Full spectrum litigator: A TeX-themed workflow for a small litigation law firm

Andrew G. Watters

1 Introduction

I am a lawyer in California, USA, with my own small law firm. I've been in practice for just under 19 years, with my own law firm for 8 years. I am also a self-taught web application programmer with 24 years of experience in the LAMP stack. In that time, I've learned a lot about the challenges facing any small law firm in the area of document generation and management. These challenges include, but are not limited to:

1. Disorganized, ad-hoc workflows that are not at all planned in advance.
2. Proprietary applications that are Windows-only, or even Mac-only.
3. Formatting issues between platforms (Mac and Windows for employees, RHEL for me).
4. Use of ancient templates, usually Microsoft Word, as well as Word macros.
5. Vendor lock-in and subscriptions.
6. Coordinating multiple people on tasks and cases.
7. Integration of various information systems, many of them Windows-only.
8. Email and calendaring when people are used to the convenience and ease of Gmail or the equivalent.

The solution I've come up with (still a work in progress) is one integrated system for handling tasks, time, files, billing, email, calendaring, and reporting. It came about because I was using a Mac and my paralegal was using Windows, and we both needed to access our Samba file server. Because accessing a Samba file server from macOS corrupts files (at least as of 2017), I had to come up with a cross-platform solution for file access, and it was convenient to make it a LAMP web application given my experience in that field.

So the current system is a LAMP web application running PHP and PostgreSQL, formerly with the FPDF library in PHP to generate PDFs (we now use LaTeX, as I will show). Email and calendaring are handled by Postfix and Radical, respectively, with access to end users via Thunderbird. The next-generation system we're working on has everything on one screen, and TeX has become indispensable for this new application.

The current system suffers from a number of shortcomings, starting with the fact that FPDF is not very configurable and certainly cannot be edited in the same fashion as a normal TeX file, i.e., from the command line. FPDF is also trial and error with creating cells in documents and outputting them to the browser. Iterating over and over with trial and error is inconsistent with the firm's needs and is also inefficient when the structure of the documents needs to be exact and specified in advance. Enter TeX.

The current operational use of TeX in our portal features (1) task orders created from TeX templates using a custom PHP script that reads the TeX templates and inserts data from our database, (2) pre-bills and bills using the same method, and (3) Outlook-style email formatting and printing.

2 The TeX templates

The templates feature a custom, null command, \php{}, which is intended to hold variables without being processed. The following (abridged) TeX template example is from the task order module in our next-generation portal:

```
\documentclass[12pt,letterpaper]{letter}
\usepackage[utf8]{inputenc}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{graphicx}
\usepackage{hyperref}
\usepackage{lastpage}
\usepackage{underscore}
\usepackage{mlmodern}
\usepackage{colortbl}
\usepackage[svgnames]{xcolor}
\usepackage{soul}
\usepackage{setspace}
\hypersetup{
    colorlinks=true,linkcolor=blue,
    filecolor=magenta,urlcolor=blue,
    pdftitle={Task Order},
    pdfpagemode=,}
\usepackage[margin=1.0in]{geometry}
\usepackage{fancyhdr}
\fancypagestyle{specialfooter}{%
  \fancyhf{}
  \renewcommand\headrulewidth{0pt}
  \fancyfoot[L]{\hrule \vspace{2.0mm} \vfill
    \href{\php{varurl}}{\php{varurl}} \hfill
    \href{mailto:andrew@watters.law}{Andrew} /
    \href{mailto:lindsey@watters.law}{Lindsey} /
    ...}
\fancypagestyle{normalfooter}{%
  \fancyhf{}
  \renewcommand\headrulewidth{0pt}
  \fancyfoot[C]{\thepage}
}
```

