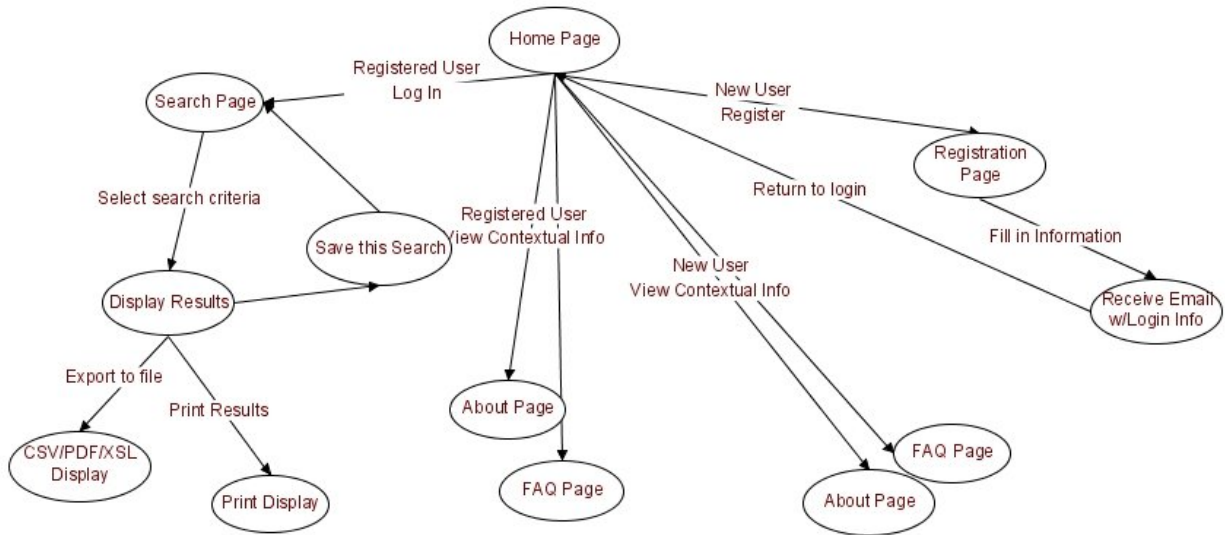


# Documentation for Loi Prototype

## Conceptual Model



## System Scope

Our system is being created in reaction to the impending Copyright Royalty Board Ruling (CRBR), for small, locally-based or non-profit radio stations who stream online. In particular we have focused on the radio stations whose data streaming is hosted by ibiblio.org. The CRBR is anticipated to require stations to report on which users are streaming which files and when, in order to collect on any royalties that are owed to artists or publishing companies. The primary function of our system is to create an easy-to-use graphic interface for managing streaming-server log files, and a way to easily generate reports.

## Note on Naming

We've decided to name our system Loi.

Loi Krathong is a festival celebrated annually throughout Thailand. It involves building small rafts with candles and incense and floating them out into a river. Loi means "to float" and the image of candles in a river is meant to remind us that we are trying to illuminate streams, in this case web streams of audio data. Meeting government

requirements for reporting of listenership may sound dull, but we intend to bring Loi Krathong into it.

Coincidentally, some people use "LOI" as an abbreviation for "laughing On the Inside." This should be a happy activity. :)

## **The Users of the System**

### **Scope/definition of user group**

The type of radio station that we envision using this system are small, non-profit or locally run stations, such as the stations currently hosted at ibiblio. 99% of the radio station users will also be the "webmaster", or subordinate of the person acting in that capacity.

### **Physical characteristics**

Age: 20s to 50s -- adults but not seniors

Perceptual abilities, e.g., perceptual handicaps: none, but tool must be Section 508 compliant since it will be used by publicly-funded groups.

Motor skills and physical disabilities: Section 508 compliant.

### **Knowledge and experience**

Level of education, reading level: College graduates, possibly advanced degrees.

