A Low-Cost Digital Licensing Platform for Photographs: Documentation for a Prototype

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The licensing platform for photographs described here builds on over two years of work by the Stanford Law School Policy Lab Copyright Licensing Practicum. In 2014, in “Improving Copyright Information Management: An Investigation of Options and Areas for Further Research” (March 2014), the first practicum team described the need for automated systems to facilitate markets for access to copyrighted works. In 2015, the Practicum homed in on the issues that image creators face in licensing and marketing their work in an online marketplace, and submitted a response to a U.S. Copyright Office Notice of Inquiry for Copyright Protection for Certain Visual Works (Federal Register, v. 80, n. 79, 4/24/15). The response, “Low-Cost Licensing of Photographs in the Digital Age: Options and a Proof of Concept,” addressed legal, technical, and policy issues related to developing a frictionless, online licensing site for photographs and other images.

The project was commissioned in 2014 by former Register of Copyrights Maria Pallante who, with then General Counsel Jacqueline Charlesworth, followed its progress closely from the start, with both taking time from their business travels to the West Coast to meet and confer directly with students in the Practicum. Others in the Copyright Office helped students think through how such a platform might leverage Copyright Office technology and infrastructure to serve the public interest. No policy project could hope for a finer client.

This third phase of the Practicum builds on, and owes a significant debt to, the research conducted by past teams. Ariel Green, Sean Harb, Peter Holm, Kingdar Prussien, Kasonni Scales, and Juliana Yee laid the foundation with their comprehensive research and creative thinking on issues related to registration and recordation.

Marta Belcher, Danielle Benecke, Shuk Ting (Candy) Cheng, Amit Gressel, Andrew Grimm, Greg Keenan, Elizabeth Lowell, Sarah Salomon, Nick Sidney, Olga Susini, Antoni Terra, Jessica Verran-Lingard, Brian Weissenberg, and Kevin Xu enlarged and strengthened the foundation through their thorough examination of the myriad issues related to an online licensing platform. The late nights spent drawing flowcharts on white boards have finally come to fruition with this prototype: https://copyright-license.herokuapp.com/.

A second, heartfelt, expression of gratitude goes to PLUS Co-Founder, President, and CEO Jeff Sedlik. A highly regarded professional photographer as well as a global image database entrepreneur, Jeff generously guided the present project at crucial phases. His insights as a professional photographer helped us to better understand our stakeholder findings from surveys and interviews with photographers. His wealth of knowledge about licensing protocols around the world helped extend our vision and goals for the licensing platform. And his deep understanding of the technical aspects of building an Internet platform helped to frame questions for our coding team at Code the Change. Jeff’s patience with our questions, thorough responses, and unstinting generosity with his time and knowledge, have kept us out of the brambles and smoothed the path to development.

On our journey to developing the platform, Margaret Hagan and Chris Reed were staunch guides. As an attorney and legal design scholar who oversees Stanford’s Legal Design Lab (http://www.legaltechdesign.com/), Margaret enthusiastically guided us through the elements of the graphical user interface that will will be needed to animate the platform’s website. She also tested and provided feedback on the prompts that facilitate license exchanges on the platform. Her feedback complemented that of copyright attorney and photographer Chris Reed, author of Workflow: Copyright for Photographers (http://www.copyrightworkflow.com/), who reined in our legalese and helped us understand photographers’ needs. Together, their expertise helped to position the platform for everyday use.

The existence of the platform is due to the efforts of Code the Change, a volunteer team of Stanford University undergraduate computer scientists. Andrew Suciu and his team translated our academic thinking into the code that now grounds the proof of concept platform. Chris Yeh then led a second team to refining the platform for use in a 0.9 near-Beta model, which the team documents in this white paper. Busy with
their own studies and classes, the Code the Change team still found time to energize this project with their passion and enthusiasm for digital solutions that improve daily life for photographers. Thanks to their expertise, the prototype is now ready to enter the working world of the Internet where we now look forward to beta testing and developing the project’s central idea for new licensing technologies for photographers and image creators.
# Table of Contents

Executive Summary.................................................................................................................. 1
I. Problem Statement.................................................................................................................. 4
II. Goal Statement..................................................................................................................... 4
III. Rationale in Developing the Online Platform........................................................................ 5
IV. Prototype Platform 0.9......................................................................................................... 6
   IV.1. Overview & Description.................................................................................................. 6
      IV.1.A. Photographer’s Prompts (Uploaders)................................................................. 7
      IV.1.B. Search Filters (Customers/Downloaders)......................................................... 9
      IV.1.C. What Is Not In the Design Protocol................................................................. 10
   IV.2. Coding Design................................................................................................................ 12
      IV.2.A. Design.................................................................................................................. 12
      IV.2.B. Technical Coding Choices............................................................................... 15
      IV.2.C. What We Left Out............................................................................................. 16
V. Version 2.0.............................................................................................................................. 16
   V.1. Licensing Scheme........................................................................................................... 17
   V.2. Advanced Customer Interface...................................................................................... 18
   V.3. Coding 2.0..................................................................................................................... 20
VI. Next Steps............................................................................................................................ 20
VI. Conclusion........................................................................................................................... 20
Appendices.................................................................................................................................. 22
   Glossary of Terms.............................................................................................................. 22
   Mandatory Terms of Use................................................................................................. 22
Executive Summary

There is no greater challenge to creative production in the digital age than enabling frictionless licenses between users and owners of copyrighted works. A particularly compelling illustration of this challenge is the millions of copyrighted photographs and other visual works that are uploaded to the Internet daily without permission from copyright owners. In democratizing the creation and distribution of visual works, digital technologies have also transformed the landscape that effectively defines creators’ rights and consumers’ ability to track ownership information.

For many photographs uploaded to the Internet, ownership information is fragmented or entirely unavailable. Copyright registration is of limited help—photographers face special barriers to registration because of the sheer volume of the works they produce, and they also have few incentives to record ownership transfers. Even for registered photographs and illustrations, metadata and security mechanisms are often missing or, if present, are regularly stripped out by Internet Service Providers, instantaneously making many photographs orphan works. Moreover, even if a work is registered and ownership transfers are duly recorded, there is often no ready mechanism for potential users to connect a work they wish to use with the corresponding copyright registration. Without ownership information, licensing of photographs does not occur. Potential licensees cannot contact the owner for the right to use the work and, therefore, must risk an infringement lawsuit or simply walk away. Moreover, many users may be unfamiliar with copyright rules and procedures, and make use of images without appreciating the risk. These impediments to licensing undermine one of copyright’s central goals—to encourage production of creative works by granting authors a bundle of exclusive rights from which they can profit, and to encourage the use of creative works by offering users easy, if not costless, means for exploiting those rights.

