Software Requirements Specification
for
Referral / ERRA Trending Analysis Tool (RE-TAT)

Version 1.0

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<th>Name</th>
<th>Date</th>
<th>Reason For Changes</th>
<th>Version</th>
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<td>Philip Tran</td>
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<td>Last editing and proofreading checks</td>
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1. Introduction

1.1 Purpose
This document will outline in detail the Referral / ERRA Trending Analysis Tool (RE-TAT)’s software architecture and design. This document will display the system’s design from several viewpoints to provide a guide on how the system works and to communicate what the system does. It intends to get an insight into the architectural and design decisions that were made for RE-TAT.

1.2 Intended Audience and Reading Suggestions
This document is written on a technical level to address the QTC Management team and Cal State LA computer science department.

1.3 Product Scope
This document provides the architecture and design of RE-TAT. Given several sets of data, RE-TAT will create a trending analysis tool that will validate appointments assigned to QTC and determine if an area has enough providers within a given distance. This software will allow the QTC management team to effectively balance how their workload will be allocated across the provider areas.

1.4 Definitions, Acronyms, and Abbreviations
- RE-TAT - Referral / ERRA Trending Analysis Tool
- ERRA - Exam Request Routing Assistant
- VARO - VA Regional Office
- DOR - Date of Referral
- SQL – Structured Query Language
- JSP - Java Server Page
- VA - Veteran Affairs
- IDE – Integrated Development Environment
- QTC - Quality Timeliness Customer Service
- MVC - Model View Controller
- UI - User Interface
1.5 References

Referral / ERRA Treading Analysis Tool (RE-TAT)
Functional Requirements and Design (FRD) Document
2. Overall Description

2.1 Product Perspective

The Data Flow Diagram, DFD, is going to be a major tool to utilize for the design of the RE-TAT architecture. Because of its simplicity and versatility, the DFD is the preferred design tool for modeling this system.

2.1.1 Level 1 DFD

RE-TAT’s major functional sub-units are shown in the DFD Level 1 below:

2.2 Product Functions

User interface - Module 2.1.1

The User Interface Module (UIM) provides a web-based GUI and functionality for the user-friendly interface. It organizes and visualizes the data-set based on user geolocation input, defined categories’ input, and distance input. The UIM contains tools such as searching geo-location based on user location input and time of date and
pinpointing geo-location. The UIM also contains feature that gives a list of medical specialties on a given area and distance, shows if a given provider is being overused or underused by claimants in a given area, and displays which claimants QTC is responsible for matching providers to. For security, the user will to enter their login information on the UIM to gain access to the system. The UIM is also responsible for receiving the QTC’s excel file information and sending it to the UM.

**Main Controller - Module 2.1.2**

The Main Controller Module (MCM) is the Model View Controller (MVC) of the RE-TAT. It contains the central system of the server side implementation on the RE-TAT. The MVC will serve as the main controller for the User Interface Module (UIM), Data Input Parser Module (DIPM), User Module (UM) and the server. The MCM is responsible for the implementation of the features. Based on the user’s input of date, geolocation, medical specialty for a given feature from the UM, the MCM will search through the database for a list of information the user wants to view and sends it to the UIM. The MCM is also responsible for transferring Excel files to the DIPM, receiving the content of the Excel files' data from the DIPM, and sending those data to the server to be stored.

**Data Input Parser - Module 2.1.3**

The Data Input Parser Module (DIPM) is a excel file reader of the RE-TAT. Given an Excel file from the MCM, the DIPM will extract the contents of the Excel file’s data and sent it information back to the MCM. There are three Excel files formats structured by the QTC management team, and the DIPM uses those formats to extract the files’ data.

**User - Module 2.1.4**

This module should allow users to create their own username and password. These users should be able to access the features in our program. They have low level access that can only read information but not change anything in the database. There should also be one admin that controls the database. The admin should be able to update the database and control the lower level user when needed.

**2.3 Assumptions and Dependencies**

The DIPM depends on QTC Excel file formatting. That formatting helps parse the file's data into the RE-TAT system. Any changes on the formatting can affect how the DIPM parses the Excel file and how the UIM displays the information back to the user.
3. External Interface Requirements

3.1 User Interfaces

The standard buttons that will be displayed on the screen are the tab buttons. The tab buttons are considered to be the menus of our system. It lets the user choose between different features that the RE-TAT tool provides. The tabs will be created so that the users can click on it to navigate different feature options. Each tab will display different UI layouts. One of the tabs will be labeled Cross-Check and it will have a UI layout that allows the users to filter the data. Filters are considered to be the input from the user. The filters consist of a drop-down list of states, a text field to enter zip codes, and a calendar to select dates for different range intervals.

3.2 Software Interfaces

The APIs that are going to be use in the RE-TAT system is the Apache's POI-HSSF and POI-XSSF Java API. This API will interact with the client's Excel files and extract the content of the file's data into the system.
4. Requirements Specification

4.1 Functional Requirements
This section is the collection of RE-TAT's functional requirements. This section includes the complete set of functional requirements, along with explanations for cases in which the statement of the requirement was deemed insufficient or requires additional clarification. All requirements relate to the design modules described in Section 2. An effort has been made to standardize the correlation between the design modules and the requirements to make access and organization more consistent. For example, requirement number “n” affecting module 2.1 will be labeled 4.1.n.

<table>
<thead>
<tr>
<th>Requirements Related to Module 2.1.1: User Interface Module (UIM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement No.#</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>4.1.1.1</td>
</tr>
<tr>
<td>4.1.1.2</td>
</tr>
<tr>
<td>4.1.1.3</td>
</tr>
<tr>
<td>4.1.1.4</td>
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<tr>
<td>4.1.1.5</td>
</tr>
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<td>4.1.1.6</td>
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<tr>
<td>4.1.1.7</td>
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</table>

<table>
<thead>
<tr>
<th>Requirements Related to Module 2.1.2: Main Control Module (MCM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement No.#</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>4.1.2.1</td>
</tr>
</tbody>
</table>
organize and request the server for those feature information.

<table>
<thead>
<tr>
<th>Requirement No.#</th>
<th>Requirement Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.2.2</td>
<td>Determine by Requirement 4.1.2.1, MCM shall output to the UIM the feature information.</td>
</tr>
<tr>
<td>4.1.2.3</td>
<td>Given the Excel file from the UM, the MCM shall pass that file to the DIPM.</td>
</tr>
<tr>
<td>4.1.2.4</td>
<td>Given the content of the Excel file’s data from the DIPM, MCM shall pass the dataset to the server to be stored.</td>
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</table>

**Requirements Related to Module 2.1.3: Data Input Parser Module (DIPM)**

<table>
<thead>
<tr>
<th>Requirement No.#</th>
<th>Requirement Description</th>
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</thead>
<tbody>
<tr>
<td>4.1.3.1</td>
<td>DIPM shall read .xlsx and .xls excel file formats</td>
</tr>
<tr>
<td>4.1.3.2</td>
<td>DIPM shall parse excel file</td>
</tr>
<tr>
<td>4.1.3.3</td>
<td>DIPM shall output to the MCM from the content of the Excel file’s data.</td>
</tr>
<tr>
<td>4.1.3.4</td>
<td>DIPM shall format the Excel data into a RE-TAT data formatting</td>
</tr>
<tr>
<td>4.1.3.5</td>
<td>DIPM shall verify whether the file is an Excel file exist.</td>
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</table>

**Requirements Related to Module 2.1.4: User Module (UM)**

<table>
<thead>
<tr>
<th>Requirement No.#</th>
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<tbody>
<tr>
<td>4.1.4.1</td>
<td>UM shall allow user to create account.</td>
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<tr>
<td>4.1.4.2</td>
<td>UM shall let user login in with correct username and password</td>
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<tr>
<td>4.1.4.3</td>
<td>UM shall only allow one admin to update database</td>
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<td>4.1.4.4</td>
<td>UM shall instruct the MCM what feature to execute</td>
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<tr>
<td>4.1.4.5</td>
<td>UM shall pass user input to the MCM</td>
</tr>
<tr>
<td>4.1.4.6</td>
<td>UM shall pass Excel files to the MCM</td>
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</table>
4.2 Logical Database Requirements

- Remote Access
- Data entities and their relationships

QTC Management Team provided three types of Excel files. Each of them has different category types. There is no general binding between these Excel files.

4.3 Design Constraints

The formatting of the QTC Excel files can affect the data output of the tool. There are three Excel file formats that are required in order to use RE-TAT, the QTC’s ERRA historical data, QTC’s VA providers list, and QTC’s referral data. If QTC were to add any new attributes into the Excel files, change how the Excel file was format, and/or add a new Excel file that was not listed above, RE-TAT will not be able to handle those changes. Careful design has to be taken in the DIPM in order for the tool to work correctly.
5. Other Nonfunctional Requirements

5.1 Security Requirements

There is going to be a login page for the user fill out. The user has to provide a username and password to gain access to the RE-TAT tool. The admin is responsible for adding user accounts to the website/database.

5.2 Software Quality Attributes

Some quality attributes to be consider with our RE-TAT software is to be reusable, robust, and available.
Appendix A: Glossary

A. ACRONYMS

RE-TAT - Referral / ERRA Trending Analysis Tool
ERRA - Exam Request Routing Assistant
VARO - VA Regional Office
DOR - Date of Referral
SQL – Structured Query Language
JSP - Java Server Page
VA - Veteran Affairs
IDE – Integrated Development Environment
QTC - Quality Timeliness Customer Service
MVC - Model View Controller
UI - User Interface
Appendix B: Analysis Models

Referral:

<table>
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<th>Zip code</th>
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VARO

<table>
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<tr>
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VA Provider

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