

Before the  
**U.S. Copyright Office**  
**Library of Congress**  
Washington, D.C. 20559

*In re:*

Technical Measures:  
Public Consultations

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Docket No. 2021-10

**Pex Statement of Interest  
to Participate in the Consultations  
on Voluntary Identification and Implementation  
of Technical Measures**

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Feb. 8, 2022

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## I. Overview

The Copyright Office has concluded that the balance Congress intended section 512<sup>1</sup> to create “has been tilted askew.”<sup>2</sup> As an independent provider of technical measures for identifying, protecting, and licensing copyrighted works, Pex can help restore that balance.

Pex is neither a content producer nor an online service provider. Pex helps copyright holders protect content and license it for OSPs to make available to OSP users, while also providing OSPs a cost-effective solution to qualify for the safe harbors of section 512. This helps OSPs protect themselves from liability and grow—without having to expend the time and resources to create their own technical measures, and without having to pay for technical measures from (or turn information over to) another OSP with whom they compete.

Pex has positioned itself in the middle of OSPs, rightsholders, and users. Pex succeeds when section 512 produces Congress’s intended balance so that the entire online ecosystem thrives. That makes Pex ideally situated to participate in the Copyright Office’s consultations on voluntary identification and implementation of technical measures.

Broad adoption of technical measures to identify, protect, and help license content will benefit copyright holders, OSPs, and users of online services alike, consistent with Congress’ vision for section 512:

- Copyright holders large and small will be better positioned to protect their content and to license it for OSP subscribers’ use, thereby creating new revenue streams and ensuring fair remuneration.<sup>3</sup>
- New and smaller OSPs will be able to economically reduce risk of copyright liability while providing more content for their subscribers’ authorized use. More content will be posted lawfully, less content will be taken down, and more revenue opportunities will be generated for the entire ecosystem.
- OSP users will not only have access to additional content, but also will potentially have greater opportunity to lawfully incorporate that content into works they create on the online services. In addition, they will have a simpler way of protecting their own copyrights in the user-generated content they create.

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<sup>1</sup>See 17 U.S.C. § 512.

<sup>2</sup>U.S. COPYRIGHT OFFICE, SECTION 512 OF TITLE 17: A REPORT OF THE REGISTER OF COPYRIGHTS 1 (2020) (Section 512 Report).

<sup>3</sup>See *id.* at 20 (stating that “[s]ection 512, coupled with the technical protection measures provisions of section 1201, sought to provide protection, and thereby encouragement, for copyright owners to create and share their works in the digital environment.”).

Broad adoption of technical measures can also spawn a variety of applications and services. Better identification of copyrighted works, for example, might help create more accurate commercial databases of ownership and license rights. That, in turn, might improve copyright protection, registration, licensing, recordation, and dispute resolution. The same technologies also help non-copyright related efforts by the private sector and internet safety groups to identify and moderate unlawful and harmful behavior online, remove associated content, and assist authorities in law enforcement efforts. Pex is working with these organizations today to facilitate such efforts.

Pex submits this filing to elaborate on these points and to express its interest in participating in the Copyright Office’s consultations on voluntary identification and implementation of technical measures.<sup>4</sup> Starting with the plenary session, representatives would include Megumi Yukie, Pex Director of Business and Government Affairs, and DigitalFrontiers Advocacy Founder and Principal Neil Fried, who is advising Pex in this matter. For the industry-sector specific sessions to follow, Pex founder and CEO Rasty Turek, COO Amadea Choplin, or Vice President of Business and Government Affairs Cesar Fishman might participate in place of Ms. Yukie depending on the topic at hand. For contact purposes, you can reach Cesar Fishman at [cesar@pex.com](mailto:cesar@pex.com) and Neil Fried at [neilfried@digitalfrontiersadvocacy.com](mailto:neilfried@digitalfrontiersadvocacy.com).