Although the digital age offers tools and opportunities to meet these challenges, digital solutions are often tailored to the needs of high-value users, such as commercial publishers, and print and broadcast media. There are fewer, low-cost solutions available to “long-tail” users, such as small businesses, website and mobile application developers and designers, bloggers, and community organizations. For long-tail users, the limited licensing options and high transaction costs of existing solutions act as barriers to lawful, licensed uses of photographs or other images. Bloggers, for example, are a vibrant portion of Internet communities, yet many encounter problems in finding, and obtaining rights owners’ permission to use, copyrighted works. Bloggers complain that they often lack access to the original image owner, and many independent bloggers find that commercially available products are too costly for their limited budgets. A system that enables quick and seamless connection between image owners and users would be a powerful tool for bloggers and, indeed, all long-tail users interested in licensing photographs for personal and professional use.

In a Notice of Inquiry for Copyright Protection for Certain Visual Works (Federal Register, v. 80, n. 79, 4/24/15), the Copyright Office solicited responses and potential digital solutions to documenting ownership rights for photographs and other visual works. The Stanford Law School
Law and Policy Lab Copyright Licensing Practicum (the “Practicum”) responded to that call with a prototype designed to support the needs of both photographers and long-tail users. Working closely with the Copyright Office, the Practicum developed a user-friendly, low-cost, scalable, and automated online prototype platform to license photographs. As the Copyright Office aligns its own practices and initiatives to facilitate online licensing in the photographic marketplace, this prototype serves as a starting point to promote private-sector solutions and partnerships that facilitate frictionless licensing by making copyright information more transparent and searchable online and by automating and simplifying the licenses themselves.

Although photographers and other image creators have exclusive rights over their creative works, digital technologies have overtaken the ability to license, distribute, and monitor those works. This online licensing tool for photographs is one step towards helping photographers and other image creators exercise control over their work. This paper documents the underlying rationale for the platform, with particular attention to photographers’ and users’ needs, legal licensing protocols, and coding choices. It also lays out next steps in developing the platform into a robust and efficient online licensing system for photographs and visual images. Finally, this report describes how the licensing platform might grow into a nonprofit venture that connects users to collections housed in libraries and museums, as well as directly to photographers.

The prototype online platform enables:

- **Potential licensees** to quickly find accurate and up-to-date information about a photograph’s creator and copyright owner, and any pertinent licensing terms; and
- **Licensors** to efficiently license their photographic works in low-friction, low-cost transactions with licensees.

The platform embodies qualitative stakeholder analysis, complemented by extensive examination of relevant law and existing and potential solutions, tools, and technologies. Section IV describes a licensing framework system that leverages the PLUS Registry for Photographs (http://www.plus.org/) solutions, as well as the operations of existing industry stakeholders and service providers. As existing technology is poised to move rapidly towards possible solutions, we further propose that the Copyright Office develop an API that helps to encourage private-sector solutions.

**The Prototype:** [https://copyright-license.herokuapp.com/](https://copyright-license.herokuapp.com/)

In the spirit of furthering private-sector solutions, this paper documents a low-cost, scalable, and automated online licensing system that serves both the creators and the users of digital photography. This basic prototype was made possible through our partnership with Code the Change, a Stanford University team of coders led by Andrew Suciu and Chris Yeh. The prototype is designed to interface with the PLUS API and Registry as a means for ensuring more accurate registration data across global networks. The prototype highlights the importance of a Copyright Office API to empower innovation by third party developers.
This online platform:

- Simplifies license and payment processing through an online marketplace portal for photographs. This platform enables photographers—amateur or professional—to license their works directly to end users. Payments are processed by a third party vendor, Stripe, which, at the time of this writing, offers the lowest transaction fees in the industry and the most powerful API tools.
- Generates customized licenses and pricing schemes through an automated questionnaire that supports variable inputs.
- Relies on industry empirics and best practices to develop an automated, customizable license that integrates easily with other platforms.

We refer to the current version of the licensing platform as “Version 0.9” to reflect the fact that a few third-party technical specifications stand between it and an operational prototype. These third-party specifications, when completed, will be integrated into the platform and, among other functions, will enable the platform to:

- demonstrate that an API can enable third parties to directly access and link registration information to their databases;
- adopt a standardized data format for embedding copyright and license data in photographs via the PLUS Registry;
- encourage the adoption of image tracking mechanisms, including embedded metadata and watermarks, or enhanced image recognition, building on tools within the PLUS Registry.
I. Problem Statement

Although photographers and other image creators enjoy exclusive rights to reproduce and otherwise exploit their creative works, digital technologies have overtaken their ability to license, distribute, and monitor the use of their works. Existing digital solutions tend to focus on the needs of high-value, commercial creators and consumers. There are fewer low-cost solutions available to "long-tail" consumers such as small businesses, website and mobile application developers and designers, bloggers, or community organizations. For long-tail users, the limited licensing options and high transaction costs of existing solutions act as barriers to lawful, licensed uses of photographs or other images. Bloggers, for example, are a vibrant portion of Internet communities, yet many encounter problems in locating copyright owners and obtaining the rights owner’s permission to use copyrighted works. Bloggers complain that they often lack ready access to identifying information about the image owner, and many independent bloggers find that commercially available products are too costly for their limited budgets. A system that enables quick, seamless connection between image owners and users would be a powerful tool for bloggers and, indeed, all long-tail consumers interested in licensing photographs for personal and professional use.¹

II. Goal Statement

The prototype consists of an online, scalable, low-cost, automated platform for licensing photographs. The platform marketplace enables photographers—amateur or professional—to license their works directly to end-user consumers. Providing this user-friendly online platform to the public should (1) reduce copyright infringement, (2) foster monetization of photographs through simple licensing processes, (3) alleviate the orphan works problem, and (4) increase social awareness of the importance of copyright licensing for images.

Thus, in the spirit of furthering private-sector solutions, we document the development of a low-cost, scalable, relatively trustworthy, and automated online licensing system that serves long-tail creators and consumers of digital photography.² In response to the Copyright Office’s expressed interest in fostering online marketplaces with simplified and automated licensing and payment mechanisms, our prototype further highlights the importance of a Copyright Office API that will empower third party developers to facilitate licensing mechanisms between creators and consumers.

