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Copyright Review Management System (CRMS) – Successfully Collaborating Across Multiple Institutions: Observations from CRMS-World

University of Michigan Copyright Office
Copyright Review Management System

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Abstract

This paper details the experience of the Copyright Review Management System (CRMS), with a focus on the means by which CRMS unifies the work of seventeen partner institutions. The scale of CRMS for systematic copyright determinations is unprecedented. Exploring mechanisms for further expanding institutional collaboration has been one goal of our CRMS-World project.¹ This paper will examine our methods, highlight challenges, and suggest practices that could assist in the development of future CRMS projects at like-minded institutions.

This paper reviews the CRMS process and comes to the following key conclusions:

- The preferred time commitment (% of work week) for CRMS reviewers is roughly 15-25% of their work week. Reviewers working under 15% of their time face greater difficulties reaching proficiency; those working more than 25% of their time tend to exhibit decreasing returns in efficiency.²
- Copyright and procedural training works best when formally administered and monitored from a central location. Misconceptions or gaps in knowledge are more common with decentralized training processes where multiple trainers approach the training differently.
- Training is best administered by a trainer who is also an active reviewer. It is essential to have continuing and up to date practical experience with the review process in order to train other reviewers.
- Immediate and direct feedback is important in developing the knowledge base of a new reviewer. It encourages reviewers to ask more questions and helps reviewers refine their model for thinking about complex copyright questions.
- Reviewers seek information in different ways. An online, searchable reference tool is beneficial for those who prefer to look up an answer individually. A communal email group is beneficial for those who prefer to pose a question publicly. Diverse resources ensure that learning needs are addressed across a spectrum of reviewers.
- Providing easy communication access to experts creates a culture of questioning and thoughtful decision-making, which often produces benefits for the overall review project.

¹ CRMS-World, IMLS National Leadership Grant LG-05-11-0150-11

² Snapshots of reviewer effort were sampled and analyzed at three times in the first two years of the grant period, giving more data on which to base observations (Figure 1).

Introduction

With the generous support of two grants from the Institute of Museum and Library Services (IMLS) and the active collaboration of seventeen academic and research institutions, the CRMS project is a collaborative effort to determine the copyright status of books in HathiTrust and to support public access to the world's literary, scholarly, and scientific heritage. By developing legal, administrative, and technical processes, the University of Michigan and its partners identify public domain books, allowing broader public access to a wealth of scholarly material. We have accomplished this through the implementation of a multi-institutional copyright research process that is consistent, accurate, documented, and reliable.

A challenge of this project is that it depends on the hard work and dedication of librarians and staff from seventeen geographically dispersed institutions in order to execute a large-scale research program. Remote collaboration is a cornerstone of this project; without it, the hundreds of thousands of copyright reviews performed thus far would have been nearly impossible. While the benefits of collaboration are clear, coordination of geographically separated copyright reviewers requires a different approach to management and training in order to ensure consistent results. In detailing and examining the nature of this work we hope to shed light on the methods by which large scale copyright review could be adopted by other libraries in the US and abroad, allowing others to host CRMS-style projects and achieve reliable results.

Observations related to training: Building a successful CRMS review team

Several factors contribute to the development of a successful CRMS reviewer. The most notable influence on productivity and consistency is the amount of time allotted per reviewer from their work week. Other observed but less measurable factors include personal commitment and engagement, reception of feedback, and open communication and community.

Reviewer time commitment

We sampled reviewer performance over three periods in the last year and a half, and grouped them according to time committed to CRMS reviews. The following table shows the average monthly productivity per reviewer during each period:

Average reviews per month by reviewer, based on reviewer time commitment

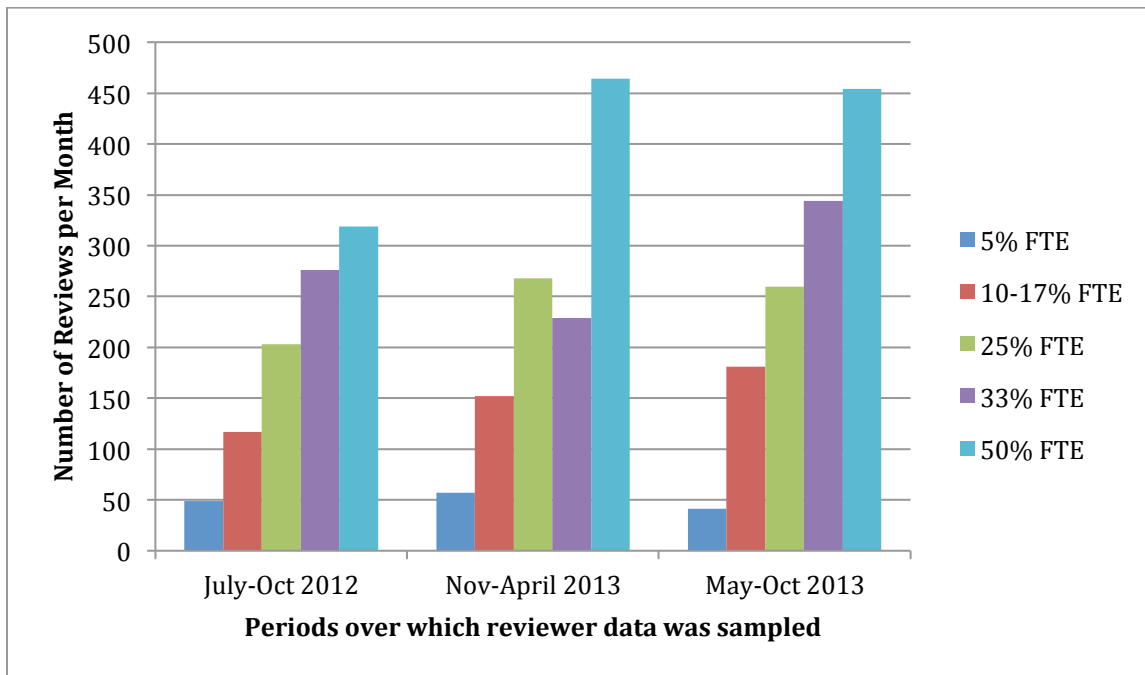


Figure 1 Average productivity per month by percent time commitment

Review productivity tends to be highest for those reviewers who devote between 15% to 25% of their work time, with diminishing productivity returns for those reviewers who commit a greater percentage of their time.³ In designing future expansions of CRMS, we believe that this observation can help institutions understand optimal time commitments for their review teams.

Reviewers contributing less than 15% of their time, on average, were less likely to achieve or maintain a sufficient level of expertise and familiarity with the interface and the review process. This proved to be particularly true for those who contributed 5% or less of their time. They were simply not spending enough time working with the CRMS system to retain the skills necessary to perform reviews efficiently and reliably. This has consequences for reviewer retention, as reviewers in the 5% bracket have been more likely to disengage from the CRMS review process.

Timely feedback

Feedback is very important for reviewer success and growth. In the first year of CRMS-World, there was often a four-month period between a reviewer performing a review and receiving feedback for that review. This was far too long. In most cases, the reviewer had forgotten the review long before receiving feedback. Over the course of CRMS-World, we have worked to

³ We noted on average between 14-16% decline in number of reviews per cost share hour in those dedicating a third or more of their work day to CRMS.

reduce the amount of time between a review and feedback for that review. This is an area we would like to improve further. A future iteration of CRMS might include a feature that would send immediate feedback to reviewers when Experts invalidate their reviews.⁴

Performance evaluation

Certain metrics, such as validation rates and average time spent per review, are useful for benchmarking reviewer performance. At the same time, they can be a source of anxiety for some reviewers. It is important for any project team to be aware of this anxiety and address it. For example, the “average time spent on reviews” measurement is frequently skewed by normal office interruptions (such as phone calls or other office duties) and should be interpreted accordingly. The number of invalidated reviews for a given reviewer should also be considered in context - those reviewers who complete 500 reviews per month will almost always have a higher number of invalidated reviews than those contributing only 20 reviews per month – they should not be discouraged by this fact.