## II. Section 512 and the Role of Technical Measures

### A. *Protecting and Promoting Copyrighted Content and Online Services Through Technological Collaboration*

With section 512, Congress sought to advance two interests: 1) online service providers’ interest in reducing their copyright litigation risk for disseminating material provided by their users; and 2) copyright holders’ interest in reducing the unauthorized use of their works online.<sup>5</sup> Congress’s objective was to encourage companies to invest in online services and encourage copyright holders to make content available through those services.<sup>6</sup> To that end, section 512 limits the liability of OSPs that create a process for terminating repeat copyright infringers, that accommodate standard technical measures to identify or protect copyrighted works, and that take down unauthorized content upon notification by the copyright holder.<sup>7</sup>

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<sup>4</sup>See U.S. Copyright Office, *In re* Technical Measures: Public Consultations, Docket No. 2021–10, *Notification of Inquiry*, 86 Fed. Reg. 72,638 (Dec. 22, 2021) (Technical Measures NOI).

<sup>5</sup>See DIGITAL MILLENNIUM COPYRIGHT ACT, H.R. REP. NO. 105-796, at 72 (1998) (Conf. Rep.); *id.*, S. REP. NO. 105-190, at 8, 20, 40; SECTION 512 REPORT, *supra* note 2, at 1, 21.

<sup>6</sup>See DMCA SENATE REPORT, *supra* note 5, at 8, 20, 40 (stating that “[d]ue to the ease with which digital works can be copied and distributed worldwide virtually instantaneously, copyright owners will hesitate to make their works readily available on the Internet without reasonable assurance that they will be protected against massive piracy” and that “without clarification of their liability, service providers may hesitate to make the necessary investment in the expansion of the speed and capacity of the Internet.”)

<sup>7</sup>See 17 U.S.C. § 512(i) (requiring OSPs to create a repeat infringer policy and accommodate standard technical measures in order to qualify for the safe harbors), (b)(2)(E) (requiring providers of system caching to create a notice and takedown process in order to qualify for the safe harbor), (c)(1)(C) (requiring hosting providers to create a notice and takedown process in order to qualify for the safe harbor), (d)(3) (requiring search engines and other

Congress’s goal was to “preserve . . . strong incentives for service providers and copyright owners to cooperate to detect and deal with copyright infringements.”<sup>8</sup> Implementing technology to identify and protect copyrighted content is a key element of that cooperation.<sup>9</sup> Congress’s view was then, and is now, “that technology is likely to be the solution to many of the issues facing copyright owners and service providers in this digital age.”<sup>10</sup>

As Senators Patrick Leahy and Thom Tillis observed in their letter to the Copyright Office calling for this inquiry: “When Congress set up the safe harbors for OSPs over twenty years ago, it envisioned industry working together to identify standard technical measures (STMs) that service providers would accommodate.”<sup>11</sup> To qualify as an STM, the statute requires that the measures: “(A) [be] developed pursuant to a broad consensus of copyright owners and service providers in an open, fair, voluntary, multi-industry standards process; (B) [be] available to any person on reasonable and nondiscriminatory terms; and (C) . . . not impose substantial costs on service providers or substantial burdens on their systems or networks.”<sup>12</sup>

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linking sites to create a notice and takedown process in order to qualify for the safe harbor). *See also* DMCA CONFERENCE REPORT, *supra* note 5, at 73 (stating that “[t]o qualify for these protections, service providers must meet the conditions set forth in subsection (i), and service providers’ activities at issue must involve a function described in subsection (a), (b), (c), (d) or (g).”); DMCA SENATE REPORT, *supra* note 5, at 19-20, 40-41 (stating that section 512 grants online service providers safe harbors if they meet certain requirements.); SECTION 512 REPORT, *supra* note 2, at 8 (stating that “[i]n exchange for cooperating with copyright owners to expeditiously remove infringing content, OSPs received a series of limitations on copyright liability under section 512—referred to as “safe harbors”—so long as they met certain conditions.”).

<sup>8</sup>DMCA CONFERENCE REPORT, *supra* note 5, at 72; DMCA SENATE REPORT, *supra* note 5, at 20, 40, 45; DIGITAL MILLENNIUM COPYRIGHT ACT, H.R. REP. NO. 105-551, PART 2, at 49, 54 (1998); SECTION 512 REPORT, *supra* note 2, at 176 (stating that “Congress’ primary intent for the section 512 framework [was] to encourage cooperation between creators and OSPs.”).

<sup>9</sup>*See* SECTION 512 REPORT, *supra* note 2, at 179 (stating that “the development of STMs depends upon voluntary collaboration and consultation within and across industries.”).