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doi.org/10.47397/tb/45-2/tb140watters-litigator

```
% Custom highlight colors
\DeclareRobustCommand{\hlpurple}[1]
  {{\sethlcolor{orange}\hl{#1}}}
...
\pagestyle{normalfooter}
\newcommand\tab[1][8.0mm]{\hspace*{#1}}
\newcommand{\php}[1]{}
%\renewcommand*\familydefault{\ttdefault}
 %% Only if the base font of the document
 %% is to be typewriter style
\author{Andrew G. Watters}
\title{Letterhead}
\begin{document}
\thispagestyle{specialfooter}
\textbf{\php{varname}} \hfill\ 555 Twin ...\\
\hrule
\begin{spacing}{1.5}
\begin{flushleft}
\colorbox{\php{varprecedencecolor}}
  {\makebox(\textwidth,40)
    {\textcolor{white}
               {\php{vartaskprecedence}}}}\\
TASK ORDER\\
Assigned: \php{vartaskassigneddate}\\
Due: \php{vartaskduedate}\\
Headline: \php{vartaskheadline}\\
Assignment: \php{vartaskassignment}\\
Body: \php{vartaskbody}\\
Tags: \colorbox{teal}...
Meta: \php{vartaskmeta}\\
~\\
Printed on: \today
\end{flushleft}
\end{spacing}
\end{document}
```

As you can see, I’ve simply started every variable with “var” followed by what I would call the variable in a normal PHP script.

3 The PHP script

Here is the main PHP script (abridged); some discussion follows.

```
<?php
// read .tex template from file system
$file = file_get_contents("task.tex")
  or die("Could not read file.");

// put all \php-tagged variables into an array
// with offset position indicated
preg_match("/\\\php{.+?}/",$file,$matches,
           PREG_OFFSET_CAPTURE);
```

```
// replace variables with data from input,
// lookup table, or database
$taskid = stripslashes(
  strip_tags($_GET[’taskid’]));

// query database for task info
$connection = new PDO
  (’pgsql:user=web dbname=watters password=web’);
$query = "select distinct tasks.idx as taskid...
$result = $connection->query($query);
foreach ($result as $row) {
        $supervisor = $row[’supervisor’];
        $handler = $row[’handler’];
        $casename = $row[’name’];
        ...
        $caseid = $row[’caseid’];
}

// precedence color
switch($precedence) {
        case "0":
        $color = "violet";
        $precedence = "CRITIC";
        break;
        case "1":
        $color = "red";
        $precedence = "URGENT";
        ...
}
// get staff list
$staff = "";
$staff_query = "select idx as staffid ...";
$staff_result = $connection->query($staff_query);
foreach($staff_result as $user_row) {
  $staff .= $user_row[’staffid’] . ":"
    . $user_row[’handle’] . ":"
    . $user_row[’email’] . ","; }
$tagged_staff = explode(",",$staff);
$vartags = ""; $tagemails = "";
foreach ($tagged_staff as $key => $value) {
  $tags = explode(":",$value);
  if (preg_match("/\b" . $tags[0] . "\b/",
                 $row[’tagged_staff’])
      and (strlen($tags[0] > 0))) {
    $vartags .=  $tags[1] . " ";
    $tagemails .= $tags[2] . ","; } }

// lookup table for variables
$name = stripslashes(strip_tags($_GET[’name’]));
if ($name == "") {
  $name = "Andrew G. Watters, Esq."; }
$url = stripslashes(strip_tags($_GET[’url’]));
if ($url == "") {
  $url = "https://www.watters.law"; }
```

