

Technology Feasibility Revision 3

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1 Introduction

File Mate 1500 currently is a desktop application for filling out the health insurance claim forms HCFA and CMS 1500 for recipients of health care. The goal of this project is to create a web-based version of the software with support for multiple simultaneous users, as well as administrator and trial version access. It will likely use common web technologies such as PHP, MySQL, Javascript, HTML, and CSS. These technologies will allow our project complete necessary functionality, such as storing the client's information and their associated patient information for later access.

A database will be used to store patient and login information. This login information will be authenticated through the stored credentials to allow the client to access their patient's information. Patient information will be used to automatically fill in the CMS and HCFA claim forms. MySQL is the preferred database querying language that our sponsor would like us to use and it will be completely sufficient in allowing all querying possibilities we should need.

Web space will either be provided through NAU or our sponsor. This web space will allow us connection between the database and all users. It will also allow the users to query the database for certain forms or particular patient information. PHP will be vital in providing the necessary functionality through this web space, as it will handle the all requests and responses between the database and the web space.

2 Technology Overview

The File Mate 1500 project will be a web application; therefore the technologies involved will be those commonly found in web stacks.

2.1 PHP

PHP is an imperative, dynamically typed, interpreted language for server-side web programming. PHP will be the method by which the server communicates with the database. It will be the primary method of handling requests of and sending responses to the client.

2.2 MySQL

MySQL is a relational database manager which is free and highly compatible with PHP. It will be used to store data relating to many aspects of operation.

2.3 HTML

The markup language of the Internet, HTML is essential for any application which must be used within a web browser.

2.4 CSS

Similar to HTML, CSS offers the ability to separate information from presentation in HTML. While it is possible to create primitive site designs in HTML alone, CSS offers the ability to go much farther.

2.5 JavaScript

ECMAScript, or JavaScript as it is currently known, is a dynamically typed, interpreted scripting language that is run within the browser and makes pages dynamic. This is essential in creating an intuitive user interface for the application.

2.6 PDF

PDF, the Portable Document Format, will be useful for generating printable forms. Since PDF files look essentially the same regardless of the platform used to render them, we can be assured that the forms will be error-free regardless of browser or operating system.

3 Technology Integration

HTML and CSS will be used to design the webpage. Then PHP will be used in processing the form items and modifying any PDF file. We are going to use MySQL as our login database manager for web-based authentication. MySQL will also be used to store medical information pertaining to the patients; this information can be used to fill out the CMS 1500 form.

File-Mate 1500 will need to be able to write to a PDF at predetermined spots to provide a real time updating of the users information on the claim form. To achieve this we can use a few different software products. FPDF(<http://www.setasign.com/products/fpdf/about/>) is a free PHP library that allows you to write on a PDF at a position. This library will allow us to generate a new PDF preview for the user to see as they alter information in the form. Together with FPDF(<http://www.fpdf.org/>) we can generate and save new modified PDFs.

To generate the preview we can use each browser's built in PDF viewer which is simple and works, but doesn't offer too many features. There are also some excellent libraries out there that generate much more feature-rich PDF previews, such as Google's viewer (<https://docs.google.com/viewer>) or a JavaScript library (<http://mozilla.github.io/pdf.js/>). These utilities will allow the user to zoom, print and save directly to desktop.

4 Proof of Feasibility

We feel that these demos show that this project is feasible using the technologies shown above. They form a solid foundation on which this project can be built. A mockup has been produced and can be viewed at (<http://dana.ucc.nau.edu/tac242/index1.php>), and a PDF

editing demo similar to what we intend to use can be found at (<http://www.setasign.com/products/fpdi/demos>).

The screenshot displays the File-Mate 1500 software interface. At the top, there is a navigation bar with the File-Mate 1500 logo and buttons for Home, Detail, New Form, Delete, Template, and Print. Below this is a tabbed interface with tabs for Patient, Insured, Provider, Service, and Form. The 'Patient' tab is active, showing a form for 'Type of Health Insurance Coverage' and 'Patient Information'. The 'Patient Information' section includes fields for First, Middle, and Last names, Address, City, State, Zip Code, Telephone, Birth Date, and Gender. There are also dropdown menus for Patients Relationship to Insured, Patient Status, and Is Patients Condition Related to (Employment? and Other Accident?). A 'Choose from Index' button is located next to the Last name field. Below the Patient Information section is a section for 'Patient's or Authorized Person's Signature' with a dropdown for Signature on File? and a Date field. A 'Next >>' button is located at the bottom right of the form. On the left side, there is a 'Patient and Insured' sidebar with 'Prev' and 'Next' buttons, and a 'Provider' section with Name and Tax ID fields. At the bottom left, there is an 'Info' section with 'Open' and 'Archived' radio buttons, and fields for Status, Date, Due, Received, Balance, and Balance Age.