<sup>10</sup>DMCA SENATE REPORT, *supra* note 5, at 52; DMCA HOUSE REPORT, PART 2, *supra* note 8, at 61. *See also* Letter from Sens. Thom Tillis and Patrick Leahy to Shira Perlmutter, Register of Copyrights, U.S. Copyright Office 2 (June 24, 2021) (Leahy-Tillis Letter) (stating that “[t]he Committee believed twenty years ago—and we continue to believe—that voluntary technology is likely to be the solution to many of the issues facing copyright owners and service providers.”), available at <https://digitalfrontiersadvocacy.com/leahy-tillis-stm-letter>.

<sup>11</sup>*Leahy-Tillis Letter*, *supra* note 10, at 1. *See also* 17 U.S.C. § 512(i)(1), (i)(1)(B), (i)(2)(A) (allowing an OSP to benefit from the liability limitations of section 512 only if it “accommodates and does not interfere with standard technical measures; defining “standard technical measures” as technical measures that copyright holders use to identify or protect copyrighted works and that “have been developed pursuant to a broad consensus of copyright owners and service providers in an open, fair, voluntary, multi-industry standards process.”); SECTION 512 REPORT, *supra* note 2, at 66 (stating that “Congress envisioned a system where content owners and ISPs would continue to work together to develop new technologies and best practices for addressing infringement on the internet, rather than creating a static system that locked in place the anti-piracy toolkit of the 1990s.”).

<sup>12</sup>17 U.S.C. § 512(i)(2).

### B. *Technical Measures Have Not Been Broadly Adopted*

Unfortunately, “Congress’ vision of broad, open, cross-industry standards-setting for the creation of standard technical measures has not come to pass” and “few widely-available tools have been created and consistently implemented across the internet ecosystem.”<sup>13</sup> Although some stakeholders have implemented “fingerprinting” and similar technologies to protect and identify copyrighted content, not all OSPs use or accommodate such technologies for a variety of reasons.<sup>14</sup>

In particular, OSPs have a financial disincentive when it comes to copyright protection, attribution, and licensing. The broad liability limitations of section 512 enable OSPs to safely profit from user engagement with even unlicensed content. Were that content properly identified and attributed, some of those profits would go to creators and copyright holders. The OSPs may therefore view attribution- and license-enabling technologies as both increasing costs and reducing revenues. That limits the widespread adoption of powerful content identification technology.

Even when such technology is in use, its implementation is often OSP-specific and limited to a select group of rightsholders.<sup>15</sup> Moreover, the Copyright Office notes that some OSPs block the use of standard web crawling technology to locate infringing material, thereby limiting copyright holders’ ability to protect their works at scale, even though OSPs themselves use web crawling to index content.<sup>16</sup> The Copyright Office also observes that successful fingerprinting depends on cooperation between OSPs and copyright holders, as well as a robust set of fingerprint files of copyrighted material against which to compare content on OSP sites.<sup>17</sup>

### III. **Pex Can Help**

Pex’s services aid copyright holders, OSPs, and OSP users. Copyright holders gain greater control over their content online, including through newfound monetization opportunities. OSPs reduce their risk of copyright infringement and can lawfully provide more content to their subscribers. OSP subscribers—who may also be social media entrepreneurs—can potentially incorporate more copyrighted works lawfully into their own user-generated content for other users to enjoy, without fear of subsequent takedowns. User-generated content creators can also use Pex services to protect their own copyrights in the content they have created. Consequently, our

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<sup>13</sup>SECTION 512 REPORT, *supra* note 2, at 66 n.352, 67.

<sup>14</sup>*See id.* at 42-46, 67, 177-78 & n.947; *Technical Measure NOI*, *supra* note 4, at 72,639.

<sup>15</sup>*See* SECTION 512 REPORT, *supra* note 2, at 42-46, 67 (surveying technologies and stating that “more than twenty years after passage of the DMCA, although some individual OSPs have deployed DMCA+ systems that are primarily open to larger content owners, not a single technology has been designated a ‘standard technical measure’” and “few widely-available tools have been created and consistently implemented across the internet ecosystem”); Justin Sanders, *YouTube’s Content ID is Great Copyright Protection But Not for Those Who Need it Most (Which is Most of Us)*, CREATIVEFUTURE, Aug. 14, 2019 (discussing YouTube’s refusal to make Content ID available to smaller copyright holders), <https://www.creativefuture.org/youtube-content-id/>. *See also* SECTION 512 REPORT, *supra*, at 179 (stating that “[t]he Office believes that one of the goals of section 512(i) and STMs is to develop big tools for small creators.”).