¹ The issue of trust hangs like a cloud over licenses between image owners and users. Unless users can be confident that their licensor actually owns the copyright in the image that they wish to license, they will usually be unwilling to enter into a license that not only commits them to pay for the use, but may make them unwitting infringers as well. Without trust, consumers lose their willingness to rely upon a particular service to meet their needs. For this project, we addressed the issue of trust through mandatory terms of use in which the photographer declares that he or she is “legally entitled to upload the photo to this platform and to grant licenses for it.” Although this warranty should be acceptable in the case of long-tail, modestly priced uses, high-value textbooks would require more rigorous title guarantees.

² We have designed the prototype to interface with the PLUS API and Registry as a means of ensuring more accurate registration data across global networks.
III. Rationale in Developing the Online Platform

Our review of existing online licensing/image tools\(^3\) indicated that solutions to the challenges that photographers and their customers face are often tailored to the needs of high-value users, such as commercial publishers, and print and broadcast media, and typically neglect low-value, “long-tail” users, such as small businesses, website and mobile application developers and designers, bloggers, and community organizations, as well as strictly internal corporate uses of images.\(^4\) For long-tail users, the typical complexity of licensing options and high transaction costs of these existing platforms discourage the lawful, licensed uses of photographs and other images. Instead, these users turn to (1) Google Images, (2) blogs or other websites (e.g., DeviantArt, Flickr, Tumblr), or (3) social media (e.g., Instagram, Facebook, Pinterest, Twitter) to obtain images. However, these websites do not offer licensing mechanisms and sometimes metadata has been stripped from the photographs they offer, making it virtually impossible to identify the author or copyright owner.

Our project has focused on bloggers and corporate event planners as two major types of long-tail users who may benefit from an online licensing platform. With these long-tail users in mind, we developed the platform to generate a new revenue stream for amateur and professional photographers.

Through surveys and in-depth interviews with bloggers in the U.S., India, and Israel, we learned that the blogging community often believes that attribution to the creator or owner of an image is all that is legally required for use.\(^5\) Many bloggers complain that they encounter problems in finding owners and obtaining their permission to use copyrighted works. They say that they often lack access to the original image owner, and many find that commercially available products that can help track ownership rights are too costly for their limited budgets. A system that enables quick and seamless connection between image owners and users would be a powerful tool for bloggers, as well as help to secure rights and enforcement mechanisms for photographers and graphic artists.

To understand long-tail uses among corporate users, we focused on event planners. Our survey of this group revealed a few trends in the way they use photographs. We learned that while some bigger corporate event planners have their own photographers, smaller event planners use third-party images available online. Such use by smaller event planners was divided between internal and external uses. Some corporate event planners make free internal use of photographs under a Creative Commons license. Others suggested that they pay little attention to a license because internal uses are unlikely to be detected by owners of the photograph. Only when they make an external use—including print use for circulation, or electronic use for distribution—do event planners seek a license. They may buy these one-time use licenses from stock image banks, without

\(^3\) Corbis, Getty Images, iStock, and Shutterstock.

\(^4\) “Internal” means using pictures in, e.g., presentations, brochures or newsletters for employees, closed internal networks, social media or websites that are available only to employees.

\(^5\) Moreover, some bloggers who are more aware of U.S. copyright law may make a strategic decision not to expend a great deal of energy to find the image owner in order to ask permission (proactive policy); instead, these bloggers share the image without permission and remove it if they receive complaints (reactive policy). In the end, most bloggers are “small fry” and the chances of being sued for copyright infringement are low. This puts the burden of tracking proprietary images on the content creator and/or copyright owner.
paying ongoing royalty fees, but then make multiple uses of the photograph for different events. With these facts to guide us, we developed license terms that would enable price discrimination depending on (1) number of employees in the licensee’s organization\(^6\) and (2) internal or external use.

Finally, photographers—both amateur and professional—want to be sure that the time and effort they invest in uploading their photos to our platform and concluding licenses will be more than repaid by compensation from licensed uses. Therefore, the rationale behind the prototype design of the photographers’ side is simplicity, standardization, and scalability when uploading images over comprehensiveness and flexibility.

### IV. Prototype Platform 0.9

**IV.1. Overview & Description**

**The Tool:** The online platform enables photographers to disseminate their photographs, subject to constrained license terms. It enables photographers to tag copyright and ownership information and to track use of their photographs online. For consumers, it enables long-tail customers to search a library of photographs for preferred images tagged with owner and copyright information. With owner identification—and connection—thus accomplished, photographers and customers can engage in a relatively frictionless licensing transaction.

**Goal Statement:** The licensing platform is self-sustaining and user-friendly. It is easily understood by amateur photographers and long-tail, casual, individual consumers who may not be familiar with complex licensing terms. The platform is free of charge for both photographers and consumers, without any third party profit participation, other than a nominal processing per-transaction fee charged by the platform’s online payment service provider.\(^7\) While the platform could be used by anyone, its current version is designed to enable photographers to license their works to lower-value individual customers who would otherwise not seek a license.

**How It Works:** The platform features a simple set of prompts that guide photographers in coding each work they upload, and which then enable them to attach individual licensing terms and search tags. Each photograph uploaded becomes part of the online photo library. A customer can then use keywords to search the library of pictures to find relevant photos. In addition to keyword search filters, the customer can filter photographs based on certain licensing terms. After finding the right picture, the customer can then agree to mandatory terms of use and purchase a license for the image. The payment gateway Stripe is incorporated in the platform as a tool to process user payments.

The full version of the platform’s mandatory terms of use is included as an Appendix at the end of

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\(^6\) This fact may be important for the photographer to know, as he or she may want to offer different rates for individuals, small and medium enterprises, and large corporations.

\(^7\) The prototype employs Stripe, which, at this time, is the lowest-cost/highest-value provider. The platform will be designed to accommodate shifts to a lower-cost/higher-value provider should one emerge.
this document. Users can also check a summary of these terms explained in plain language (see the Appendix, i.e., “The 10 Commandments”). Such mandatory terms of use, attached to all licenses, grant worldwide, perpetual, non-exclusive, non-transferrable, and non-sublicensable rights to the licensee. Moreover, while customers may reproduce, distribute, and display licensed photos, they are not permitted to remove metadata or use the pictures—or their context—to depict a model or the photographer in an inappropriate or undesirable manner.