We don't believe that the job necessarily would require a degree, but that the types of people who are in the field tend to be well educated. Statistically, we can only base this on our interaction with the staff at the ibiblio-hosted radio stations, who are all college graduates.

Native language: English- again, because our target group is based on ibiblio-hosted radio stations. These stations are all located within the U.S.

Knowledge of particular (domain-specific) terminology: these users probably aren't familiar with a system that functions in this capacity, or with the terminology associated

with legal compliance. This is partly because the legal terms are still being created, and the whole concept of tracking that Loi attempts to address is brand new.

### **Computer/IT experience or knowledge**

Computer literacy: Users will range from skilled to expert.

Level of experience with similar systems: We don't anticipate any previous experience, because Loi will be a new kind of system; however, experience with search engines or databases with an advanced search interface would be relevant.

Level of experience with other systems: Ranging from skilled to expert.

Level of experience with the task: novice, at least initially.

### **Psychological characteristics**

Attitudes: Idealistic, eager to help the station, and to put in the necessary work to deal with the system. At the same time, to a certain extent view technology as a black box, and don't want to deal with being "do-it-yourselfers." Looking for a fully developed, robust tool with a good interface.

Motivation to use the system: legal and institutional compulsion. It's possible that they will feel somewhat resentful about generating these reports, and therefore

resentful of using the system. We hope to counter this by making the interface as easy to use and attractive as possible. (Including a pretty logo.)

### **Personas: primary, secondary, others**

Primary persona: Emma



Age: 29  
Height: 5'3  
BA Degree in communications from UNC.  
Single  
Full-time employee

Emma is in charge of the web presence for WUNC. She worked for 3 years at a publishing firm in NYC as an editor. From there she moved to a web startup, also in NYC. She was primarily responsible for content and copyediting content provided by others on the firm's website, but because the CMS used by the startup was unfamiliar to most of the editors and contributors, she became the point person for website problems. She taught herself enough about the CMS and the hosting provider's systems to be able to troubleshoot problems. She even tried running Linux once, but had problems with wireless and gave up.

Emma moved to WUNC two years ago as the webmaster. At WUNC Emma has a lot of control over new initiatives, organization of the site, look-and-feel, etc. But she is restrained by existing functionality that must be maintained, and by WUNC's relationship to the national organizations, NPR, PRI, and APM (American Public Media).

Emma has enough responsibilities that she's considering bringing on board another person, and is concerned that new requirements for reporting of web-based listenership will be unmanageable. The issue is especially difficult because it likely cannot be delegated to a new person or separate entity.

Candid Quotes:

"It's so awesome to have a job where I... well... my alarm clock is set to turn on NPR in the morning, y'know?"

"In my dream world bandwidth is free and people from St. Paul write in to thank us for our web streams."

#### Secondary Persona: Kay



Age: 32

Height: 5'9"

BS Mechanical Engineering from NCSU

Married with 2yr-old daughter

Volunteer

Kay is a systems guy who does it all for WZZZ community radio, which has a total staff of 5. He's doing IT, website, and desktop computer help for all the staff. Kay has a day job in RTP and manages the systems at WZZZ for fun. He typically puts in 4 hours a week, but that varies widely depending on his availability and level of interest in current projects. He's also a ham radio operator. He loves to play with technology, but he has a lot of demands on his time and has little interest in the law, anything that looks like accounting, or anything else that doesn't look like it's directly supporting WZZZ. If there were a tool that would allow Kay to meet reporting requirements with less than 5 minutes of effort in per month, Kay would likely use it, but too much intervention or too much work in setting up the system would likely cause Kay to tell WZZZ that they need to find someone else to handle the job. With an extremely limited budget, it's not clear that WZZZ would be able to handle that, which might make them alter programming. Since Joe is already contemplating cutting back on commitments so as to have more time with his young daughter, cutting ties with WZZZ is a distinct possibility if too much more management load is handed to him.