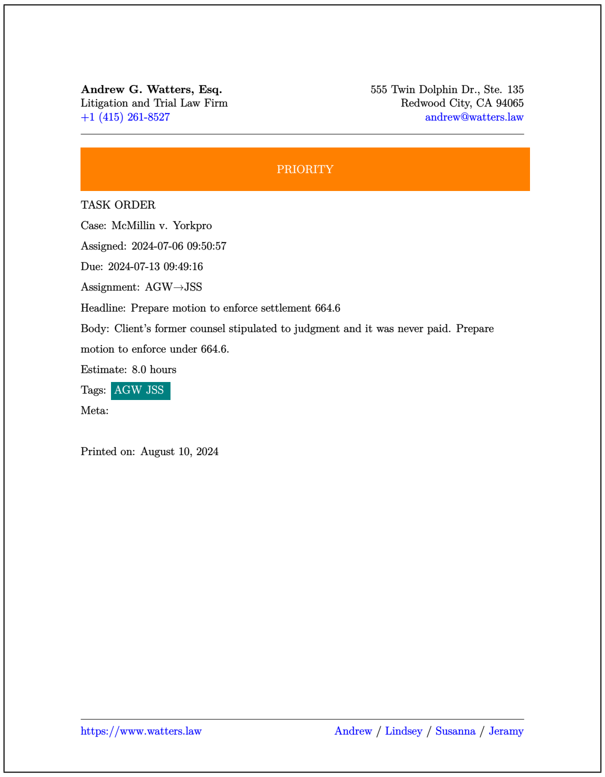
```
// arrays of patterns and replacements
$prefix = "/\\\php{"; $suffix = "}/";
$search = array($prefix . "varname" . $suffix,
              $prefix . "varurl" . $suffix, ...);
$replace = array($name, $url, ...);
$newfile = preg_replace($search,$replace,$file);

// create new .tex file
file_put_contents("./tasks/taskorder_" . $taskid
   . ".tex", $newfile)
or die("Could not write taskorder_$taskid.tex.");

// process bar.tex file
$bin = "/home/texlive/2024/bin/x86_64-linux/"
       . "pdflatex";
$opt = "-interaction nonstopmode";
$file = "taskorder_$taskid.tex";
exec("cd tasks; $bin $opt $file")
or die("Could not render PDF.");

// if asked to mail to user, send email
$email = stripslashes
  (strip_tags($_GET[’email’]));
if ($email == "true") {
        $uid = md5(uniqid(time()));
        $attachment = base64_encode
          (file_get_contents
            ("./tasks/taskorder_$taskid.pdf"))
        or die("Could not load PDF attachment.");
        // get tagged users’ emails
        $emails = explode(",",$tagemails);
        foreach($emails as $key => $value) {
                if ($value != "") {
                echo "mailto: $value\n";
                mail($value,
"Task Order - Andrew G. Watters, Esq.",
"--$uid\r\nContent-type:text/plain...");
                }
        }
}
else {
// display PDF in browser
$filename = "./tasks/taskorder_$taskid.pdf";
header(’Content-type:application/pdf’);
header(’Content-disposition: inline; filename="’
       . $filename . ’"’);
header(’Content-Transfer-Encoding:binary’);
header(’Accept-Ranges:bytes’);
@readfile($filename) or die("File not found.");
}
?>
```

In my PHP code, I read the TEX template file into a string. I then specify arrays of patterns and replacements using the built-in `preg_match` function in PHP. As long as the arrays of patterns and replacements are the same length, the patterns will be replaced in the order they appear in the arrays. In other words, the first element of the pattern array is replaced with the first element of the replacement array, and so on.

Once the replacements are made, I write a new TEX file with the correct data. I then render the TEX file with the `pdflatex` command and display the results in the browser, or else email the PDF to the user, depending on user preference.

4 Task orders

Tasks in the law firm are assigned on the home page of the portal. The problem is that the portal is a static web page and there is no easy way to print out particular tasks with all the correct fields and have it be user-friendly. So I implemented the task order feature that emails users a PDF with all the key information that they can print out, if desired:



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PRIORITY

TASK ORDER

Case: McMillin v. Yorkpro

Assigned: 2024-07-06 09:50:57

Due: 2024-07-13 09:49:16

Assignment: AGW→JSS

Headline: Prepare motion to enforce settlement 664.6

Body: Client’s former counsel stipulated to judgment and it was never paid. Prepare motion to enforce under 664.6.