**Licensing Issues with the Platform:** The main issue with formulating a licensing system for the online platform is striking the right balance between flexibility and scalability. High-value, commercial customers will likely contact the photographer directly to negotiate a detailed license to use a photograph; such users negotiate terms closely, even word by word. This type of a licensing agreement has high flexibility but minimal scalability because highly customized licenses do not translate easily to other transactions. However, a highly customized agreement would not likely be feasible for low-value customers who not only may not have the financial resources to negotiate expensive, tailored licenses, but who likely do not have the need for individually crafted licenses.

At the other end of the spectrum is a licensing option that could offer maximum scalability but minimal flexibility, i.e. a one-size-fits-all, take-it-or-leave-it license. While this type of license may make sense for low-value customers, such licenses may result in lost opportunities for photographers who are prevented from negotiating individual terms with customers.

Version 1.0 of the platform will offer constrained flexibility. Although we researched various licensing terms that could provide more flexibility, we realized that adding more flexibility causes the platform to become more complicated to use. In the latter part of this documentation on Version 2.0, we include certain features which could be introduced in the future which would introduce more flexibility into the tool and licensing terms. Also, while this tool attempts to minimize aborted transactions, they are sometimes inevitable. Although at this stage in development, the website does not yet provide a means of direct contact between the photographer and consumer in the event of an aborted transaction, we have earmarked this feature for Version 2.0.

**Corporate Event Planners:** In this initial stage, the platform focuses on the needs of bloggers and corporate planners as two “long-tail users” who may benefit from a frictionless licensing mechanism, and who will, in turn, generate a revenue stream for photographers.

**IV.1.A. Photographer’s Prompts (Uploaders)**

The goal of the prompts is to concisely guide a photographer in uploading photos to the platform and attaching preferred license terms. As the prompts are the interface between photographers and the platform, it was important to make it extremely simple and intuitive. While we discussed a variety of questions that could potentially be asked, we narrowed the scope to the questions that we deemed absolutely necessary. The logic was to prioritize and limit the prompts in order to achieve a higher compliance and participation rate from potential photographers.

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8 An aborted transaction is a transaction in process that terminates abnormally. These types of transactions can occur due to coding error or user-generated conflicting commands.
The first prompts guide the photographer in uploading images. Indeed, in requesting that photos
be uploaded before asking any licensing questions the tool should foster the photographer’s
immediate engagement with the site. The photographer then provides metadata regarding the
image by tagging existing checkboxes (e.g., nature, sports, landscape) and listing keywords that
describe the photo (e.g., bicycle, love, marriage, etc.). As an incentive, the photographer learns
that the more information provided, the easier the search for the photo, and the higher its likely
use. The goal is to receive as much information as possible from the photographer without
burdening his or her engagement with the platform.

The prompts then focus on attribution and integrity (what some might call the “moral rights” of
the photographer). The photographer has three options regarding credit: “Image Already Includes
Credit (e.g., watermark, embedded credit),” “Text Near the Image (e.g., credit text must be posted
on the user’s website),” or “No Credit (explicitly do not want credit).” The first option is designed
to encourage the photographer to provide images containing embedded credit metadata. The
second option—“Text Near the Image”—means that, upon posting the photo to a website or other
venue, the user of the photo must attach credit to the image. The tool will not automatically,
digitally edit images to add credit and attribution for the photographer. In choosing the option of
“Text Near the Image,” the photographer must include the appropriate text when coding the
photograph into the platform, and then rely on the user of the image to attach the relevant text.
Finally, the website also offers a “No Credit” option, as some photographers may not want credit
for certain images.

This latter set of prompts also addresses integrity, i.e., “May the user edit the image, and, if so, in
what way?” For simplicity’s sake, we presented three options in this part—“Yes (edit as desired),”
“Minor edits (e.g., crop, color shift, resize),” and “No (‘as is’ use only).” These options are self-
explanatory, and are designed to give the photographer artistic control over the image in a
simplified manner.

The third, and final, set of prompts describes the licensing options that are available to the
photographer. Here, photographers first choose whether to charge for their images. In charging for
the use of an image, the photographer must set a licensing pricing scheme. The first step in this
process establishes a base price for the photographer’s images. At this point, the system will also
offer a default “market place” price (i.e., average price for images on the platform) that the
photographer could then change by moving a slider. Once the base price is set, the platform
automatically generates prices for the other available licensing options. There are six licensing
options that are determined according to the combination of two main variables—type of user (one
person, 2-50 people, 51+ people) and type of use (internal or external). The first variable—type of
user—is self-explanatory and uses the number of employees (or volunteers) in the organization as
a proxy for its size and activity. The second variable—type of uses—focuses on the user’s
perspective, i.e., internal and external. Internal use is for “in-house” uses, e.g., a presentation to
employees or the executive board. External use is for any use outside of the legal entity, e.g., in
association with a product or service that is offered by the organization to third parties, or in order
to promote such a product or service.

From the pricing perspective, once the photographer chooses the desired base price (or simply
approves the default price), the system automatically generates the default prices for the six
different licensing options (e.g., external use for one person, internal use for 51+ people, external use for 2-50 people, etc.). Using a slider bar aligned with each option, the photographer may then change the price for each of these different licensing options as desired. Finally, it should be clear that the licensing platform does not charge anything for services; the only cost associated with the site is a commission to the payment service provider for its services in facilitating the licensing transaction between the customer and the photographer.

From a policy perspective, our choices reflect a tension between enabling more options and control for the photographer on the one hand, and simplicity and high engagement levels on the other. At first, we wanted to enable the photographer to control as many options as possible. The logic was that the more variables made available to the photographer, the easier it is to control the attributes of the different licensing options. More importantly, a high number of variables enable the photographer to price-discriminate more easily and in a more targeted and sophisticated fashion. However, we soon realized that such variables make this initial prototype cumbersome. Hence, we reduced the number of options without jeopardizing some degree of control for the photographer.

Additionally, we thought of ways to reduce ambiguity, i.e., interactions that would not be entirely clear to the photographer and might require additional frustrating clarifications. We considered at length, for example, the differences between commercial and non-commercial uses and definitions regarding the different types of users. After lengthy deliberation, we settled on several proxies that address the different type of users and uses. We allowed three categories of users and two categories of uses that result from six licensing options. Our goal was to weigh photographer autonomy and control over the licensing options, mainly the ability to tailor preference and price-discriminate, against the need to simplify and streamline the process to increase usage and engagement rates from photographers. The result of this two-fold analysis was to give the photographer some leeway to price-discriminate and set different licensing options, but not make the platform too open ended with too many options and variables.