#### Candid Quotes:

"I enjoy helping out the station, but it's just a hobby, and I have a lot on my plate. . . they really need to hire someone to help out with this stuff."



Secondary Persona: Joe

Age: 19

Height: 6'0"

Undergrad History major at Wake Forest

Intern with WCPE

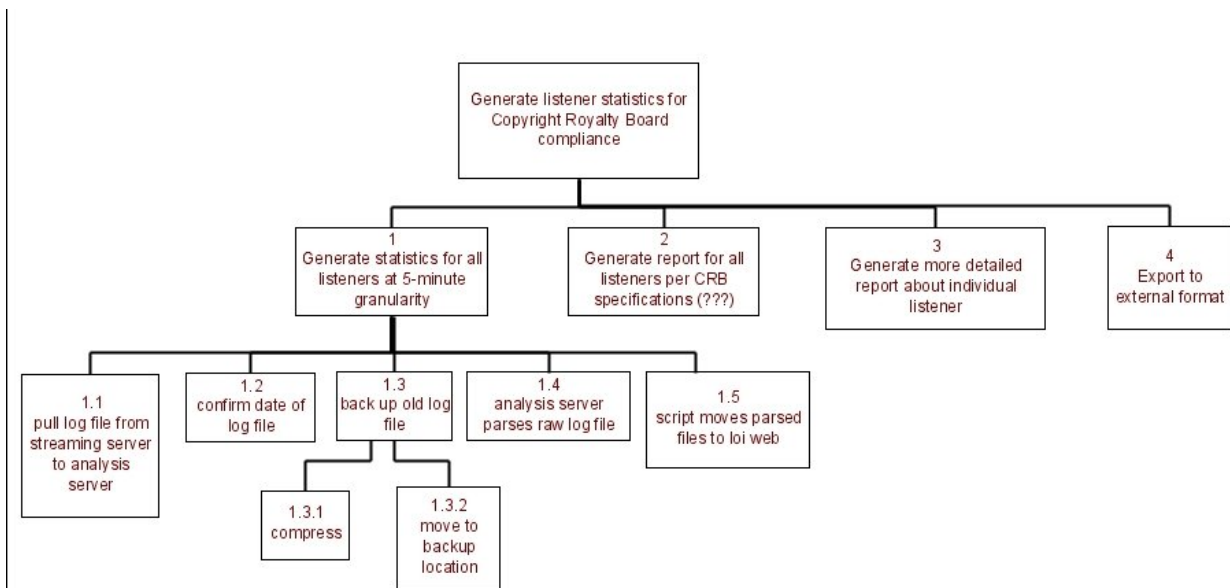
Joe is a music lover first and foremost. He applied for an internship at WCPE because he'd been listening to it via the web for two years before coming to college in NC at Wake Forest. Joe does everything from make coffee to shaking the toner cartridge in the office printer to generating reports based on listener feedback emails. Joe's superiors have assumed that he's tech-savvy because he's a bright college student, but in reality Joe is rather apprehensive about using new technologies. He is comfortable with Yahoo! mail and with MS Word on Windows XP, but does not venture out of that comfort zone unless explicitly asked to do so. Joe's superiors have tasked him with finding out what tools are available for reporting web listenership.

Candid Quotes:

"Sure, I text and use facebook, but I'm not, like, a programmer or anything."

## **The Task Being Supported by the System**

### **Task Overview**



(1) above will not be documented as an essential use case since all the responsibilities are system responsibilities and there is no user interaction. (1) is included in the diagram above for completeness.

## Essential Use Case: Generate report for all listeners per CRB specifications

USER INTENT	SYSTEM RESPONSIBILITY
	Request identification
Provide identification	
	Validate user identification
	Offer search options
Select Preset "CRB Report"	
	Search parsed data/compile results
	Display search results
View results/print results.	

Scenario: Generate a standard CRB report.