Personal commitment and engagement

As might be expected, reviewers who make an effort to clarify their understanding either by emailing the group list or querying the expert reviewers with specific examples tend to exhibit a better than average validation rate.⁵ Demonstration of personal engagement often coincides with those reviewers who contributed the most for each percentage time commitment bracket. Moreover, reviewers who were hired specifically for the purpose of performing CRMS reviews have exhibited high levels of productivity and well above average contributions to the CRMS process. These reviewers often have dedicated job hours for which they are committed to CRMS reviews only.⁶

⁴ Currently, it is possible to search for Expert feedback within the “Historical Reviews” section of the CRMS interface – Historical Reviews provides a mechanism for reviewers to view their past copyright reviews and final outcomes. Ideally, reviewers would learn from their past review outcomes and adjust their techniques. We have found that reviewers underutilize this tool and can benefit from training on its use. An automated feedback mechanism would be a further improvement.

⁵ The validation rate personal statistic is factored by the number of matching reviews and conflict reviews that are adjudicated as correct by an Expert.

⁶ This observation is consistent with outcomes produced by original CRMS-US project team. CRMS-US was administered as a production unit with clearly designated job hours and managed by technical services departments. These factors appear to have a positive impact on reviewer productivity.

Building community

A sense of community is important in our efforts to build meaningful connections among reviewers, and when possible, allow us to emphasize to reviewers the significance of their endeavor. We instituted bi-annual video conference calls for all reviewers to hear news of the project, develop their skills with topic specific mini-lessons, and have an opportunity for asking questions of the project team. These calls have been received with positive feedback from reviewers and consistently engender renewed communication between reviewers and the project team.

Our ability to meaningfully collaborate and communicate with reviewers has been foremost in our minds when we consider expanding the locus of reviewers and the review process – put simply, meaningful communication is essential to the success of any multi-institution copyright review process. Direct contact with the centralized project team can serve to motivate reviewers and helps to inspire a sense of collegiality amongst all reviewers.

I. Refinement of reviewer training methods

Well-trained reviewers are fundamental to our process. We began CRMS-World with basic assumptions about reviewers and the most effective means of training them. The first year of the grant period allowed us to test those assumptions and refine our approach to reviewer training. In the process, we have concluded that online training is possible and practicable, but with a specific caveat – online training should be performed by a centralized training team, one with a consistent set of methods.

A. Year one: On-site training

The initial group of CRMS-World reviewers visited the University of Michigan for a two-day, intensive training session in May 2012. The session covered the basics of copyright and provided an introduction to the interface and resources used in the CRMS-World project. Virtually all of the initial CRMS-World reviewers took part in this on-site training.⁷ At this stage, the CRMS-World interface was still being finalized, but it was functional enough to give reviewers a chance to practice reviews.

Within a month, the CRMS-World interface was live and the reviewers were invited to begin working according to their cost share time commitments, contributing between 5% and 50% of their work time each week. This initial work was closely examined in order to see if any

⁷ One trainee was given a personalized training session due to time constraints and two others planned to return home and train colleagues who could not attend the session.

unforeseen issues would arise, to determine if the assumptions of the project design were valid, and to identify any needed adjustments. After a few months, and based on these observations, minor adjustments were made to policy and the CRMS decision tree.⁸

From the beginning, reviewers were encouraged to send questions to a group email so that all reviewers could learn from the shared questions. These questions and answers were recorded in the CRMS Project Wiki,⁹ building a body of knowledge that reviewers have access to at any time. We found that some reviewers routinely took advantage of these tools, while others asked few questions or none at all. We also found that the reviewers who actively participated and asked questions by email were those who tended to engage in the project at higher levels.