Estimate: 8.0 hours

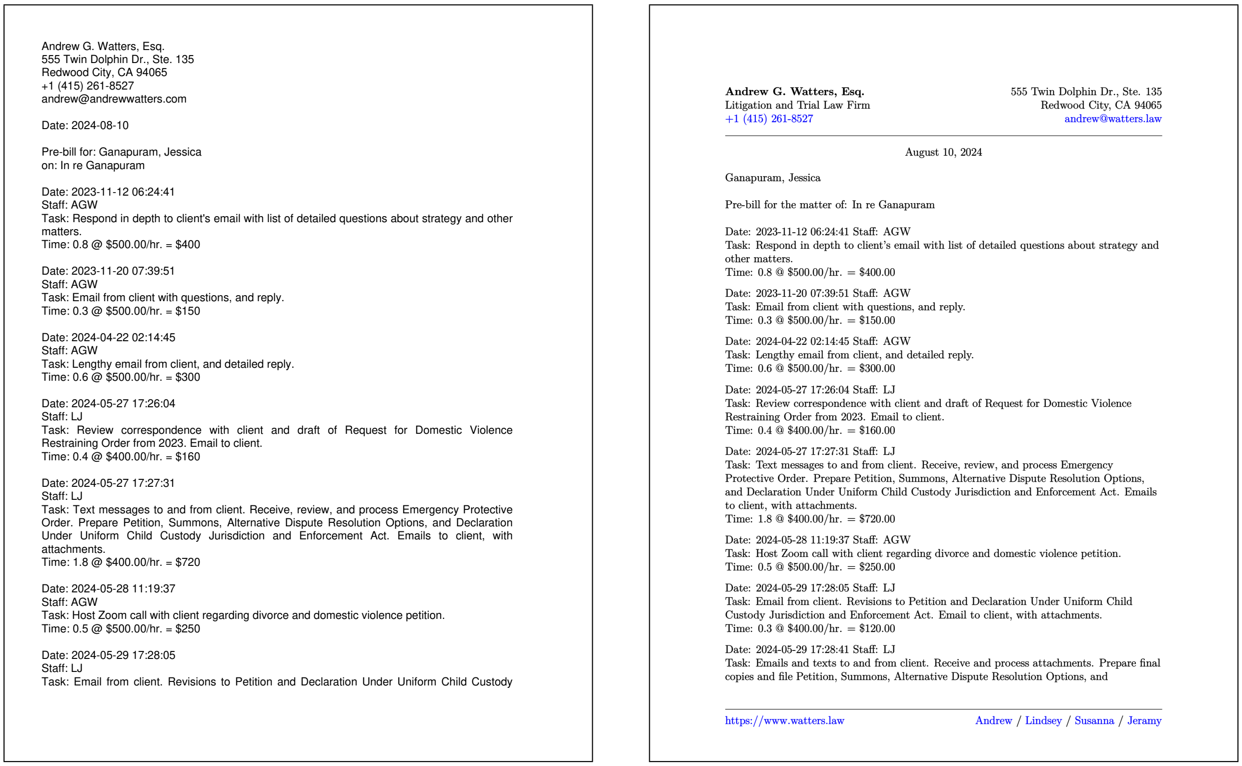
Tags: AGW JSS

Meta:

Printed on: August 10, 2024

https://www.watters.law Andrew / Lindsey / Susanna / Jeramy

Of course, I can also print the task orders to my office copier from the command line as part of this system with an additional command. In this way, I can assign and print a task from anywhere with Internet access, which is helpful when I’m working



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Date: 2024-08-10

Pre-bill for: Ganapuram, Jessica
on: In re Ganapuram

Date: 2023-11-12 06:24:41
Staff: AGW
Task: Respond in depth to client's email with list of detailed questions about strategy and other matters.
Time: 0.8 @ $500.00/hr. = $400

Date: 2023-11-20 07:39:51
Staff: AGW
Task: Email from client with questions, and reply.
Time: 0.3 @ $500.00/hr. = $150

Date: 2024-04-22 02:14:45
Staff: AGW
Task: Lengthy email from client, and detailed reply.
Time: 0.6 @ $500.00/hr. = $300

Date: 2024-05-27 17:26:04
Staff: LJ
Task: Review correspondence with client and draft of Request for Domestic Violence Restraining Order from 2023. Email to client.
Time: 0.4 @ $400.00/hr. = $160

Date: 2024-05-27 17:27:31
Staff: LJ
Task: Text messages to and from client. Receive, review, and process Emergency Protective Order. Prepare Petition, Summons, Alternative Dispute Resolution Options, and Declaration Under Uniform Child Custody Jurisdiction and Enforcement Act. Emails to client, with attachments.
Time: 1.8 @ $400.00/hr. = $720

Date: 2024-05-28 11:19:37
Staff: AGW
Task: Host Zoom call with client regarding divorce and domestic violence petition.
Time: 0.5 @ $500.00/hr. = $250

