (Portable Document Format) documents under a wider variety of circumstances than having no names, or names that do not follow these conventions. In the era of the Internet, where many documents must be searchable in order to be useful, this is very important.

See Glyph List Specification, *supra*, § 6 (quoting Adobe Sys. Inc., *Glyph Names and Current Implementations* (ver. 1.1, 2003), *available online*). To the extent that users have copied and pasted text out of this Court's opinions (or that this Court's staff have copied and pasted text to quote briefs), those users have depended on font developers reimplementing a software interface.

Thus, the questions presented in this case implicate the types of font files mandated for use by this Court. This fact demonstrates another of the many unexpected ways in which the Federal Circuit's decision could affect existing and ubiquitous technologies.

* * *

Perhaps in an attempt to avoid these far-reaching consequences, the Federal Circuit attempted to distinguish its decision from interoperability in general on the grounds that the allegedly infringing Android system was not entirely compatible with the Java interface. *See* Pet. App. 46a n.11. This effort is unavailing for at least two reasons. First, it is frequently also the case that

implementations of common interoperability standards are not 100% compatible with the standards.[8] Second, the paradoxical consequence of the Federal Circuit's logic would be that incomplete copying is less likely fair use than complete copying—a curious result given the literal text of the second fair use factor. *See* 17 U.S.C. § 107(2). At a minimum, then, there is an open question of whether the Federal Circuit's reasoning will apply to implementers of technical standards; that open question creates uncertainty for a wide range of common technologies.

B. The Widespread Use and Tremendous Value of These Technologies Demonstrates the Necessity of Resolving the Questions in This Case

The examples above all suggest that the Federal Circuit's rulings in this case potentially implicate all sorts of technologies that depend on technical interoperability standards. And because standards are exceptionally important to the modern economy, this case has exceptionally important economic implications.

Standards, and reimplementation of those standards, create tremendous value in today's economy. According to the National Academy of Sciences, standards-dependent industries generate "aggregate economic activity approaching $2 trillion per year." Nat'l Research Council, *Patent Challenges for Standard-Setting in the Global Economy* 25–26 (Keith Maskus & Stephen A.

[8] *See* Jugnu Gaur Ochin, *Cross Browser Incompatibility: Reasons and Solutions*, 2 Int'l J. Software Engineering & Applications No. 3, at 66, 66 (2011), *available online* ("Many browsers circulating now are not 'compliant'" with Internet standards such as CSS).

Merrill eds., 2013) [hereinafter *Patent Challenges for Standard-Setting*].

A brief review of some of those industries confirms the accuracy of this remarkably large valuation. The Internet is entirely dependent on software interfaces defined in technical standards, and the Department of Commerce has estimated that the Internet-related economy in 2016 created $1.2 trillion in value and 5.9 million jobs.[9] A trade association estimates that the mobile communications industry, encompassing smartphones, LTE networks, and other connected devices, generated $3.6 trillion of economic value in 2017.[10] The legal profession ubiquitously uses the standardized PDF format as noted above; the top 100 law firms made $105.7 billion in revenues in 2017.[11]

Should the Federal Circuit's decision stand, it could plausibly throw these standards-based industries into disarray. Comparison to patent licensing practices can help to illustrate what might happen should this Court not grant review. Implementation of technical standards often implicates patent rights. *See* Duan, *supra*, at 20–23. To simplify licensing and promote use of the standards, the organizations that develop those standards impose detailed, cautious licensing obligations on relevant patent

[9] *See* Kevin Barefoot et al., *Defining and Measuring the Digital Economy* 12, 16 (Bureau of Econ. Analysis, U.S. Dep't of Commerce, working paper, Mar. 15, 2018), *available online*. The report states that it is measuring the "digital economy," but defines that term "primarily in terms of the Internet and related information and communications technologies." *Id.* at 6.

[10] *See* GSM Ass'n, *The Mobile Economy 2018*, at 28 & fig.12 (2018), *available online*.