B. Year one: Decentralized training

In the latter half of the first year, we evaluated the performance of reviewers who had not taken part in the on-site training at the University of Michigan. These reviewers had instead been trained at their respective institutions, by supervisors who had been trained on-site. Even though the University of Michigan project team was monitoring their reviews, these reviewers had been working and learning about the system somewhat independently. While the reviewers had access to the same training documents and CRMS interface as all other CRMS reviewers, their introduction to the interface and the review process varied depending on their local supervisor. After a few months of observation, we found that these variations in training introduced misconceptions that needed to be addressed by the University of Michigan project team.

A decentralized training approach might work when combined with a more robust training program for the trainers. If such a decentralized approach is to succeed, we stress that it must, at minimum, include a requirement that trainers have extensive and thoroughly vetted experience in reviewing. When it comes to mastering the CRMS process, we have found no substitute for actively participating in the review process. Any local institution taking responsibility for training their own reviewers should, therefore, anticipate dedicating a supervisor at 10 hours weekly if they will also be involved in staff training.

C. Year two: Centralized online training

Ultimately, we found the result of local training to be less efficient than an online, centralized training program, one that could train multiple reviewers from several institutions at once and do

⁸ The CRMS-World Decision Tree illustrates the order of operations in the review process and is available at <http://www.lib.umich.edu/imls-national-leadership-grant-crms-world/presentations-and-resources>.

⁹ The CRMS Project Wiki is an internal project resource which allows for a more informal and flexible way to address the inevitable complexities as they arise. It is hosted in a location easily accessible during the review process.

so while ensuring a baseline consistency. A formal, remote training process saved the project team the time and expense of sending a trainer to each partner institution or having additional trainees travel to the University of Michigan for training on-site. To this end, we created online training materials; a practice training interface; and a means for hosting shared-screen lessons, which allow an Expert to watch a trainee’s screen and offer comments and advice in real-time as he or she works.

The CRMS training space (“the sandbox”) is identical to the CRMS production space¹⁰ but entirely separate from it – meaning that reviews made in the sandbox are never exported to Hathitrust and thus have zero impact upon actual rights. The sandbox functions as an interactive training environment allowing trainees to practice independently or during a shared-screen lesson. Sandboxed reviews are a perfect way to demonstrate the actual review process, as the trainees learn nuances of the review process which are more difficult to capture within static documentation. Meanwhile, trainers at the University of Michigan can monitor their performance and provide immediate and directed feedback. The project team also has access to trainee performance statistics, which help in determining when a person is ready to move from the training space into the production environment.

To date, reviewers trained in this manner have quickly attained proficiency and demonstrated an understanding of the complexities around copyright. We believe that the routinized and highly realistic practice provided by the sandbox, combined with immediate feedback from Michigan’s project team, have allowed reviewers to more quickly develop a reliable understanding of the process. To make the centralized online training even more robust, the training program is now supplemented by online videos, which explain how the interface works and provide additional instruction. Finally, the University of Michigan project team continues to follow up on new reviewers and offer additional shared-screen sessions as needed.

II. Expert reviewers

As part of the CRMS review process, two different reviewers look at each candidate volume independently. If their results match, their shared judgment is accepted. If their results do not match, there is a “Conflict” and an “Expert” evaluates both independent reviews and adjudicates between them. An Expert in CRMS is a reviewer with substantial review work experience who has demonstrated a high level of knowledge of CRMS processes. He or she, after receiving additional training, is qualified to examine and adjudicate mismatches in the copyright determinations of their fellow reviewers.

¹⁰ The CRMS production space is CRMS’s review interface, where reviewers can actively examine a candidate volume and make a copyright determination.

Expert review is a critical mechanism for catching and correcting incorrect reviews. These occur sporadically, with no appreciable difference in frequency between reviewers; we find that they are usually the result of natural human error. For example, if a reviewer, through a typo, enters an incorrect author death date, it is highly improbable that a second reviewer would make a mistake in precisely the same manner. The CRMS double review and Expert adjudication process is designed to catch errors and prevent them from being given effect. The difference caused by the mistaken review will send that review to the conflict queue, and the subsequent adjudication by an Expert reviewer can easily identify and remedy this kind of error.