Date: 2024-05-29 17:28:05
Staff: LJ
Task: Email from client. Revisions to Petition and Declaration Under Uniform Child Custody

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August 10, 2024

Ganapuram, Jessica

Pre-bill for the matter of: In re Ganapuram

Date: 2023-11-12 06:24:41 Staff: AGW
Task: Respond in depth to client's email with list of detailed questions about strategy and other matters.
Time: 0.8 @ $500.00/hr. = $400.00

Date: 2023-11-20 07:39:51 Staff: AGW
Task: Email from client with questions, and reply.
Time: 0.3 @ $500.00/hr. = $150.00

Date: 2024-04-22 02:14:45 Staff: AGW
Task: Lengthy email from client, and detailed reply.
Time: 0.6 @ $500.00/hr. = $300.00

Date: 2024-05-27 17:26:04 Staff: LJ
Task: Review correspondence with client and draft of Request for Domestic Violence Restraining Order from 2023. Email to client.
Time: 0.4 @ $400.00/hr. = $160.00

Date: 2024-05-27 17:27:31 Staff: LJ
Task: Text messages to and from client. Receive, review, and process Emergency Protective Order. Prepare Petition, Summons, Alternative Dispute Resolution Options, and Declaration Under Uniform Child Custody Jurisdiction and Enforcement Act. Emails to client, with attachments.
Time: 1.8 @ $400.00/hr. = $720.00

Date: 2024-05-28 11:19:37 Staff: AGW
Task: Host Zoom call with client regarding divorce and domestic violence petition.
Time: 0.5 @ $500.00/hr. = $250.00

Date: 2024-05-29 17:28:05 Staff: LJ
Task: Email from client. Revisions to Petition and Declaration Under Uniform Child Custody Jurisdiction and Enforcement Act. Email to client, with attachments.
Time: 0.3 @ $400.00/hr. = $120.00

Date: 2024-05-29 17:28:41 Staff: LJ
Task: Emails and texts to and from client. Receive and process attachments. Prepare final copies and file Petition, Summons, Alternative Dispute Resolution Options, and

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Figure 1: FPDF (left) and TEX (right) output of a pre-bill.

from home or in the event I ever decide to become a digital nomad.

5 Pre-bills and bills

Pre-bills are an opportunity for the clients to see where they stand with their accounts and what they will owe when the bill is issued. This is a commonly used feature and is critically important in a law firm. I'll display the FDPF result and the TEX result side-by-side in figure 1.

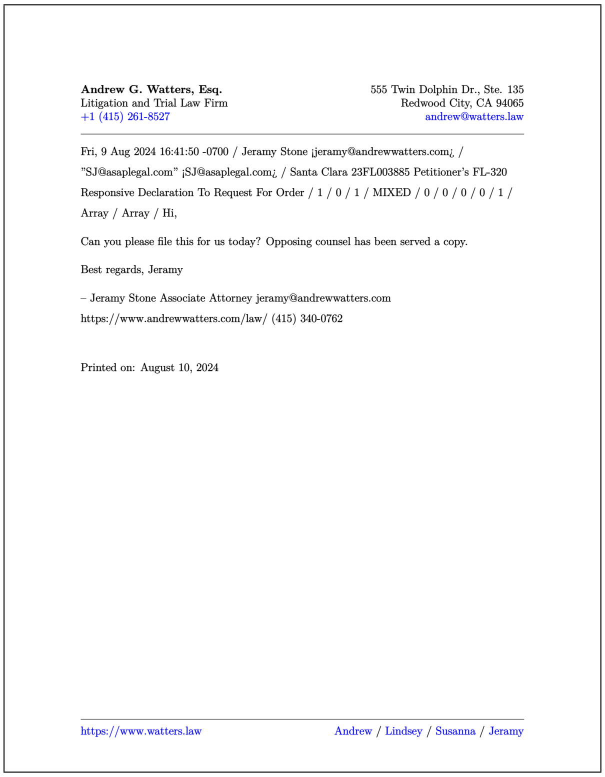
Although FPDF is faster than TEX, the TEX result is much more professional-looking and more easily formatted.