[11] *See* Ben Seal, *The 2018 Global 100 Ranked by Revenue*, Am. Law. (Feb. 7, 2019), *available online*.

holders. *See id.* at 23–25 & nn.92–95 (discussing several such obligations); *Patent Challenges for Standard-Setting*, *supra*, at 31. Even with these safeguards, complex lawsuits and negotiations over these so-called "standard-essential patents" have persisted and continue even today. *See, e.g.*, *Microsoft*, 795 F.3d at 1031–34; *In re Innovatio IP Ventures, LLC Patent Litig.*, 956 F. Supp. 2d 925, 957 (N.D. Ill. 2013); *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1209 (Fed. Cir. 2014); *Fed. Trade Comm'n v. Qualcomm Inc.*, No. 5:17-cv-220 (N.D. Cal. trial completed Jan. 29, 2019).

Disputes over software interface copyrights in technical standards could go down a path far worse than those over patents on standards. A survey of major standard-setting organizations reveals that, though nearly all are well-equipped to deal with patent issues, few have provisions to deal with copyright infringement resulting from software interfaces in standards. *See* Duan, *supra*, at 29–33. A comprehensive survey of technical standard-setting organizations found that "the issue of what might be referred to as 'essential copyrights' is rarely dealt in an effective way in [licensing] policies." Rudi Bekkers & Andrew Updegrove, *A Study of IPR Policies and Practices of a Representative Group of Standards Setting Organizations Worldwide* 36 (Sept. 17, 2012) (commissioned paper preparatory to *Patent Challenges for Standard-Setting*, *supra*). This situation suggests that, for the $2 trillion in economic activity among standards-dependent industries, even the possibility of copyright liability—or uncertainty about that liability—could trigger long-lasting litigation in the courts as well as impasses at the negotiating tables.

To the extent that this Court can bring clarity to the issue of interface copyrights before the disputes begin, that clarity would likely bring immense value to the technology industry and the economy overall. Certiorari is warranted at least for this reason.

II. Technologies such as Next-Generation Healthcare and Smart Cities, Which Promise Benefits to Public Safety and Welfare, Could Be Stymied by Copyright in Interfaces

It is not just current technologies that will bear the costs of the Federal Circuit's decision. Future and emerging technologies, too, stand to be impeded as a result of copyright in software interfaces.

1. Interoperability—and thus sharing of software interfaces—is central to the movement toward "smart cities," in which city governments utilize "an overarching ecosystem of different technologies that collectively improve the efficiency, security, safety and sustainability of a city."[12] Technologies used in smart city development range from air quality monitors to traffic lights to flood water monitors to emergency dispatch systems.[13] Experts estimate that, by 2021, spending on

[12]Tom Blewitt, *Interoperability: The Key to the Emerging Smart City*, ReadWrite, Mar. 9, 2017, *available online*.

[13]*See, e.g.*, Bob Bauder, *Pittsburgh Expanding System of "Smart" Traffic Lights to Ease Congestion*, Pitt. Trib.-Rev., Nov. 26, 2018, *available online*; Christine Kendrick & Andrew Rodgers, City of Portland, Or., *Recommendations for the Development and Implementation of Distributed Sensor Networks* (2018), *available online*; Cale Guthrie Weissman, *From Katrina To Harvey: How Disaster Relief Is Evolving With Technology*, Fast Company (Aug. 28, 2017), *available online*; Kenny Walter, *Smart Cities Could Be Asset*

such "smart city technology" will reach $135 billion.[14]

Developing an effective smart city system relies on both data collected by the government *and* on "the sharing of data among individual citizens and industries with the government and the general public." Bengt Ahlgren et al., *Internet of Things for Smart Cities: Interoperability and Open Data*, IEEE Internet Computing, Dec. 12, 2016, at 52, *available online*. Interoperability is thus prerequisite to effective smart cities for at least three reasons.

First, interoperability promotes flexibility and competition to best need the specific needs of cities. Because no two cities are alike, each city will require a different array of devices and digital capabilities tailored to fit its needs. Without interoperable smart-city devices, cities will be locked into vertical silo models which lock data into devices and services of one provider, a result "particularly problematic for the public sector, since this prevents fair competition in public procurement and is less suitable for largescale data sharing." *Id.* This is doubly true for rural and large-area municipalities. Take, for example, the city government of Sitka, Alaska, which provides services to approximately 9,000 residents spread out over 2,870 square miles that encompass everything from oceanic shoreline, to temperate rainforest, to a dormant stratovolcano. U.S. Census Bureau, *Alaska: 2010 Population and Housing Unit Counts* 7 tbl.5 (June 2012), *available online*. Cities such as Sitka, with a

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During Natural Disasters, R & D Mag. (Sept. 25, 2017), *available online*.