Qualities of a successful Expert reviewer

Over the course of the grant there have been five Experts. The project team has attempted to identify qualities that define an effective and successful Expert in order to select candidates for this role. At minimum, Expert reviewers should be able to address approximately 30 conflict reviews each day (accounting for two hours of their daily routine) while also dedicating time to answer general questions from reviewers, monitor reviewer statistics, and participate in additional administrative duties as needed. Below are some relevant additional characteristics of our Expert reviewers:

- University of Michigan 1 – Program Manager - 100% time effort, JD, MLS, fundamental grounding in the copyright law surrounding the scope of the project.
- University of Michigan 2 – Technical Services Librarian - 30% time effort, good track record in CRMS-US for over a year, detail oriented, conservative, pre-emptively asks questions, rewrote the decision tree to make sense for herself and then shared it with the project as a whole.
- University of Michigan 3 – UM Copyright Office Special Project Librarian - 25% time effort, in-depth knowledge of CRMS copyright process, high accuracy, asks lots of questions, rewrote the training materials.
- Princeton 1 – Interlibrary Loan/Document Delivery Librarian - 50% time effort, highly conservative tendencies, higher than the average accuracy, asked many questions to clarify her knowledge, keeps detailed spreadsheets. Performed reviews for at least seven months before training as expert.
- Johns Hopkins 1 - Content Management Librarian - 50% time effort, higher than average accuracy, over 500 reviews done monthly, consistent and high quality work.

Number of Expert reviewers

When the CRMS-World project was originally designed, there was no reason to expect that multiple Experts would be needed to maintain the conflict queue. In fact, the CRMS-World workflow was designed to improve on CRMS-US and keep conflicts at a manageable level. For

this reason, the program manager initially took sole responsibility for Expert adjudication. The program manager had a legal background and was responsible for responding to most questions about the review process. He closely monitored the reviews and every conflict during the initial phase of the project.

As the project progressed, the volume of conflicts was higher than expected and eventually the workload became too large for one person to manage. We have found that an individual Expert reviewer can look at approximately 200 conflicts a day if working at top speed and doing nothing else. With approximately 130 new conflicts being generated each day, the project team recognized that an alternative was necessary. In the process of developing that alternative, we have found that, in managing the work of about forty reviewers, a CRMS system should feature a minimum of three Expert reviewers.

Ideally, a CRMS system of similar scale to CRMS-World would involve four trained Experts, a number which provides a margin of safety in the event of staffing changes. Multiple Experts help to distribute the substantial Expert review workload and also provide important backup in case of staff turnover. A CRMS project which features few Experts is very vulnerable to the departure of those Experts because so much of the CRMS process depends on a steady Expert review workflow, loss of Experts would be a serious blow to any CRMS system.

Changing definitions of a conflict

At the beginning of the CRMS-World project, a conflict was triggered either by a disagreement in the rights status or a disagreement in the reasons for reaching that status. Here, two reviewers might have identified a book as being in copyright but arrived at this conclusion in ways that didn't precisely match. Their judgments both agreed that the work was copyrighted, but the system still treated it as a conflict requiring an Expert review.

This realization led us to a policy change regarding conflicts, one which has saved substantial Expert review time. CRMS no longer requires an Expert to adjudicate in cases where both reviewers have agreed that a candidate volume should be kept closed, even if each reviewer had a different reason for that judgment. The core reason for this policy change is that the end result is still the same: no change to the rights status of the work and the volume remains closed. For practical purposes, we have taken the stance that an Expert adjudication is not necessary, with the recognition that a closed work can be re-reviewed at some later date.

III. Security

Access to in-copyright scans is essential for reviewers and Experts to do their work efficiently. Given this special access, security for any CRMS project must be a priority. Rigorous security measures in place to protect access to the CRMS review interface and to regulate authorized access to potentially in-copyright book scans.