6 Outlook-style email printing

On this module, I integrate IMAP commands and data with TEX to retrieve data from my email server and print it to a PDF using the same method as above (figure 2). It still requires some work to get the formatting correct, which is in progress.

7 Future work

Future uses that we're working on include (1) generating actual pleadings and other legal documents from templates using existing data in our database, and (2) printable calendars and reports showing deadlines and similar information. This is an ideal use case for TEX for several reasons, including that it's free



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Fri, 9 Aug 2024 16:41:50 -0700 / Jeramy Stone ¡jeramy@andrewwatters.com¿ / "SJ@asaplegal.com" ¡SJ@asaplegal.com¿ / Santa Clara 23FL003885 Petitioner's FL-320 Responsive Declaration To Request For Order / 1 / 0 / 1 / MIXED / 0 / 0 / 0 / 0 / 1 / Array / Array / Hi,

Can you please file this for us today? Opposing counsel has been served a copy.

Best regards, Jeramy

– Jeramy Stone Associate Attorney jeramy@andrewwatters.com

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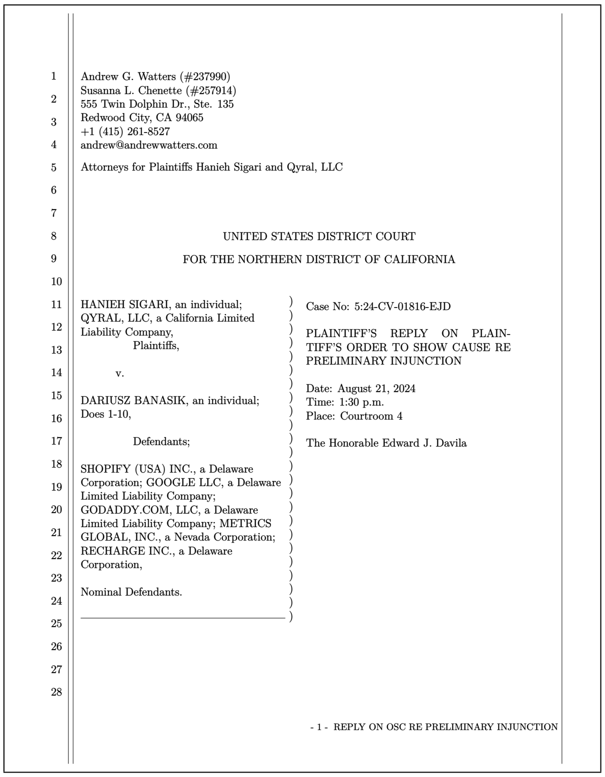
Figure 2: Sample email PDF.

and open source. A sample of what may be possible follow:



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UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

HANIEH SIGARI, an individual;
QYRAL, LLC, a California Limited Liability Company,
Plaintiffs,

v.

DARIUSZ BANASIK, an individual;
Does 1-10,

Defendants;

SHOPIFY (USA) INC., a Delaware Corporation; GOOGLE LLC, a Delaware Limited Liability Company; GODADDY.COM, LLC, a Delaware Limited Liability Company; METRICS GLOBAL, INC., a Nevada Corporation; RECHARGE INC., a Delaware Corporation,

Nominal Defendants.

Case No: 5:24-CV-01816-EJD

PLAINTIFF'S REPLY ON PLAINTIFF'S ORDER TO SHOW CAUSE RE PRELIMINARY INJUNCTION

Date: August 21, 2024
Time: 1:30 p.m.
Place: Courtroom 4

The Honorable Edward J. Davila

- 1 - REPLY ON OSC RE PRELIMINARY INJUNCTION

8 Conclusion

TeX is the greatest free software of all time for us, and it integrates nicely with the LAMP web application stack that we have been using for nearly ten years. I find it straightforward to integrate into my web application because it's editable in Vim and can process relatively quickly.

Challenges include that rendering speed is not optimal for a web-based user interface. However, as pointed out during the Q&A for my presentation at TUG 2024, it may be possible to pre-render the most time-consuming sections of the template in advance in order to accelerate the responsiveness of the application. I intend to explore that in the near future.

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