Emma walks into her office, sits down her purse and coffee, and wakes up her computer. She notes on her calendar that today is the day she is supposed to generate a standard CRB report, so she opens Loi, which prompts her for her username and password. Once she has logged in, she is immediately presented with a search interface that has several saved searches. Loi came with a "Standard CRB report" search in this area, but it did not exactly meet the needs of the station, so a few months ago Emma made a new search and saved it. She now chooses that saved search. Loi takes just over two minutes to complete her search, so she opens her email and begins reading. Having finished checking her email, Emma comes back to Loi to find a search results screen that offers the options of saving the results and printing the results. Emma chooses the "save report to disk" option, whereupon she is prompted to either display or download a file called "saved-data.txt" (a plain text file). Having done this, she now chooses the "print" option, and she is presented with her standard system print dialog, where she chooses the office printer.

## Essential Use Case: Generate more detailed report about individual listener

USER INTENT	SYSTEM RESPONSIBILITY
	Request identification
Provide identification	
	Validate user identification
	Offer search options
Enter IP address	
	Search parsed data/compile results
	Display search results
View results/print results.	

Scenario: Generate more detailed report about individual listener.

Emma sits down at her computer and opens Loi. Although Loi is running on a remote server, it provides a local graphical interface which responds quickly to her input. The quick and clear response is important because Emma is worried: there will be a staff meeting later that afternoon, and the director has requested that she pull all information from Loi on a certain IP that is believed to be connected with abuse that the station is investigating.. Loi's minimalist, lovely interface pops up, prompting Emma for her username and password. She enters the required information. Loi accepts her information and proceeds to the search page, where it presents a search menu consisting of several boxes that can accept multiple

parameters. Emma tabs down to the IP address box and pastes the IP from the email the director sent her. The search will encompass the last 3 months, which is as far back as the Loi system has data; Loi warns her that she is searching the full date range and offers to narrow the range for her. She submits her query without narrowing the range, and Loi begins the search. Loi immediately places a moving icon on the screen that estimates the wait time, so Emma switches over to her open email inbox as it searches. After about thirty seconds, Loi presents results with an above-the-fold summary at the top. It offers options to save to the desktop, to print the summary, or to print the full results. Emma clicks save first, then proceeds to print the report. She doesn't want to risk losing any data. She also knows that the director and others at the meeting are likely to request a modified search, and she would rather start with the broadest, most complete search than spend time making multiple searches. The printer finishes printing out the 15 page report, and Emma gathers up the pages and staples them together.

## Essential Use Case: Export to an external format

USER INTENT	SYSTEM RESPONSIBILITY
	Request identification
Provide identification	
	Validate user identification
	Offer search options
Select Preset "CRB Report"	
	Search parsed data/compile results
	Display search results
View results	
Export results to external format (CSV)	
	Convert results to CSV file
	Offer CSV file for download
Save CSV file locally	

Scenario: take search results and export them to standard formats

Emma sits down at her desk after a lunch meeting with the manager, who wanted her to share a CRB Report with a coworker. The Coworker wanted to use the report in an Excel

spreadsheet, so Emma will have to export the report. Emma returns to Loi, which she had used earlier to generate a standard report. The results screen is still up, and it shows the option of exporting to several formats. Next to each format is a short description of what that format is used for. One of the options is "Comma-separated Values (.csv)" and is for use with spreadsheets. Emma chooses this option and is presented with a standard system dialogue for opening or saving downloaded files. She chooses to save the file to her Desktop.

## **General description of task characteristics**

### **The frequency or timing of the task**

#### **How frequently do users perform the task?**

As the Copyright Royalty Board ruling has not yet been handed down, we're not yet sure what the requirements will be. An educated guess is that it will be similar to tracking financial records in case of being audited by the IRS- the reports will be generated and filed on a regular basis, possibly monthly or quarterly.