[14]Teena Maddox, *Smart Cities Expected to Invest $80B in Technologies in 2018*, TechRepublic, Feb. 20, 2018, *available online*.

decentralized population and a unique diversity of environmental monitoring needs, need the flexibility to mix and match vendors in order to become a fully functioning "smart" city.

Second, interoperability allows cities to evolve their systems over time as their needs change. Demographic changes, natural disasters, and even basic changes in civic priorities can create new needs. *See, e.g.*, Azzedine Boukerche & Rodolfo W.L. Coutinho, *Smart Disaster Detection and Response System for Smart Cities*, 2018 Proc. IEEE Symp. on Computers & Comm., *available online*. Without the ability to procure or commission devices that share software interfaces with existing systems, cities will face difficulties in keeping pace with changing times.

Third, interoperability ensures that municipal investments in smart-city technologies maintain long-term value. Cities face high initial costs of purchasing, establishing, and maintaining the necessary infrastructure backbone for technologies. The market for sensor devices and others that cities would use is highly dynamic, with many new and potentially unexperienced entrants making new and possibly unprecedented devices, and with others exiting the market equally quickly. *See* Federal Trade Commission Staff, *Internet of Things: Privacy & Security in a Connected World* 13 (2015), *available online*. In a system governed by copyright-protected interfaces, one vendor going out of business could cripple an entire network of floodwater monitors. Incompatibilities among devices in this dynamic market, when they affect institutions such as cities, pose a massive risk not only in terms of financial burden, but potentially (in the case of emergency operations and disaster response infrastructure) in human lives.

2. Interoperability is also critical to the future of healthcare technology. According to the 21st Century Cures Act, interoperability "enables the secure exchange of electronic health information with, and use of electronic health information from, other health information technology without special effort on the part of the user; [and] allows for complete access, exchange, and use of all electronically accessible health information for authorized use under applicable State or Federal law." Pub. L. No. 114-255, sec. 4003(a), 130 Stat. 1033 (2016) (codified at 42 U.S.C. § 300jj(10)). Electronic health records improve efficiency of care, and reduce the risks posed by transitioning care between providers. Stephen O'Connor, *What Is Interoperability, and Why Is It Important?*, Advanced Data Systems Corp. (May 30, 2017), *available online*. The healthcare information technology industry is growing steadily, with one survey estimating an industry-wide growth rate of 16.9% annually. Int'l Data Corp., *IDC Forecasts Worldwide Technology Spending on the Internet of Things to Reach $1.2 Trillion in 2022* (June 18, 2018), *available online*. Seventy-one percent of hospitals relied upon national "health information networks" to enable sharing of digital patient data. Christian Johnson et al., Office of the Nat'l Coordinator for Health Info. Tech., *ONC Data Brief No. 43, Methods Used to Enable Interoperability among U.S. Non-Federal Acute Care Hospitals in 2017*, at 8 (Dec. 2018).

To be useful, electronic health records must be discrete, flexible, and usable by a wide variety of provider systems—meaning that those systems must reimplement software interfaces in order to read standardized records. The ability to format, transmit, and interpret

data in a universal language is critical to the success of health technology systems and electronic health records. *See, e.g.*, O'Connor, *supra*. Portability and mutual intelligibility among systems are especially critical factors when patients seek care away from home, as individuals often cannot provide their medical histories with the degree of specificity needed to inform care decisions. *See, e.g.*, Rashmee Patil, *The Importance of EHR Interoperability for Better Patient Care*, Med. Econ. (May 21, 2016), *available online* (describing a patient in New York City who complained of chest pains and could only relay that he had undergone "some procedure" in a cardiac unit in his home state of North Carolina).

Accordingly, the development of new technologies in fields as diverse as smart cities and healthcare depends on interoperability of software systems. Since software interfaces are at the core of interoperability, the present case could have important implications for key future technological developments.

III. Operations of the Federal Government Stand to Be Potentially Hindered by Any Uncertainty over Copyright in Interfaces

The possibility of software interface copyright will potentially impair even the federal government in its ability to engage in effective regulation and governance. The government frequently encourages or mandates interoperability of systems by statute or regulation, in order to realize important policy objectives. The subsistence of copyright in interoperability standards thus threatens the government's ability to engage in these practices.

1. Interoperability is a cornerstone of important government policy objectives. As a result, the government frequently mandates or encourages use of specific interoperability standards—including standards that incorporate software interfaces.