IV.1.B. Search Filters (Customers/Downloaders)

Initially, we visualized the intake page of the platform as including a short survey of photographers and customers, focusing especially on the needs of bloggers and corporate event planners as two representative types of long-tail customers. After conducting stakeholder interviews with bloggers and corporate event planners, however, we found that they viewed the survey as a barrier to entry to the site, interrupting the overall simplicity and user-friendly flow, and they requested an alternative intake and search method that could be completed in just a few clicks. Although shelving the survey did affect the ability to develop more flexible licenses matched to consumers’ needs, we retained some flexibility by integrating search filters. Our research indicated that search filters not only have a positive visual impact on customers, but that customers find filters less time-consuming than a full questionnaire and they appreciate filters as an easy means of maneuvering through the site. Accordingly, the search function of version 0.9 has a sorting feature based on different filters linked to the photographer’s licensing prompts.

The search filters include options to select a specific image category such as “Architecture” or “Sports.” The filters will also include pricing options for “Internal or External” use, under which the customer can locate images licensed only for limited use within an organization, as, for
example, an image used in an internal corporate training event or in a blog accessible only internally within an organization. “External” use indicates some aspect of public display, including use on a public blog. Similarly, if the customer knows in advance that it needs an editable image, it can use the “Editable” search filter to locate only those photographs licensed for editing. These basic filters form the foundation for a prototype that will grow over time into a more robust platform with extended licensing options and search features. For a full description of a next generation Version 2.0, see Section V.

IV.1.C. What Is Not In the Design Protocol

The goal of this Version 0.9 focuses on developing a simple, user-friendly interface, which, in turn, resulted in trade-offs across the design scheme. There were a number of worthy licensing and design components that we postponed in favor of a simple, user-friendly platform that can be upgraded over time with new features, i.e., Version 2.0 (see Section IV). In prioritizing our mission of simplicity and ease of use across versions, we also set aside certain licensing features and categories from the platform.

From a substantive perspective, we balanced simplicity with the basic tools that photographers need to set pricing for standard licenses and set preferences for how their images may be used. To that end, we looked for effective proxies that would enable price discrimination, yet keep the process simple and intuitive for the photographer.

Although we discussed price proxies extensively, we eventually departed from the following factors:

- **Commercial/non-commercial use:** We debated at length whether to adopt “commercial/non-commercial use” as the main price proxy for photographer preference. We settled on “internal/external use distinction” over “commercial/non-commercial use,” as the latter invokes legal definitions with meaning that may not be fully transparent to common users or even to legal professionals. Internal/external use, on the other hand, is more easily understood by customers, and more easily defined in our operating terms.

- **Derivative works and credit line:** Derivative works and credit were included in the pricing variables, which would enable photographers to assign certain values to specific uses, such as developing derivative works or omitting the credit line. Because these terms are ambiguous, we moved them to the preferences section. We discovered, for example, the complications involved in pricing and setting terms for licenses for derivative uses. By building in “Derivative Works” and “Credit” as preference filters, photographers can choose basic licensing preferences for their works without deciding corresponding pricing values or specific licensing terms. Yet customers can still use these filters to search works that can be licensed according to editing and credit preferences.

- **Category of users:** Our prototype users are bloggers and corporate event planners as two groups that are currently less likely to seek copyright licenses for photographs they find on the web. Initially, we developed an intake questionnaire asking each set of these users to answer questions respecting the types of uses they make of photographs they find on the
we planned to cross-reference their answers with the photographers’ preferences and pricing matrix to determine the type of license granted to the user. However, in the interest of simplicity, we did away with these questionnaires and opted for a single, universal license. Any changes in the terms of that license can be negotiated individually between photographers and users.

Our choices emphasize simplicity because users are unlikely to use the system to buy licenses if we erect too many barriers, from search to payment, in the form of questions. The moment we did away with the questionnaires for the two sets of users, we were able to open the system to all long-tail, low-value users, not only bloggers and corporate event planners.

After we did away with user questionnaires, we then contemplated—and eventually rejected—the use of factors in the questionnaires as search filters. Our thinking about the various pricing factors that we ultimately rejected is as follows:

1. **Average number of views the blog attracted in the past six months**: We discussed this as a factor that might help the photographer determine pricing. Although the number of views might give a soft number on the overall popularity of a photograph, we recognized the extent of variables that prevent hard documentation on individual downloads.

2. **Number of employees of the corporate entity**: This could help a photographer set a price for a license according to the approximate number of views that a photograph would receive. Approximate views would reflect the number of employees in the company. In stakeholder conversations with photographers, however, we realized that the extent of visibility inside an organization does not make much difference to photographers. Rather, photographers’ concerns relate to whether the use of the photograph is external (public) or internal to the organization. Thus we decided that internal use could be reflected in a single price point irrespective of the extent of visibility within the organization.

3. **Annual net income of a corporate user**: We considered using net income as a pricing factor to give the photographer an option of using different price points for entities with different scales of business. For instance, a photographer could charge a higher price to a large corporation and a lower price to a small business or startup. In the interest of simplicity, however, we excluded this factor to lower user barriers and better enable seamless transactions.

4. **Print and/or digital format**: We originally included format as a pricing factor for photographers who want to charge different price points for digital and print uses of their photographs. Although this feature may become part of Version 2.0, we set it aside in the interest of simplicity at the prototype phase.

5. **Circulation**: We understand that photographers may wish to adapt licenses according to the number of copies of the photograph that the user wants to make. This feature of the license is inherently part of the internal and external demarcation, which takes circulation into consideration. Thus, if the use is external, the circulation will likely be larger. Moreover, circulation is difficult to calculate for photographs published on the internet.
6. **Duration of use**: We understand that photographers may want to license photographs for fixed durations of time and charge different prices points for different durations. We decided to defer this licensing model to Version 2.0 in an effort to maintain simplicity in the prototype.

7. **Size of image**: Again, we thought the photographer may want to charge different price points based on the size or resolution of the photograph. Our stakeholder interviews with photographers, however, revealed a general lack of concern about licenses adapted according to size or resolution.