#### **What are the time constraints on the task?**

Time constraints involved would include the constraints on the individual users, i.e. if they needed the report for a particular time, as well as system storage space limits. If the system can only keep three months worth of raw log files, for example, then Loi must be used within three months of the date of interest.

### **The complexity and difficulty of the task**

#### **How complex is the task? How difficult is the task?**

The task is comparatively simple, involving a handful of clicks, and selecting search parameters. The task is easy, because the system will not allow that many options, and hence there are less opportunities for things to go wrong.

#### **How structured is the task?**

Highly structured.

### **The relationship of the task to other user tasks**

#### **Is system use mandatory or discretionary?**

Once adopted in a given radio station environment, system use will most likely be mandatory, since there are no other options for accomplishing the tracking and report generation tasks. Loi assumes only one user per station, however. If there are multiple users within a single station, Loi has no way of partitioning them from each other; each will know everything that the other knows.

### **How important is the task?**

The task is extremely important, as being out of compliance with the Copyright Royalty Board ruling could lead to serious financial repercussions.

### **What is the relationship between the users and the data?**

The data is a physical representation of how many listeners in the world are making use of the radio station's services. This could potentially be a somewhat personal relationship, since the nature of the radio station is non-profit, and the people who work in that type of situation are likely to feel a strong connection with what they do.

## **The physical environment of task performance**

### **Where is the task performed?**

The task will be performed in the station headquarters, most likely in the office/personal workspace of the user.

### **What other tools does the user have?**

None. Most public radio stations do not have software for doing this kind of analysis at this time.

## **The social, organizational and cultural environment of the task**

### **Relationships with other people in the workplace or on the work team**

Emma is entrusted with the managing the station's website and streaming, but anyone on her team should be able to use Loi, so Loi should not require significant knowledge outside the domain of Public Radio.

### **The organizational culture and its effects**

A CRB ruling requiring radio stations to track web listeners would likely have effects on public radio that we cannot predict in advance, since it would represent such a fundamental and radical shift in the rules of the game for internet streaming of radio. Consequently, it's even harder to guess what the impact of using Loi would be.

### **National or ethnic cultural effects**

The CRB is an American institution, so the motivation for Loi is currently national in scope. However, a ruling from the CRB requiring tracking of web listenership would likely be followed by similar rules in Canada and other nations.

## Planning for learning and breakdowns

### What training will be provided? How is the task learned?

Several forms of training can be offered for Loi. We plan to provide walkthrough documents with screenshots, one walkthrough per use case. We would also like to provide unobtrusive hints and suggestions at each step while Emma is using Loi, with larger hint bubbles providing guidance on the first use.

### What happens when things go wrong?

If the raw log files cannot be located, inform the user. Offer the option to browse for files. If the log files cannot be opened, inform the user of the permissions error. Offer the permissions and location of the files.

If the machine with Loi installed crashes, ideally the log files are stored elsewhere and won't be impacted, but the radio station will be unable to generate their statistics until a replacement is installed.

If the person who normally uses Loi is out sick, another person should be able to step in with at most a 10-minute delay in production of statistics.

## Interface Design Decisions

1.) **Decision:** Question and Answer style interface for all areas of the system. This is achieved by breaking the functions of the site into small pieces (by having them each on their own page) instead of offering all available options at once. This way, a user is only presented with the information that they need.

**Evidence:** We based this decision off of our experience with current best-design practices, and mimicking successful sites such as google.com, as well as the articles *Dialog styles: question and answer* by Deborah Mayhew and ***Traditional dialogue design applied to modern user interfaces (Communications of the ACM, issue 33)*** by Jakob Nielsen.

**Rationale:** As Mayhew recommends, the small pieces effectively ask a user questions (i.e. 'Are you a new user, or do you already have an account?') The answer here is yes or no; and this information will determine what options the system will offer the user next. We felt that this was the simplest and most straightforward way to organize the task flow.

2.) **Decision:** User Login/logout link available in same location on every page.