In the field of healthcare, for example, vendors of electronic health record systems have perverse incentives to make their records intentionally unreadable on competitors' software—a practice so notorious it has gained the name "information blocking."[15] Congress, in response, recently enacted the 21st Century Cures Act, which directs the Department of Health and Human Services to develop regulations for interoperability of electronic health records, to prevent information blocking.[16] In a proposed rulemaking, the Department would adopt a variety of "Application Programming Interface Standards" with which vendors must comply in order to obtain government certification.[17] In order to achieve high-quality healthcare, the government thus mandates the use of specific software interfaces and APIs.

Similarly, the government has an ongoing interest in making more wireless spectrum[18] available for important technological developments such as mobile phones and

[15] *See* Office of the Nat'l Coordinator for Health Info. Tech., *Report on Health Information Blocking* (Apr. 2015), *available online*; Julia Adler-Milstein & Eric Pfeifer, *Information Blocking: Is It Occurring and What Policy Strategies Can Address It?*, 95 Milbank Q. 117, 119 (2017), *available online*.

[16] *See* sec. 4003(b), § 3001(c)(9)(B).

[17] 21st Century Cures Act: Interoperability, Information Blocking, and the ONC Health IT Certification Program, RIN 0955-AA01, § 170.215, at 625–26 (Office of the Nat'l Coordinator for Health Info. Tech. Feb. 11, 2019), *available online*.

[18] Spectrum is the limited range of radio frequencies that are used for transmitting wireless communications. The Federal Communica-

satellite communications. Since at least 1996, Congress had recognized that a great deal of valuable spectrum was being inefficiently used for analog television broadcasts, and so engaged in a decade-long project to transition the United States to more-efficient digital television signals. *See* Telecommunications Act of 1996, Pub. L. No. 104-104, sec. 201, § 336, 110 Stat. 56; Jeffrey A. Hart, *The Transition to Digital Television in the United States: The Endgame*, 1 Int'l J. Digital Television 7 (2010). The prerequisite to this "Digital TV transition," however, was a technical standard for digital television. As discussed above, the ATSC standard that the Federal Communications Commission ultimately adopted is a collection of software interfaces that interpret commands contained in the digital broadcast signals. *See supra* p. 5; 47 C.F.R. § 73.682(d); Duan, *supra*, at 19. The mandatory use of ATSC software interfaces was necessary to achieving the government's objective of efficient management of the airwaves.

2. Given how the government depends on standards and software interfaces to achieve its policy objectives, uncertainty about the copyright status of such interfaces could throw a wrench in the workings of government. It has long been recognized that intellectual property rights can impede seemingly unrelated government objectives: The analogous field of patent law will often "collide with regulatory goals in contexts as varied as biotechnology, border control, communications, environmental protection, and tax." Tejas N. Narechania, *Patent Conflicts*, 103 Geo. L.J. 1483, 1485 (2015). Professor Narechania

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tions Commission is responsible for allocating parcels of spectrum for private party use. *See generally* 47 U.S.C. § 303(c).

gives the example of the Federal Communications Commission's attempt to protect public safety through modernizing 911 systems, an effort that has been significantly hampered by assertions that compliance with the FCC's 911 rules necessarily infringes patents in force. *See id.* at 1485, 1498–500.

Copyright in software interfaces could similarly complicate the government's ability to implement policy objectives that require adoption of interoperability standards. The government generally tries to use voluntary consensus standards developed by private consortia—that is, standard-setting organizations—in its regulations. *See* National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, sec. 12(d)(1), 110 Stat. 775 (1996). Indeed, the software interfaces discussed above with regard to digital television and electronic health records are standards developed by third parties. If third parties held copyrights in those standards that could implicate implementers of the standards, then in order to avoid copyright issues, the government would need to engage in potentially complex negotiations or would need to write its own standards wholly independent of third-party contributors. Besides leading to suboptimal policy outcomes overall, either option is costly to the government and would likely deter agencies from engaging in important public policy initiatives.

Accordingly, the application of copyright law to software interfaces directly implicates the government's ability to advance policy objectives, because achievement of those objectives often involves adoption of standards. This further emphasizes the importance of this Court giving clear resolution to the questions presented.

CONCLUSION

For the foregoing reasons, the petition for a writ of certiorari should be granted.

Respectfully submitted,

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