8. **Purpose of use of the photograph**: We anticipated situations where photographers wish to prevent or limit use of a photograph in a particularly sensitive context. For example, an animal photographer may not want his photographs to be associated with advertisement for the meat industry or a nature photographer may not want her photographs to be associated with products, companies, or issues associated with environmental degradation. This feature may be included in future versions of the licensing platform, but, for now, would serve as a barrier to entry for the prototype.

**IV.2. Coding Design**

Beginning in Spring 2015, a team of Stanford undergraduate coders from Code the Change, a national nonprofit organization with a Stanford chapter, joined the legal team to develop a prototype of the website according to the licensing specifications from the legal team already well underway. The coding team prioritized a user-friendly platform that demonstrates the use cases for licensing photographs. This section describes the coding team’s design and coding choices and details elements of the prototype’s specification.

**IV.2.A. Design**

The most important design choices focused on four aspects: (1) the overall layout of the website and its various pages, (2) the user interaction of searching and filtering photos, (3) the way in which photos would be displayed on the website, and (4) the design of the user system.

- **Overall layout**: The website is split into five main pages: Home page, About page, License Creation form, Search page, and Purchasing form. Navigation across the website is provided by a header bar at the top of the website. The Home page consists of a search bar and a full-screen background image, in a style similar to the Bing search engine. The About page explains that the website is a working prototype with design and source code managed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License; this page also provides a simple form for users to submit feedback about the website. The license creation form enables photographers to upload their images and set their preferred licensing options. The Search page enables users to see watermarked thumbnails of images that match their searches; it also includes search filters to help users narrow the images to those they may want to license. When a user selects an image from the search page, he or she is directed to the purchasing form, which presents licensing
options to the user and provides a mechanism to purchase the image using a credit card through the Stripe system.

- **Searching and displaying photos:** Upon a search and/or filter by an end user, or customer, the photos are displayed in a tiled format. The figure below displays an example of how photos are displayed using this approach. Currently, we have added a filter for the image category, with filters for price and edit options under development.

![Figure 1: Home Page with Search Bar](image-url)
Figure 2: About Page with Feedback Form

Figure 3: License Creation Page

Figure 4: Search Page
IV.2.B. Technical Coding Choices

The website is built on a Python Flask server with a PostgreSQL database. The server is hosted on Heroku, a free cloud service provided by Salesforce, while the database and image storage are provided by Amazon Web Services (AWS). The front-end is powered by jQuery and Bootstrap components; in particular, the Masonry plugin was used to display the search images in a tiled format, taking into account the size of the displayed objects and collaging them together in an efficient manner. The payment system is linked to and handled by Stripe, and the user system is built with Flask-Login. Our open source code is also publicly available on GitHub. All of these technical choices were made with the following considerations:

- **Scalability**: In the event that the prototype becomes widely used, the service must be easily updated to handle a large number of users. In particular, Heroku and Amazon Web Services provide very simple mechanisms to quickly increase the bandwidth of the website.
- **Cost**: As a team of volunteers, we mainly used services that are free to use for a prototype implementation. Almost all of the tools we relied on are either open-source or entirely free to use, with the exception of the AWS S3 storage platform used to store photos, which provides a free trial for only one year.
- **Easy to learn**: Although some members of the coding team have prior web development experience, the project afforded an opportunity to train newer members in building websites. We chose Flask and Bootstrap, in part, because they are easier to learn for beginning web developers.
IV.2.C. What We Left Out

We left out many desirable features in this beta version of the website, emphasizing basic functionality over comprehensiveness. In the future, we can add more advanced features, including a search filter for price, larger thumbnail previews before a user licenses a photo, and batch-uploading of images.

While we implemented a rudimentary user system in Version 0.9, forthcoming in Version 2.0 should be an enhanced user system that enables consumers to keep track of photos that they have downloaded and both parties to have a complete file of the licenses that they have negotiated. Photographers should be able to set default settings for the upload form. The user system would also enable future integration with the PLUS system developed by Jeff Sedlik. (We are awaiting release of the PLUS API, which is currently in development.) Should the licensing team decide to add an expiration option to the licensing creation form, the system would also include notification to both photographers and consumers about expiring licenses.

The tentative design of the User System is described in more detail below:

- **User System Design:** There are two primary categories of users in the system: licensors of photos and licensees of photos. We will address each of these categories in turn.
  - **Licensors:** The licensors of photographs are the simpler of the categories, as each licensor is treated as an individual without ties to any other licensor. In the current prototype, those that upload photos are intended as discrete entities without overarching structure or affiliation. For example, in designing the user system we chose not to have groups of affiliated licensors. The remaining design choices lie in the ability of licensors to set default preferences for their licenses. These preferences enable a smoother upload process, as licensors can avoid re-entering the same information on each photograph.
  - **Licensees:** The licensees of photographs required interaction between users, and thus a more complex user system was required. There are two categories of licensees: those that are “admins,” and others who act on behalf of an “admins.” Admins are in charge of “groups,” to which they can invite others to join as members. This enables the purchasing of licenses attached to the group, rather than the individual in the setting of a company, for example.

From a coding perspective, the platform reflects the priorities of scalability, cost, and ease of coding. While future versions will reflect more complexity in design, we are confident that our choices thus far enable that growth.

V. Version 2.0

In our goal to provide a simple, user-friendly prototype, we omitted certain useful features that would complicate customers’ interaction with the platform. Thus, we postponed implementation
of some functions and features to a future version of the platform. This section describes features ideal to a Version 2.0, followed by next steps in development in Section VI.

Perhaps most important in developing the features necessary to a robust Version 2.0 is a way to track analytics that document users’ preferred uses. These analytics could aid in developing additional search filters to help users locate images that fit their search criteria, and would also provide photographers with information that helps them adapt their standard licensing preferences to customer needs.

V.1. Licensing Scheme

Search and filter functions for users, include:

- **Search bar on the front page supporting keyword search function.** All the photos that match a particular keyword would appear and be subject to further filtering.
- **Side filter bar includes:** (1) category of pictures, (2) options of editing, (3) a sliding bar of price span, and (4) other features that can be generated automatically from the photos, such as dominant color or black/white scheme, vertical/horizontal of pictures, size of files, etc. The filter function will enable users to narrow the scope of search results efficiently. Users can zoom in on photos for quick review.
- **A separate page for a chosen photo** with detailed information, including created time, photographer, tags, number purchased, and comments from other users.