**Evidence:** In "Evolution Trumps Usability Guidelines" (User Interface Engineering, 2005) Jared Spool points out people are used to seeing certain elements in certain places. The article "Combining Eye Tracking and Conventional Techniques for Indications of User-Adaptability" by Ekaterini Tzanidou, Marian Petre, Shailey Minocha, and Andrew Grayson (published in Human-Computer Interaction-INTERACT 2005 (SpringerLink) ), an eye-tracking study was reported. The study resulted in the researchers making this recommendation, "This study should encourage designers to aim for consistency not only within a website but also consistency across websites."

**Rationale:** The idea of element consistency across all pages tallies with our common experience as users of web-based applications. It makes sense, and in our opinion is easier to use. This way, a user can easily tell at glance whether they are still logged in, and are able to logout.

3.) **Decision:** Simplify the interface as much as possible

**Evidence:** We referred to an article by Jean Tillman from *Digital Web Magazine*, "User Interface Design for Web Applications" (2003) as a general guide to confirm our decisions in terms of which pages to have, and how to best simplify the landing page, as well as another article from the same magazine, "11 Ways to Improve Landing Pages" by Michael Nguyen (2005.)

**Rationale:** This ties in with our decision to break the interface into small pieces, but we feel is important in its own rite. At the top level, we have only four links from the landing page. Login, register, about, and frequently asked questions. The most important thing about the landing page itself, is that it very clearly tells you where you are. Nguyen recommends not confusing the user by bombarding them with a whole bunch of stuff at first. If they are intimidated by the first page they see, they may choose not to enter the site at all. This is why we chose the central logo, with few links.

4.) **Decision:** Allow lots of white space.

**Evidence:** There was a study done in the Psychology department at the University of Wichita, "Reading Online Text: A Comparison of Four White Space Layouts" by Barbara Chaparro, J. Ryan Baker, A. Dawn Shaikh, Spring Hull, and Laurie Brady in *Usability News* (2004) which found that while users could see more information if it was packed into a smaller space, they couldn't process it all.

**Rationale:** Studies have shown that users process information more efficiently if there are wider margins and the information was generally spread over more space. This confirmed our feelings about too much information in a small space, which is why we decided to not make use of all the screen real estate that was available to us. Instead, as previously mentioned, we broke functions into small pieces and placed them each on their own page, with plenty of white space.

5.) **Decision:** Generated report data is displayed in tables.

**Evidence:** Roger Johansson, web designer specializing in usability, posted on this topic on his blog devoted to web usability. ([http://www.456bereastreet.com/archive/200410/bring\\_on\\_the\\_tables/](http://www.456bereastreet.com/archive/200410/bring_on_the_tables/).) He points out, "Yes, do your best to avoid using tables for *layout*, but for tabular data, *tables are what you should use*." In the article *Designing Data Tables*, by Sarah Horton (from the e-book *Web Design Reference Guide*, Peachpit Press; available at <http://www.peachpit.com/guides/guide.aspx?g=webdesign>) she recommends using simple tables that people can read, rather than making the biggest or most flashy table.

**Rationale:** Tables are sometimes shied away from, as they were so badly mis-used before the advent of CSS. But we feel that it's perfectly acceptable, and useful, to use tables to layout tabular data. Our tables are very much static; since we have refrained from using flashy interactive features apart from regular hyperlinks. The only script associated with them is a simple javascript which makes the rows alternate in color, which we feel makes the data easier to visually differentiate.

6.) **Decision:** This stems partly from suggestions made in class during our prototype demonstration. Classmates suggested using a calendar-style 'date picker' for our date range searches. This would essentially be a little pop-up calendar, that allows users to click the dates, rather than having to manually type them.