<sup>16</sup>*See* SECTION 512 REPORT, *supra* note 2, at 177 n.946.

<sup>17</sup>*See id.* at 178.

services benefit anyone who would like to lawfully license, disseminate, access, or use copyrighted content online.

We offer two main services: Discovery and Attribution Engine.

Discovery. Since its founding in 2014, Pex has refined its core technology so copyright holders can find their audio or video content on more than 40 digital platforms. This enables them to prevent losses from unauthorized use.

Most other services provide copyright holders a search bar to enter keywords they believe will lead to all unauthorized uses. But millions of uploads of a copyright holder's song or film will not use the title of the work.

Our Discovery service leverages Pex's fingerprinting technology for quicker, more accurate results. Advanced search capabilities and digital rights management tools show rightsholders where their content exists across the world's social media and user-generated content platforms, such as Facebook, Twitter, YouTube, Apple Podcasts, Instagram, Dailymotion, Giphy, SoundCloud, Spotify Podcasts, and Twitch. In addition to identifying where the content is, Discovery lets copyright holders know how much of their content is being used and what parts. Rightsholders can then request removal of the content or allow it to remain and decide whether to seek compensation.

Attribution Engine. In 2019, we designed a mechanism that enables copyright holders and OSPs to enter into a license agreement the moment an OSP subscriber uploads copyrighted content to the online service.

Attribution Engine allows copyright holders to register their content with us at no cost to them. Subject to a conflict resolution system to resolve ownership disputes and inconsistencies in data, we incorporate the metadata into our asset registry of millions of copyrighted movies, television shows, videos, sound recordings (including composition information), podcasts, and images. Once registered, copyright holders set policies—such as “block,” “license freely,” or “monetize”—for what they want to happen when a match is detected.

If an OSP uses our services, our software creates a fingerprint hash of user-generated content as it is being uploaded and compares it to the data in our registry, all within five seconds. If the user-generated content matches an entry in our registry, the OSP receives information about the copyright holder and the copyright holder's policies before the OSP makes the content available.

For example, if a user uploads a video that contains a piece of a copyrighted song in the registry, the Attribution Engine will identify the content, look up the rightsholders, notify the OSP of every copyright holder of the sound recording and composition, and provide the rightsholders' policy for the song. The OSP can then instantly begin compensating the copyright holder or prevent the upload depending on the policies set by the rightsholder.

To address any disagreements, Pex incorporates a dispute resolution process at no cost to the copyright holder, the OSP, or the user. When Attribution Engine informs an OSP that a copyright holder wishes to prevent upload of a piece of user-generated content, the user may

dispute that the content use would infringe copyright, arguing for example that it constitutes a fair use. The copyright holder and the user can then agree to have the claim sent to an expert identified by organizations such as the World Intellectual Property Organization for human review.

The expert provides a non-binding advisory opinion of whether a court is likely to find the use infringing. Although the copyright holder or the user is free to ignore the advisory opinion and seek judicial or other resolution of the dispute, the advisory opinion will give parties a sense of whether they are likely to prevail, helping them make a cost-benefit analysis of whether to continue the dispute outside of Pex's system.

Attribution Engine also empowers platforms, especially those that are just starting out and are growing businesses, to have Pex distribute any royalty payments to all rightsholders globally.

For no additional charge, Pex also covers up to \$50 million of any damages and legal fees if an OSP fails to qualify for the safe harbors in section 512 of the U.S. Copyright Act or the E.U. Copyright Directive as a result of relying on Pex's Attribution Engine. Pex will expand this indemnification to new and important markets over time. Thus, this process doesn't just protect copyright holders' content and increase their revenue opportunities. It also creates an affordable way for new and small OSPs to lawfully provide their users with content while reducing the OSPs' litigation risk.