Maintenance of security authorization levels and monitoring access to the scans requires the participation of a number of IT staff and continued vigilance by the project team. In addition to an authorization chain for granting access, it is important to communicate the significance of local security measures to any participating institutions. Since adequate security is a baseline requirement for any CRMS-like project, we currently recommend the following practices:

- The institution should be a member of HathiTrust.
- It is important to designate an appropriate administrator to recommend and supervise reviewers.
- The institution must meet basic security requirements in terms of system access, dedicated work terminals, and a secure environment. Publicly accessible workstations are not acceptable for working on CRMS reviews. Ideally a reviewer's workstation will be located in a secured area of the library and dedicated to the use of one person or, in the case of shared workstations, a small number of library staff.
- To use the CRMS interface, reviewers are required to login with an individual username, unique password, and from only one specified IP address. Access is permitted only from that IP address using that combination of username and password. Access is not permitted by remote desktop login or by laptop computer.
- Security precautions should be taken by local computer administrators. At minimum, workstations should be updated with security patches, a firewall should be maintained, and reviewer computers should employ a locking screensaver.
- Participating reviewers must sign a formal Letter of Understanding with the CRMS project team, one that outlines the security-related responsibilities of the Reviewer.

In contemplating the expansion of CRMS, we would like to develop a more streamlined IT support channel that would help securing access for new trainees proceed more quickly and efficiently. Again, because security is a fundamental requirement of any CRMS project, it should be an early consideration for any institution hoping to take on this type of work.

Conclusion

This paper is meant to provide an understanding of CRMS practices to date. We continue to evaluate our methods and other possible approaches, always with the goal of greater copyright determinacy for library collections. We recognize that the training materials we have developed so far (videos, online documentation, and the sandbox) meet the needs of the current project, but additional resources might allow us to provide support for a larger number of reviewers in the future.¹¹ We hope that our experiences with reviewer management and training, along with our insights into Expert Review and the importance of security to CRMS projects, will assist interested institutions as they contemplate similar work. Finally, we are very open to communicating our experience with interested members of the library community – we hope this paper will serve as an invitation to draw on the experience and expertise of our staff as this effort continues.

¹¹ We have considered additional ideas, including MOOC-style training, automated features prompting Experts to intervene when a reviewer's statistics drop below certain levels, and online assessment tools to monitor a reviewer's understanding of the CRMS process.

Appendix A: Project Resources (Training Resources as of December 2013)

This is a compilation of the publicly available training resources developed for on-site training, asynchronous long-distance training, and for reviewers to reference as needed.

White Papers and Studies¹²

CRMS-World Legal Analysis and Resulting Workflow. Bobby Glushko, February 20, 2012.

Search Strategies for Finding British Commonwealth Author Death Dates: UM CRMS Grant. The Reference Staff of the Humanities and Social Sciences Division, Library of Congress. Prepared for the University of Michigan Library Staff, December 7, 2011.

Project Resources

CRMS-World Online Training 01 - Getting Started

CRMS-World Online Training 02 - The Review Interface

CRMS-World Online Training 03 - Understanding the Decision Tree

CRMS-World Dataflow

CRMS-World Decision Tree

CRMS-World Decision Tree Help Documentation

Training Videos

Tutorial - Credited Inserts

https://lib.mivideo.it.umich.edu/media/Tutorial+1+-+Credited+Frontispiece/1_1hrkm8s2

Tutorial - Editor Introductions

https://lib.mivideo.it.umich.edu/media/Tutorial+2+-+Editor+Introductions/1_voogtdaz

Tutorial - Dealing with Inserts

https://lib.mivideo.it.umich.edu/media/Tutorial+3+-+Dealing+with+Inserts/1_ba42sx0q

Tutorial - Death Date Resources

https://lib.mivideo.it.umich.edu/media/Tutorial+4+-+Death+Date+Resources/1_5w0lqbyx

Tutorial - When to Mark UND

https://lib.mivideo.it.umich.edu/media/Tutorial+5+-+When+to+use+UND/1_vtem198s

¹² All white papers and project resources are publicly accessible from the CRMS home page at: <http://www.lib.umich.edu/imls-national-leadership-grant-crms-world/presentations-and-resources>