Figure 1: File-Mate 1500

Address Detail

Patient and Insured

Prev 2 of 2 Next

Coverage:

Patient: Joe, Bob, A

Insured:

Description:

Provider

Name:

Tax ID:

Info Open Archived

Status: New

Date: 10/18/13

Due: \$0.00

Received:

Balance: \$0.00

Balance Age:

Patient Insured Provider Service Form

HEALTH INSURANCE CLAIM FORM

APPROVED BY NATIONAL UNIFORM CLAIM COMMITTEE (NUCC) 02/12

PICA

1. PATIENT'S NAME (Last Name, First Name, Middle Initial)
Bob A Joe

2. PATIENT'S BIRTH DATE

3. PATIENT'S ADDRESS (No. Street)
CITY
STATE
ZIP CODE

4. INSURED'S I.D. NUMBER (For Program in Item 1)

5. INSURED'S NAME (Last Name, First Name, Middle Initial)

6. INSURED'S ADDRESS (No. Street)
CITY
STATE
ZIP CODE TELEPHONE (Include Area Code)

7. IS PATIENT'S CONDITION RELATED TO:
a. EMPLOYMENT (Current or Previous) No
b. AUTO ACCIDENT (Place State) No
c. OTHER ACCIDENT No

8. INSURED'S POLICY GROUP OR SECA NUMBER

9. INSURED DATE OF BIRTH

10. OTHER CLAIM ID (Designated by NUCC)

11. INSURANCE PLAN NAME OR PROGRAM NAME

12. IS THIS ANOTHER HEALTH BENEFIT PLAN? No

13. INSURED OR AUTHORIZED PERSON'S SIGNATURE (I authorize payment of medical benefits to the undersigned physician or supplier for services described below.)

14. DATE OF CURRENT (Inns, PFT) or PREGNANCY (JMP) DUAL

15. OTHER DATE

16. DATE PATIENT LEAVE TO WORK CURRENT OCCUPATION

17. NAME OF REFERRING PROVIDER OR OTHER SOURCE

18. HOSPITALIZATION DATES RELATED TO CURRENT SERVICES

19. ADDITIONAL CLAIM INFORMATION (Designated by NUCC)

20. OUTSIDE LAB? No

21. RESUBMISSION CODE ORIGINAL REF. NO.

22. PRIOR AUTHORIZATION NUMBER

23. A. DATE(S) OF SERVICE From To B. ICD (Incl. G) C. PROCEDURE, SERVICE OR SUPPLY CODE (Include Quantity) D. CHARGES E. DAYS OR UNITS F. H. I. J. PROVIDER ID #

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Figure 2: File-Mate 1500

Male
 Female

Single
 Married
 Other

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1500
HEALTH INSURANCE CLAIM FORM
APPROVED BY NATIONAL UNIFORM CLAIM COMMITTEE 0805

1. MEDICARE MEDICAID TRICARE CHAMPVA GROUP HEALTH PLAN SPECIAL RELIGIOUS OTHER
Medicare # (Medicaid #) (Tricare #) (Member ID#) (DOB or IC) (SSN) (ID)

2. PATIENT'S NAME (Last Name, First Name, Middle Initial) 3. PATIENT'S BIRTH DATE MM | DD | YY SEX M | F

4. INSURED'S I.D. NUMBER (For Program in Item 1) 4. INSURED'S NAME (Last Name, First Name, Middle Initial)

5. PATIENT'S ADDRESS (No. Street) 6. PATIENT RELATIONSHIP TO INSURED Self | Spouse | Child | Other

7. INSURED'S ADDRESS (No. Street) CITY STATE CITY STATE

8. PATIENT STATUS Single | Married | Other
Employed | Full-Time Student | Part-Time Student

9. OTHER INSURED'S NAME (Last Name, First Name, Middle Initial) 10. IS PATIENT'S CONDITION RELATED TO: a. EMPLOYMENT? (Current or Previous) YES | NO b. AUTO ACCIDENT? YES | NO c. PLACE (State) | d. OTHER ACCIDENT? YES | NO

11. INSURED'S POLICY GROUP OR FELCA NUMBER 11. INSURED'S DATE OF BIRTH MM | DD | YY SEX M | F 11. EMPLOYER'S NAME OR SCHOOL NAME 11. INSURANCE PLAN NAME OR PROGRAM NAME

12. PATIENT'S OR AUTHORIZED PERSON'S SIGNATURE I authorize the release of any medical or other information necessary to process this claim. I also request payment of government benefits either to myself or to the party who accepts assignment below. SIGNED: _____ DATE: _____ 13. INSURED'S OR AUTHORIZED PERSON'S SIGNATURE I authorize payment of medical benefits to the undersigned physician or supplier for services described below. SIGNED: _____ DATE: _____

14. DATE OF CURRENT ILLNESS (First symptoms) OR INJURY (Accident) OR PREGNANCY (EMP) 15. IF PATIENT HAS HAD SAME OR SIMILAR ILLNESS, GIVE FIRST DATE MM | DD | YY 16. DATES PATIENT UNABLE TO WORK IN CURRENT OCCUPATION FROM MM | DD | YY TO MM | DD | YY

17. NAME OF REFERRING PROVIDER OR OTHER SOURCE 17a. 17b. 17c. 17d. 17e. 17f. 17g. 17h. 17i. 17j. 17k. 17l. 17m. 17n. 17o. 17p. 17q. 17r. 17s. 17t. 17u. 17v. 17w. 17x. 17y. 17z. 18. HOSPITALIZATION DATES RELATED TO CURRENT SERVICES FROM MM | DD | YY TO MM | DD | YY

19. RESERVED FOR LOCAL USE 20. OUTSIDE LAB? YES | NO \$ CHARGES

21. DIAGNOSIS OR NATURE OF ILLNESS OR INJURY (Indicate items 1, 2, 3 or 4 to Item 24E by line) 1. _____ 2. _____ 3. _____ 4. _____ 22. MEDICAD RESUBMISSION CODE ORIGINAL REF. NO. 23. PRIOR AUTHORIZATION NUMBER

24. A. DATE(S) OF SERVICE From To B. PLACE OF C. PROCEDURES, SERVICES, OR SUPPLIES (English (Usual) Organization) D. DIAGNOSIS E. RENDERING

CARRIER
PATIENT AND INSURED INFORMATION
SIGN

Figure 3: Mockup of Proposed Web-based File-Mate 1500