Take, for example, Pex client [DanceFight](#). DanceFight is an upstart online application that allows users to [upload clips of themselves dancing to popular music](#). Other users then vote on the clips in the spirit of friendly competition. For the application to succeed, DanceFight needs to ensure copyright holders are willing to allow users to include their songs in the uploads. Pex provides an affordable way to do that for DanceFight, which does not have the resources of larger OSPs such as YouTube, TikTok, and Snap. As a result, not only does DanceFight get an affordable way to launch its new application and mitigate its litigation risk, but users get a creative outlet for their dancing, and willing copyright holders generate additional revenue from their songs.

Pex's Discovery and Attribution Engine services show why many arguments against use of technical measures are misguided.

Some opponents claim that technical measures are too difficult and expensive for smaller OSPs to create, falsely insisting that broad use of technical measures would entrench larger OSPs in the marketplace, hindering competition and innovation.<sup>18</sup> To the contrary, third-party providers of technical measures, such as Pex, provide a cost-effective solution that allows small platforms to compete against large OSPs—especially when it comes to content licensing.

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<sup>18</sup>*See id.* 179.

Other opponents claim that technical measures can block non-infringing uses of content and chill speech.<sup>19</sup> Congressional testimony suggests, however, that “false positives” are exceedingly rare,<sup>20</sup> and dispute resolution processes offer additional assurances that all parties’ rights will be respected.

Opponents sometimes express concern that adoption of technical measures could become harmful technology mandates.<sup>21</sup> It is worth noting that Congress was clear that part of the *quid pro quo* for the section 512 safe harbors was for OSPs to “accommodate[] and []not interfere with standard technical measures.”<sup>22</sup> Nonetheless, nothing requires that technical measures be one-size-fits-all.<sup>23</sup> Concerns about specific technology mandates could be further ameliorated if the Copyright Office identifies certain *categories* of technical measures, inventories a variety of technologies that fall under those categories, and indicates that OSPs (or others) can submit additional options for evaluation.

Pex is excited to share with the Copyright Office and stakeholders the technical expertise and marketplace experience it has developed in implementing these types of solutions. Pex therefore expresses its interest to participate in the Copyright Office’s consultations. In the end, broader adoption of technical measures will help copyright holders, OSPs, and users reap the benefits that the online environment has to offer, thereby accomplishing the balance Congress intended with section 512.

#### IV. Responses to Questions 6-8

*Q6. To what extent would the adoption and broad implementation of existing or future technical measures by stakeholders, including online service providers and rightsholders, be likely to assist in addressing the problem of online copyright piracy? What are the obstacles to adopting and broadly implementing such existing or future technical measures? Would the adoption and broad implementation of*

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<sup>19</sup>See *id.* at 44 (discussing claims by advocacy groups that YouTube’s Content ID fingerprinting solution produces false positives and fails to account for fair use.).

<sup>20</sup>See The Role of Private Agreements and Existing Technology in Curbing Online Piracy: Hearing Before the Subcomm. on Intell. Prop. of the S. Comm. on the Judiciary, 116<sup>th</sup> Cong., Written Testimony of Katherine Oyama, at 9 (Dec. 15, 2020) (Oyama Testimony) (indicating that uploaders disputed less than one percent of the Content ID claims made on YouTube from January through June 2020 and that only slightly more than half of those disputes were resolved in the uploaders favor, suggesting an initial takedown error rate of approximately one-half percent, but then resulting in reposting of the content), <https://www.judiciary.senate.gov/imo/media/doc/Oyama%20Testimony.pdf>.

<sup>21</sup>See SECTION 512 REPORT, *supra* note 2, at 176-77 (discussing claims that requiring adoption of technical measures could lead to harmful, one-size-fits all technology mandates).

<sup>22</sup>17 U.S.C. § 512(i)(1)(B).

<sup>23</sup>See SECTION 512 REPORT, *supra* note 2, at 67 n.354 (quoting comments of Vicky Shekler of the Recording Industry of America that “[t]he DMCA standard technical measures doesn’t say it’s one-size-fits-all. It doesn’t say that there can’t be flexibility.”).

*such existing or future technical measures have negative effects? If so, what would be the effects, and who would be affected?*

Adoption and broad implementation of technical measures would greatly benefit copyright holders, OSPs, and users of online services. Copyright holders large and small would be better positioned to protect their content, as well as to license it for OSP subscribers' use. New and smaller OSPs would have an economical way to reduce their risk of copyright liability, as well as to provide more content for their subscribers' authorized use. OSP users would have access to additional content, as well as potentially a greater opportunity to lawfully incorporate that content into content they create on the online services. In addition, they would have a simpler way of protecting their own copyrights in the user-generated content they themselves create.

Pex sees several obstacles to broad adoption and implementation of technical measures.

First, OSPs currently benefit from broad liability protection under section 512's safe harbors even without the development and implementation of additional technical measures, as the Copyright Office observed in its section 512 report.<sup>24</sup> Consequently, OSPs have little incentive to contribute toward the creation or adoption of additional measures.

Second, section 512(i), the provision of the Copyright Act that requires OSPs to accommodate standard technical measures, does not explicitly direct the Copyright Office to preside over a process to identify or create technical measures, or to rule whether existing technical measures or categories of measures meet the definition of a "standard technical measure."

Third, there is a dearth of comprehensive and accurate databases of copyright ownership, license, and "fingerprint" information against which to compare user-generated content for purposes of protecting and licensing content at the time of upload.<sup>25</sup>

Pex sees no negative effects from the adoption and broad implementation of technical measures.

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<sup>24</sup>*See id.*, at 66 n.352, 95 n.501 (citing comment that "[t]he fact that hosting platforms are reaping huge profits from the sale of ads placed on infringing works while insulated from liability for such activities by safe harbor protections has provided a strong financial disincentive for these service providers to participate in the 'open, fair, voluntary, multi-industry standards process' called for in section DMCA 512(i)(2)(A)"; stating that "[a]lthough section 512(i) premises eligibility for the safe harbors on two different OSP obligations—the obligation to adopt and implement a repeat infringer policy, and the obligation to allow and not interfere with standard technical measures—the second of these two has had little real-world impact on the availability of the section 512 safe harbors.").

<sup>25</sup>*Cf. id.* at 178 (stating that "[t]he effectiveness and efficiency of this technology to address online infringement depends on improving the data that feeds into filtering/fingerprinting systems. The quality of the data, as well as the affordability of the technology, rests on creator involvement and cooperation throughout the process. As content filtering technology inherently relies upon reference files and data provided by rightsholders, 'the technology cannot meet its full potential' unless 'copyright owners are prepared to deliver reference files and ownership data to service providers' and 'are prepared to actively manage that data (e.g., by resolving conflicts in ownership data).'" (quoting comments of SoundCloud).

Some opponents claim that technical measures are too difficult and expensive for smaller OSPs to create and that broad use of technical measures would entrench larger OSPs in the marketplace, hindering competition and innovation.<sup>26</sup> This ignores that third-party providers of technical measures, such as Pex, provide a cost-effective solution.

Other opponents fear that technical measures can block non-infringing uses of content and chill speech.<sup>27</sup> Congressional testimony suggests that “false positives” are exceedingly rare.<sup>28</sup> Moreover, dispute resolution processes like the one Pex has implemented (described in Part III, above) can provide additional assurances that all parties’ rights are respected through a process that scales as a platform grows.

Opponents sometimes express concern that adoption of technical measures could become harmful technology mandates.<sup>29</sup> It is worth noting, however, that Congress was clear that part of the *quid pro quo* for the section 512 safe harbors was for OSPs to “accommodate[] and []not interfere with standard technical measures.”<sup>30</sup> Nonetheless, concerns about specific technology mandates could be ameliorated if the Copyright Office identifies certain *categories* of technical measures, inventories and evaluates a variety of technologies that fall under those categories, and indicates that OSPs (or others) can submit additional options for evaluation.

*Q7. Is there a role for government to play in identifying, developing, cataloging, or communicating about existing or future technical measures for identifying or protecting copyrighted works online? Can the government facilitate the adoption or implementation of technical measures, and if so, how? Are there technical measures or other standards used to protect copyrighted works online of which the government should be aware when implementing statutory or regulatory provisions, such as requirements for procurement, grants, or required data inventories?*

The government certainly has a role to play in identifying, developing, cataloging, or communicating about technical measures.

First, the government can play a pivotal role in flagging issues. For example, the Copyright Office’s section 512 study and the Federal Register notice that led to this proceeding (prompted

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<sup>26</sup>*See id.* at 179.