In support of the search and filter functions, the platform could employ such open source software as ImageMagick to conduct automatic extraction of metadata from photos and information from photographers’ preferred licensing options.

Throughout the process of developing the first version of the Platform, we discussed at length the user search function. The search function was originally conceived in the form of questionnaires for customers where the platform would match information from both sides of photographers’ and customers’ responses. After much discussion, we adopted search filters over information matching to optimize simplicity.

- **Keyword search by photographers’ names.** Customers will be able to search and filter photos based on a specific photographer’s first or last name. If the photographer provides such information in the “credit” or “keywords” fields of the questionnaire, her photos will be displayed to users who search those terms. Without such information in those fields, however, user searches will not locate photos directly linked to any particular photographer. For users, keyword search function increases the precision and efficiency of searches. For photographers, keyword fields can enhance the searchability of their photos.

- **Private user messages to photographers to request an exclusive license.** This function enables users to connect offline with photographers to negotiate exclusive licenses for individual photos. Because such licenses can be complicated to negotiate, we shifted them to an offline, individual format.
- **License price packages adapted according to different license terms.** Licensors will be able to choose (1) between a perpetual license and a license with limited terms; and further, (2) among duration terms of one day, one month, six months or one year. This function increases flexibility of the platform to accommodate purchasers’ different needs and helps to foster price discrimination. Customers seeking to license photos for short periods of time may pay lower prices than those licensing the same photos for a longer term.

- **Photos free of license fees and royalties.** The homepage may display pictures that are free of license fees and royalties to attract users and to promote the platform. The feature can attract new customers and also increase the exposure of photographers who are willing to license certain photos free of fees and royalties.

V.2. Advanced Customer Interface

The following features characterize the user interface:

- **Tags by users to describe pictures.** Tags will be short (fewer than 3 words) descriptions of photos to indicate not only the visual features, characteristics, and objects of photos, but also users’ subjective opinions, feelings and impressions about the photos. This feature collects photographers’ preferred descriptions of their photos as well as consumers’ reactions and suggestions about those photos; these descriptions feed into search analytics to categorize photos across the platform.

- **Ranking photos based on numbers of purchases.** Photos matching a user’s keyword search will be displayed according to frequency analytics in search results. The function enables customers to identify the most popular and recognizable pictures. It also functions as a recommendation for customers who have no idea what kind or style of photos they are looking for.

- **Embedded metadata that enable viewers to locate photos licensed through the Platform.** If viewers like a photo on other websites which has been downloaded and licensed from the Platform, they are able to easily locate the photo on the Platform by clicking the picture. This function attracts potential customers and enables them to easily identify the photos they like.

- **Processing of complaints regarding copyright ownership disputes and takedown procedures.** Despite photographers’ representations respecting their ownership of pictures, the Platform will comply with the notice and takedown procedures prescribed in section 512 of the U.S. Copyright Act (“DMCA”). The Platform will designate an agent to receive and handle notifications of claimed infringement from an alleged copyright owner of a certain picture. A DMCA counter-notification procedure will be designed for photographers.

- **Tutorial page for both photographers and users.** A video or click-through graphic depicting the process of uploading, searching and ordering pictures, as well as main functions of the licensing platform would be educational for photographers and customers.
In terms of user experience, tutorial materials would help photographers and customers understand functions and features so they can intelligently choose license types and terms.

- **Plugin for Chrome/Firefox/Explorer and WordPress.** The function enables photographers to upload photos from other sources to the Platform. A warning on copyright ownership/authorization for photos will accompany the plugin function. The function offers more convenience in uploading photos, thereby encouraging photographers to use the Platform routinely.

- **Default license options for photographers, especially for batch uploads.** The function enables photographers to save their preferred license options and automatically apply the same options to all future photos. The function also makes it easy for photographers to upload a large numbers of photos in batches.

- **Comment boxes.** Photographer and users may offer comments through the “Feedback” portal to describe their experiences with the licensing platform and to suggest new functions. The feature complements an underlying algorithm that collects information that can be used to develop the Platform further.

- **Mobile App for the Platform.** A mobile app will enable photographers to upload photos directly from their smartphones or tablets. It will also enable users to choose photos and conveniently enter into license agreements in just a few steps. With default options in place through the mobile app, we anticipate many photographers and customers will make fuller use of the Platform.

- **Purchase histories and reminder function.** Users will appreciate the ability to review a list of the photos and associated licenses they have purchased in the past. Purchase histories are linked to an automated reminder function to warn customers about impending expirations of licenses. The reminder function also enables users to extend their licenses easily in just one or two clicks. Customers will also have the option of switching from licenses with limited periods to perpetual licenses.

- **API connected to third-party photo registries.** Through a shared API, the platform can connect to or partner with third-party platforms and registries. The test case for this will be a shared API with the PLUS Registry, [http://plus.org/](http://plus.org/), but will later link to such block chain platforms as Ascribe.io or BigchainDB to enable complete histories of licensing records. Such cooperation across platforms and registries enables photographers, users, and third parties to identify image creators, image rights holders, and license types, terms and duration.

- **Mobile-friendly graphic design.** In upgrading the website to include more advanced features, a web graphic designer will also enhance the site’s overall aesthetic with the goal of making it mobile friendly. We envision an open design with large, easily visible icons and menu choices, complemented by a scrolling display of featured photographs. The goal of the graphic design is to present a site that is attractive to professional photographers and their customers, and is as aesthetically pleasing as the photographs it features. This design
vision may inspire future developers to produce efficient mobile applications that enable frictionless licensing through smartphones, androids, and tablets.

V.3. Coding 2.0

Building a robust and secure Version 2.0 with enhanced search and licensing features would entail overhauling the website. At the front end, the re-designed website would build in more complex licensing options and search filters, yet retain the feel of user-friendly simplicity. We plan on incorporating instant search filters, such as those used by Google, where selecting a search filter immediately applies the filter to the current photos. We anticipate revising the “License Creation” and “Purchase” forms to reflect a two-column format, where the left column includes all available options and the right column provides associated examples and explanations of each option. The two-column format would help guide users who have limited knowledge of how to license a photograph. We also foresee modifying the license creation form to enable batch uploading. This would enable photographers to upload hundreds of photos at a time under the umbrella of a single set of licensing terms.