**Evidence:** While we couldn't find any documentation directly relating to a date picker widget, the well-known usability advocate Jakob Nielsen advises designers to ". . . support autofill to the max" in his article *Top Ten Web Design Mistakes of 2005* (available at <http://www.useit.com/alertbox/designmistakes.html>.) *Automatic Filling in a Form by an Agent for Web Applications* by Takeshi Chusho, Katsuya Fujiwara, Keiji Minamitani was a presentation on using various tools for auto-completion of web forms. They also found that it increased usability.

**Rationale:** This is easier for a few reasons: first, it requires less typing, second, it requires less thinking, since it allows the user to visualize the dates, and third, it eliminates the need to figure out what standardized date format would be the best for everyone to use.

7.) **Decision:** Which criteria to generate reports on. So far we have chosen ip address, date, track title, artist, cd title, and cd publisher.

**Evidence:** From a discussion with our contact at WUNC, referencing this document: <http://www.futureofmusic.org/CARPfactsheet.cfm>

1. The name of the service
2. The channel of the program (AM/FM stations use station ID)
3. The type of program (Archived/Looped/Live)
4. Date of transmission
5. Time of transmission
6. Time zone of origination of transmission
7. Numeric designation of the place of the sound recording within the program
8. Duration of transmission (to nearest second)
9. Sound recording title
10. The ISRC code of the recording
11. The release year of the album per copyright notice and, in the case of compilation albums, the release year of the album and copyright date of the track
12. Featured recording artist
13. Retail album title
14. Record label
15. UPC code of the retail album
16. Catalog number
17. Copyright owner information
18. Musical genre of the channel or program (station format)

**Rationale:** When the Copyright Board Ruling does come down, we want our system to be readily adaptable to what the defined criteria are. So far what we have are general suggestions, but no one knows whether all/any of these criteria will be required.

## Screenshots

Loi Login page:



[Log In to use Loi](#)  
[New User?](#)

[What's this?](#) :: [Get Help](#) :: [Forgotten Login or Password?](#)

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New Users Register Page:

**Contact ibiblio about Loi**

Some information on using the form and on registering through ibiblio.

This form will allow you to open a help ticket if you are already a Loi user or are interested in becoming one. Please also consult our [FAQ](#) page, in case your question is answered there.

Enter Your Information Below

Your Email Address

Subject of your problem

Description of your problem

one

Lower down on the same page:

Some information on using the form and on registering through ibiblio.

This form will allow you to open a help ticket if you are already a Loi user or are interested in becoming one. Please also consult our [FAQ](#) page, in case your question is answered there.

Enter Your Information Below

Your Email Address

Subject of your problem

Description of your problem

Please note that if you take a long time to compose your request you may be asked to click the Submit button a second time.

[What's this?](#) :: [Get Help](#) :: [Forgotten Login or Password?](#)

Done

## Contextual Pages:

About Page:



[Login/Logout](#)

### About Loi

This page will provide contextual and background information about the Copyright Royalty Board ruling, and the Loi system.

[What's this?](#) :: [Get Help](#) :: [Forgotten Login or Password?](#)

Done

## Frequently Asked Questions Page:



### Frequently Asked Questions

This page will provide answers to frequently asked/anticipated questions about using the system and signing up.

[What's this?](#) :: [Get Help](#) :: [Forgotten Login or Password?](#)

Done

Logged in:



[What's this?](#) :: [Get Help](#) :: [Forgotten Login or Password?](#)

Search Page:

### New Search

These are sample search criteria based on possible CRB requirements

date range  
Mar 31 2008  
to  
Mar 31 2008

ip address

Transmission duration

Recording title

ISRC Code

Artist

### Preloaded Searches

- past month
- past quarter

### KZZB Saved Searches

- Artist X
- this IP address

Results Page:

### New Search

These are sample search criteria based on possible CRB requirements

date range  
Mar 31 2008  
to  
Mar 31 2008

ip address

Transmission duration

Recording title

ISRC Code

Artist

### Preloaded Searches

- past month
- past quarter

### KZZB Saved Searches

- Artist X
- this IP address

### Your Results:

lower down on the page:

