# **Project Document**

# WFFI Tracker Database System

## Version 1.5

## Last revised: 04/18/2018

## CPSC 4910

## Prepared by:

Team 5

*James Hare - Project Manager*

*Javier Martinez - Quality Assurance Manager*

*Richard Kimsey - Development Manager*

*Daniel Velasquez - Application Architect*

*Team - System Analysis Manager*

WFFI Tracker Database System

SECTION 1 - INTRODUCTION Page 3

1.1 PURPOSE

1.2 SCOPE

1.3 TERMINOLOGY

1.4 REFERENCES

SECTION 2 – MANAGEMENT Page 5

2.1 GENERAL DESCRIPTION

2.2 SOFTWARE VALIDATION

2.3 CONFIGURATION MANAGEMENT PLAN

2.4 PROJECT SCHEDULE

SECTION 3 - REQUIREMENTS Page 6

3.1 FUNCTIONAL REQUIREMENTS

3.1.1 Functional Capabilities

3.1.1 System Inputs

3.1.2 System Outputs

3.2 NON FUNCTIONAL REQUIREMENTS

3.2.1 Language

3.2.2 Database Considerations

3.2.3 User Interface

3.2.4 Security

3.2.8 Operating Environment

SECTION 4 – DESIGN Page 8 4.3 SYSTEMS ARCHITECTURE

SECTION 5 - IMPLEMENTATION STRATEGY Page 9

SECTION 6 - USER DOCUMENTATION Page 10

6.1 INSTALLATION GUIDE

6.2 USER'S GUIDE

SECTION 7 - TEST AND VALIDATION Page 11

SECTION 1 - INTRODUCTION

Team 5, established from the Senior Capstone Course at the University of Tennessee at Chattanooga was tasked with redesigning a database in Microsoft Access for Woodbridge Foam Fabricating INC. The redesign was necessary because the original database was written in Microsoft Access ‘98 and WFFI Management determined that an update to the 2016 version of Microsoft Access was in order. The redesigned database delivered in the first iteration will feature reports that are more aesthetically appealing utilizing modern design features and colors. This is to benefit the group of target users who have indicated that the current format of the reports is not intuitive and that the learning process is not user friendly. Another focus of the first iteration of the database was on correcting the administrative user input process so as to prevent duplicate entries. Administrative users previously had the ability to enter records into the database completely unchecked but that flaw was addressed in the iteration 1 database update. Another consideration our team implemented was in the security of the database. Security now includes a more robust ability to assign permissions to users and restrict certain menus as only available to administration personal.

1.1 PURPOSE

The purpose of this document is to capture and record the basic information that will be needed to correctly define and plan the WFFI Tracker Database System. This document will expand upon the scope and specification of the project and state what the project is planning to achieve. It also lists the names of the development team along with their roles and responsibilities. This document also specifies and defines irregular terminology that both users and the client may not be familiar with. It will also specify both functional and nonfunctional requirements of the project. It will lay out a design plan for the development team and the client to review. Finally, it will specify user documentation, including installation and user guides along with software testing and validation.

1.2 SCOPE

The initial implementation will consist of a fully functional database to be used with Microsoft Access. The solution will be used to print out reports to be used on the floor at the Woodbridge Foam Fabricating INC facility. The reports will consist of various data entries from the database with a primary goal of testing the operating machinery at the facility. The solution will be limited to the Windows Desktop operating system and will not be made available on other operating systems or mobile applications.

1.3 TERMINOLOGY

This document makes use of acronyms and terms that may not be understood by the reader. Therefore, the following provides definitions for terms relevant to this document.

WFFI: Woodbridge Foam Fabrication, Inc.

UTC: The University of Tennessee at Chattanooga

Poka-yoke: A Japanese term that means “mistake-proofing”, or “inadvertent error prevention”

1.4 REFERENCES

[1] Tracker.zip. Retrieved February 06, 2018, from Corey Kraft.

[2] Capstone - Tracker Database. Retrieved February 06, 2018, from Corey Kraft.

SECTION 2 – MANAGEMENT

2.1 GENERAL DESCRIPTION

The following is a list naming the key people involved in the development of the project, along with their roles and responsibilities:

James Hare (Project Manager) is responsible for leading the development process and maintaining the project schedule. Also responsible for organizing and leading all Scrum sessions as well as overseeing compilation and delivery of the project document. Finally, responsible for reporting project status to upper management.

Daniel Velasquez (Application Architect) is responsible for designing the overall vision for the solution. Will lead in the development and maintenance of the System Architecture Specification. Finally, is responsible for coordinating with traceability of design and development.

Richard Kimsey (Development Manager) is responsible for leading the development and maintenance of the System Design Specification. Will also coordinate developer resources. Finally, is responsible for code production and delivery.

Javier Martinez (Quality Assurance Manager) is responsible for leading in developing and maintaining the Test Plan and Test Specifications. Is also responsible for coordinating text activities. Finally, is responsible for the validation of developed software.

Team (Systems Analysis Manager) is responsible for organizing and leading requirements elicitation activities. Is also responsible for leading in the development and maintenance of the Requirements Specification. Finally, is responsible for coordinating traceability of requirements and design.

2.2 SOFTWARE VALIDATION

Through the use of software validation, we will be able to assess whether or not we are developing the right product. Software Validation decisions will be made by the Quality Assurance Manager, who will also coordinate text activities, develop and maintain test plans and test specification. Software will be validated by using a given set of test cases as defined in section seven (7) of this document, which will reflect the expected use of the system. If the system performs in the correct manner, the software will meet the requirements.

2.3 CONFIGURATION MANAGEMENT PLAN

Configuration Management decisions will be made by the Project Manager. Configuration implementation and maintenance will be handled by the Application Architect. Configuration management tasks will include Microsoft Access configuration and necessary component installations on the developer’s devices. The Application Architect will also be responsible for source control configuration and version control through the Google Drive client. Software Validation tools will be configured and managed by the Quality Assurance Manager.

2.4 PROJECT SCHEDULE

The Tracker Database System project schedule will be documented in the form of a Gantt Chart. The Project’s start date is January 8th, 2017, and the schedule is to be organized by a series of sprints excluding the kick off tasks undertaken prior to Sprint 1. The Project Manager will be responsible for project activity scheduling, documenting task progress, and updating task dates. An updated tracking of each sprint, including completed tasks, will be documented in the form of a Sprint Report.

SECTION 3 - REQUIREMENTS

3.1 BUSINESS REQUIREMENT SPECIFICATION (BRS)

The user requirements for this project is update the old WFFI Tracker Database System and make it more modern and easy for the workers at Woodbridge Foam Fabricating INC so they can operate a system more efficiently. The user will be able to have a user login of their own instead of using a common user for everyone. There will be a audit table so that everyone can see who makes changes in the system so there will not be duplicates of the same changes. We will also add restrictions on the target width and target height fields.

3.2 FUNCTIONAL REQUIREMENT SPECIFICATION (FRS)

The system requirements for this project is a Microsoft Office that will allow them to run the program using Microsoft Access . The system or program needs a user to execute the program and some users will be allowed to have access to audit new changes in the system depending on their security access status.

3.2.1 Functional Capabilities

The system will be able to do everything that the WFFI Tracker Database System did before with some minor changes. The changes include an audit table that will show who changed anything in the system so that could eliminate duplicates. We added triggers to delete functionality to populate audit tables. The user will now be able to login with their own user login so employees will not use the same user login as everyone else at the Job. This will eliminate some security threats to the user logins There will be a easy way to change the background in the database so there will be no hassle in changing the database. We added restrictions on user input on the target width and target height fields since most of the width and height are the same except for a few instances.

3.2.2 System Inputs

The system will keep track of who is entering data and, as such, will pull in the User Name from the current Microsoft account that is logged into the system. The system will be able to take in new data when a new part is added to the database to be used in an inspection. The system will also be able to take in new instructions based on individual machine parts that need to be inspected.

3.2.3 System Outputs

The system will output a full report that will be used to conduct inspections on machines within the WFFI facility. The report is put on file after being filled out by hand at the machine location. The report will consist of the following fields: name of inspector; time of inspection; date of inspection; machine name; machine location; instructions for completing the inspection; measurements for the size of the foam being produced; notes for further inspection of the machine.

3.3 NON-FUNCTIONAL REQUIREMENTS

The system keeps track of each part that must be inspected at each machine on-site at WFFI. The system should be easy to use and have a high quality visual aspect so that employees of WFFI can integrate the new system at the facility with ease. The database will be used in Microsoft Access and makes use of Microsoft User Accounts to keep track of who is entering what data. As such, the system will only be available for the Microsoft Windows platform.

3.3.1 Language

The database will be created with the Microsoft Access application. VBA (Visual Basic for Applications) may be used for more complex functionality. Forms, reports, queries and tables will be constructed using Microsoft Access, and SQL may be used for more complex queries.

3.3.1 Database Considerations

The Tracker Database system should be designed with modern relational database techniques, such as primary keys and referential integrity. Duplicate data should be minimized. Tables should have logical relationships.

3.3.2 User Interface

Forms and reports should be aesthetically pleasing but simple in design, and should include the Woodbridge Group logo and header. Reports should make efficient use of space and have consistency in their layout. Important text and information should be accentuated.

3.3.3 Data Security

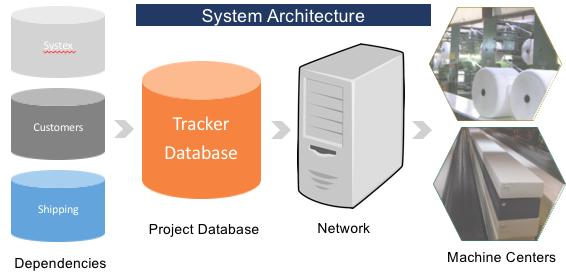
The Tracker Database should include data auditing to record when users make changes to the database. The audits should include at least time, date, the user, and the modification done. User permissions should be included to limit which information users can view and modify. A poka-yoke design philosophy should be implemented when taking user inputs.

3.3.8 Operating Environment

The Tracker Database will operate using the Microsoft Windows Operating System environment. Woodbridge do not want it to be accessible to any other devices besides a desktop environment in their facility.

SECTION 4 – DESIGN

4.1 SYSTEMS ARCHITECTURE



The systems Architecture for the Tracker Database is shown above. The tracker database is a relational database with dependencies on multiple WFFI business databases such as the Systex, Customers, and Shipping databases. The Tracker database is stored on a shared network drive and is accessed from different machine centers in the Woodbridge Foam Fabricating Chattanooga location.

SECTION 5 - IMPLEMENTATION STRATEGY

Implementation and design are interleaved activities so that the level of detail and creativity in the design is determined by the limitations of our windows console app as well as time limitations. The strategy we are using to develop the software revolves around being aware of implementation issues such as reuse, configuration management, and host-target. Most of our implementation will be developed using a host-target where we will be developing the software on one machine and use a different machine to execute that software. A configuration manager will be in charge of keeping track and managing the changes we make to the database. If the User Stories pass SQA they will move on to a peer review done by another developer on the team who has not involve with the code change. If the User Stories are found without defect they will be merged onto our production environment and the test case documents used to test them will be archived for later inspection if needed. This rigorous quality assurance process is to ensure a quality product is achieved in the end.

SECTION 6 - USER DOCUMENTATION

6.1 INSTALLATION GUIDE

Please test the Tracker database in a replicated environment first before deploying it to a production environment.

To install the the Tracker database download the Tracker.mdb file and place it in the folder that contains the Tracker database system and its supporting databases.

A Microsoft**©** Windows account, along with an account in the Tracker database, must be created for each user of the database. To allow a Windows account to use the database, an account in the database must be created with the same username as the Windows account. Database admins can add and modify user accounts in the admin menu.

6.2 USER'S GUIDE

To open the application, navigate into the folder on the shared drive where the tracker database Microsoft Access file is located and double click the tracker database .MDB file with mouse.

User will be given a pop up screen that displays the user’s microsoft account name. If that user has been given access to the database they will be navigated to either the employee or admin form and will be able to access the different functionalities associated with the Tracker Database. If the user has not been given access to the database they will be navigated out of the Tracker database and the Microsoft Access default home screen will appear.

SECTION 7 - TEST AND VALIDATION

Test Plan for our system to make sure it meets the requirements of our users and to document the improvements of our systems.

Test cases

* Make sure that Logins to the database are now done automatically by checking the user's windows login
  + Out of 30 tries, it was 100 percent that people were able to login to the database by checking the user’s windows login.
* Make sure that all users can be easily added, removed, and edited in the admin menu
  + Out of 30 tries, admins were able to add, remove, and edited other users
* Make sure that audit tables trigger works from user logins and data deletions
  + Out of 30 tries, the triggers worked from the user logins and data deletions. This allowed users from making edits when they’re not suppose to or login into other people’s accounts when they’re not suppose to.