Back-end improvements would enhance the security of the system. The security settings on uploaded photos must be configured so that the full-resolution image is only accessible after a verified purchase. This enhancement would correct loopholes in the website that enable unauthorized access to full-resolution images without first purchasing the image. Another back-end improvement would involve preserving embedded metadata during the process of resizing images. While the current website enables the user to download and resize a photo they’ve licensed, it does not include a mechanism to preserve metadata embedded in the original photo. These enhancements are necessary prerequisites before making the website public.

VI. Next Steps

The core value of the platform described in this report is to connect creators to their audiences, directly and without the market-making intermediaries that not only capture for themselves part of a creative work’s value, but sometimes also deflect signals of consumer preference from their true course. Initially at least, service to this core value has required a focus on modestly valued, long-tail uses of copyrighted works, since the substantial investments made by high-end users such as textbook publishers require the labor-intensive, and consequently costly, services provided by market intermediaries. At this time, off-the-shelf information technologies cannot provide a trusted chain of title to a licensed work thereby necessitating such market intermediaries. In time, however, with the evolution of adjacent technologies and institutions, even high-end uses can be expected to migrate to automated systems that directly connect creators with their audiences.

VI. Conclusion

This platform enters a rapidly developing online marketplace for the exchange of creative works. Through an efficient, user-friendly licensing tool, the platform enables photographers and image creators to manage their exclusive rights to license, distribute, monitor, and reproduce their
creative works. As the Copyright Office aligns its own practices and initiatives to facilitate online licensing in the photographic marketplace, this prototype serves as a starting point to promote private-sector solutions and partnerships that facilitate frictionless licensing by making copyright information more transparent and searchable online. With this documentation for the beta prototype, we invite public comment on how to improve the platform to become a robust licensing mechanism between photographers and those seeking to use their works.
Appendices

Glossary of Terms

Customer / Downloader / Licensee / User: Person or entity who might use the platform to purchase copyright licenses to a photograph available on the platform.

Long-tail users: Type of users whose consumption patterns are sporadic and who make use of photos in isolated instances.

Low-value users: Type of users whose contributions to total sales are minimal.

Photographer / Uploader: Person who uploads his or her own photographs to the platform to make the photos available to users for copyright licensing.

PLUS: The Photo Licensing Universal System—a cooperative, multi-industry initiative—provides a system that clearly defines and categorizes image usage around the world, from granting and acquiring to tracking and managing licenses.

Practicum: Stanford Law School Law and Policy Lab Copyright Licensing Practicum (2013-16) led by Professor Paul Goldstein and Luciana Herman.

Stripe: Payment processing platform which can be integrated into websites without having to register and maintain a merchant account and at minimal processing fee.

Mandatory Terms of Use

1. Summary Terms (“The 10 Commandments”)

1. This platform enables photographers to license their photos to customers directly. All rights granted under the license are worldwide, perpetual, non-exclusive, non-transferrable and non-sublicensable.

2. This platform provides other licensing terms, which shall be agreed upon and complied by licensor and licensee.

3. Customers are allowed to reproduce, distribute and display licensed photos, but not to use them in any way that enables third parties to download, extract or access photos as standalone files.

4. Customers are allowed to edit photos only if and to the extent indicated by photographers.

5. Customers shall attribute only if photographers require it and shall respect photographers’ desired form of attribution, regardless of the editing rights customers may have been granted.

6. Customers shall not remove metadata included in photos.
7. Customers shall select their type of user in good faith and respect the accompanying licensing terms.

8. Customers shall not use photos to depict the model, if any, in a sensitive or inappropriate manner.

9. Photographers shall represent that they are legally entitled to upload their photos to the platform and to grant licenses for those photos, and that any and all third parties’ interests have been cleared (e.g., model release, co-owner, publicity rights).

10. Photographers or customers that provide false or incorrect information on this platform may be legally responsible for those inaccuracies. They agree to indemnify the platform from any and all claims, obligations or costs arising from such conduct.

2. Grant of Rights and Restrictions.

1. Licensor grants to Licensee a perpetual, non-exclusive, non-sublicensable and non-transferable, worldwide right to reproduce, distribute, and display the Licensed Material identified in the invoice, solely to the extent explicitly stated in this Agreement. This right may be exercised by subcontractors of Licensee for preparation of the licensed type of use, provided that such subcontractors agree to abide by the terms of this Agreement.

2. Use of the licensed photo is strictly limited to the medium, placement, and any other restrictions specified by the invoice. Licensee may use the licensed photo in any production process as may be necessary for the intended use specified by the invoice, including as set forth in Section 2.1 above.

3. Upon request of the Licensor, Licensee shall correctly provide the information of the type of user and the type of use based on good faith. Licensor has the right to terminate this Agreement for the licensed work if Licensee fails to provide this information.

4. Licensee may not: (i) make the licensed photo available in any medium accessible by persons other than its authorized users; or (ii) make the licensed photo available in a manner that will enable or invite a third party to download, extract, redistribute or access the licensed photo as a standalone file.

5. The photographer shall be attributed only if he/she requires it and, if so, Licensee shall respect his/her desired form of attribution.

6. Licensee can edit the photo only if and to the extent allowed by Licensor.

7. The licensed photo’s metadata shall not be removed.

8. Licensor declares that he or she is legally entitled to upload the photo to this platform and to grant licenses for it, and that any and all third parties’ interests have been cleared (e.g., model release, co-owner, publicity rights).
9. While efforts have been made to correctly caption the subject matter of, and to provide other information (including metadata) related to, the licensed photo, Licensor does not warrant the accuracy of such information.

10. Pornographic, defamatory or otherwise unlawful use of licensed photo is strictly prohibited, whether directly or in context with other material. Licensee shall also comply with any applicable government regulations and/or industry codes.

11. The licensed photo cannot be used to depict personal endorsement by the model in the photograph (if any) or depict the model in the photograph (if any) in an inappropriate manner.

12. The licensed photo shall not be used contrary to the terms specified in the invoice. Except for the privileges expressly granted to Licensee under this Agreement, Licensor reserves all rights relating to the use of the licensed photo.

13. If the invoice privileges reproduction of the licensed photo on a website, Licensee shall post terms and conditions on its permitted websites that prohibit, republication, retransmission, reproduction or other use of the licensed photo as a stand-alone file.

14. If the invoice privileges use on any social media platform or other third party website, (i) such rights shall be automatically terminated in the event the platform or website seeks to exploit the licensed photo contrary to the terms of this Agreement, and (ii) in such event, upon Licensor’s request, Licensee shall remove any licensed photo from such platform or website.