<sup>27</sup>*See id.* at 44 (discussing claims by advocacy groups that YouTube’s Content ID fingerprinting solution produces false positives and fails to account for fair use.).

<sup>28</sup>*See Oyama Testimony, supra* note 20, at 9 (indicating that uploaders disputed less than one percent of the Content ID claims made on YouTube from January through June 2020 and that only slightly more than half of those disputes were resolved in the uploaders favor, suggesting an initial takedown error rate of approximately one-half percent, but then resulting in reposting of the content).

<sup>29</sup>*See* SECTION 512 REPORT, *supra* note 2, at 176-77 (discussing claims that requiring adoption of technical measures could lead to harmful, one-size-fits all technology mandates).

<sup>30</sup>17 U.S.C. § 512(i)(1)(B).

by the letter from Senators Leahy and Tillis) are helping inventory *the status quo* and focus attention on the need for technical measures.

Second, the Copyright Office plays a beneficial convening role—as it is doing by convening these consultations—to explore and publicize the availability of existing technical measures or to prompt creation of additional options. This can also help ensure that a panoply of products meet certain minimum criteria, benefit a variety of stakeholders, and incentivize OSPs to use such products (if they do not develop their own) to meet any obligations under section 512. Importantly, a particular technological solution need not be unanimously approved or work for all stakeholders to qualify as a standard technical measure, as the Copyright Office has observed.<sup>31</sup>

Third, should these issue-flagging and convening efforts not sufficiently spur additional voluntary efforts, the Copyright Office and Congress may need to take regulatory or legislative action. This will presumably be a topic of discussion in the Copyright Office’s “forthcoming notice of inquiry” on the interpretation of section 512(i) and the statutory definition and identification of STMs.<sup>32</sup> As the Copyright Office has pointed out, “while Congress intended to incentivize cooperation between OSPs and rightsholders, cooperation cannot be the only answer; voluntary initiatives certainly have their place, but experience shows that they are no substitute for balanced legislation.”<sup>33</sup> Indeed, it may be that the current language of section 512, when combined with a variety of current technological and market factors, provides large OSPs too much immunity and thus too little incentive to help develop and implement technological measures. In addition, as the Copyright Office also explained in the section 512 report:

If the language of section 512(i) has restricted or discouraged the use of STMs, then Congress may want to amend the provision to broaden the language so as to avoid any perceived requirement that measures must be achieved only by the consensus of every industry involved in the digital ecosystem. Congress may also wish to provide the Copyright Office with regulatory authority to oversee the development of STMs.<sup>34</sup>

*Q8. Please identify any other pertinent issues not referenced above that the Copyright Office should consider in these consultations.*

Broad adoption of technical measures could also spawn a variety of applications and services. Better identification of copyrighted works, for example, might help create more accurate commercial databases of ownership and license rights. That, in turn, might improve copyright protection, registration, licensing, recordation, and dispute resolution, or facilitate services such as

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<sup>31</sup>See SECTION 512 REPORT, *supra* note 2, at 177 (stating that “the Copyright Office does not read the language of section 512(i) to require consensus from all stakeholders across every industry to meet the statutory requirements of a STM. Section 512(i) requires only ‘broad’ consensus.”).

<sup>32</sup>See *Technical Measures NOI*, *supra* note 4, at 72,639.

<sup>33</sup>SECTION 512 REPORT, *supra* note 2, at 2.

<sup>34</sup>*Id.* at 179. See also DMCA HOUSE REPORT, PART 2, *supra* note 8, at 61 (stating that standard technical measures “could be developed both in recognized open standards bodies or in ad hoc groups, as long as the process used is open, fair, voluntary, and multi-industry and the measures developed otherwise conform to the requirements of the definition of standard technical measures set forth in new subsection (h)(2).”).

copyright “title insurance.” The same technologies can also help non-copyright related efforts by the private sector and internet safety groups to identify and moderate unlawful and harmful behavior online, remove associated content, and assist authorities in law enforcement efforts.

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Pex thanks the Copyright Office for the opportunity to file this submission and stands ready to answer any questions or provide technical expertise around content identification and rights management. We look forward to continued cooperation and working together toward a system that benefits all parties involved in this process.