

Validation Plan for

BOE Database

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NO APPROVALS REQUIRED

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1. Purpose

The purpose of this document is to provide the validation plan for the BOE (Basis of Estimate) Database. This document will discuss the necessary tests needed to be performed and the traceability of the requirements to the design elements. In order to verify that the database performs and meets the requirements set by MSE and Team Snakes for the BOE Database solution, a traceability matrix is created to trace the corresponding requirements and design elements to the verification tests.

2. Scope

The scope of the validation plan focuses on the efforts to verify that the primary solution functions perform as designed according to the design specifications and satisfies its requirements. These tests will fulfill the set user, solution, and compliance requirements. The following types of verification will be performed:

- Solution/Integration
- User Acceptance
- Data Migration

2.1. Exclusions, Assumptions, and Limitations

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2.1.1. Exclusions

Tests that involve the installation of the BOE Database and all of its components, the website, and the application server to host the website will not be tested. Components within the database of similar design and functionality will not be tested as it would be considered redundant to test. These include tables such as sprint, capability, and product which have little to no impact on data.

2.1.2. Assumptions

It is assumed that the installation process of the BOE Database has been completed successfully and is ready to receive solution, integration, data migration, and user acceptance testing. MSE is responsible for any regression testing that may occur after the requirements testing has been performed.

2.1.3. Limitations

Given the magnitude of the database, its components, and the extent of the web application, not every component of the project can be efficiently tested in a timely manner. It will be addressed as to what should and should not be tested to verify the solution and integration of the BOE Database.

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3. Environment

Formal verification execution will be performed in a controlled environment as follows:

Verification Type	Controlled Environment
Solution/Integration	Non Production
User Acceptance	Non Production
Data Migration	Non Production

4. Approach

The efficient method of testing the BOE Database is to test the primary components which make the user interface perform as it should. Since there are modules comprised of similar structure, testing at least one of these components should be sufficient as the tasks to be enacted on each table relate across the different tables in the database. Testing the user interface involves the testing of the input, search, and edit modules. All tests performed on the user interface are reflected in the user requirements traceability matrix.

The selected tests which have been performed are the higher risk requirements which will need to undergo a risk assessment, should a test fail. Given the set limitations, it is important to test the key features of the BOE Database which show the performance of the product. Since all of the tables are connected in the database and are designed in a hierarchical structure, one error in the data migration test would show that the BOE database is not capable of functioning. That being said, the only tests needed are a couple of key tables to emphasize the stability of the database. The two selected tables were OBS and Program. OBS is the key to all data relationships in the database as described in the design documentation. The Program is the overlying project reference which contains all of the smaller components that make up a program.

Testing the user interface involves testing the three primary functions of the user interface successfully. Search, Insert, and Upload are the primary functions of the UI. By testing each function of the user interface in the two primary tables, both the database and the user

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interface are thoroughly tested simultaneously. This would effectively test the user requirements. As for the solution and compliance requirements, they are reflected upon the user interface. The input of data through the user interface is done through a csv file upload and single record insertion. The most common types of errors that can occur in this scenario would be invalid data input. As a result, there is a higher risk of a failed test and more thorough testing may be needed if necessary.

5. Acceptance Criteria

As stated in the approach, the effort designed in this plan will be considered complete when at least the user requirements pass their tests. This is required in order for the BOE Database to be considered in working order and production ready. The solution and compliance requirements are variable to the user(s) that have been assigned these tests. The tests indicated in the Traceability Matrix have been selectively chosen to be the primary tests to be performed.

- If all steps pass:

The test can be marked as passed and the tester may proceed with the production process.

- If any steps fail or an expected result is not achieved:

The test is to be redone and re-checked for any missed steps or input faults which may have occurred. For each failed test performed, the results should be recorded and reviewed for processing a solution.

6. Roles and Responsibilities

The *IT Solution Delivery Lifecycle* Procedure, describes the Roles and Responsibilities for developing, verifying, and implementing a Solution. Additional responsibilities relevant to this document are:

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Role	Responsibilities
Maintain Database	Ensure the integrity of the database is optimal as possible
Maintain User Interface	Update the UI as needed when entities are removed or added to the database

7. **Supporting References**

There are no supporting references specific to this document

8. **Terms and Definitions**

The terms and definitions specific to this document are included below:

Term or Acronym	Definition
BOE	Basis of Estimate Database Project
MSE	Mission Solutions Engineering
Team Snakes	The name of the group assigned to develop the BOE Database Project
Not Tested	Test has been performed in a similar solution in the Traceability Matrix
Untestable	Based on the requirement description, the test is not feasible to test or the requirement has not been fulfilled as indicated in the comments section of the Traceability Matrix.

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9. Revision History

Version	Version Date	Revisions
1.0	12/7/16	Initial Release

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10. Appendix: Deliverables and Approvals

10.1. Appendix A: Traceability Matrix

10.1.1. User Requirements Traceability

Req#	Requirement Description	Design Doc #	Design Doc Name	Test Performed	Comments
#001	Successful Data Entry into the Database	6.4.2.1	Insert/Search/Edit	2,3,4,7,8,9	
#001	Successful Data Entry into the Database	6.4.2.2	Upload	5	
#001	Successful Data Entry into the Database	6.4.1.1	Program	2,7	
#001	Successful Data Entry into the Database	6.4.1.2	Product	Not Tested	Similar Testing performed for Program
#001	Successful Data Entry into the Database	6.4.1.3	WBS	Not Tested	Similar Testing performed for Program
#001	Successful Data Entry into the Database	6.4.1.4	CPCR	Not Tested	Similar Testing performed for Program
#001	Successful Data Entry	6.4.1.5	Development	Not Tested	Similar Testing performed for

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	into the Database				Program
#001	Successful Data Entry into the Database	6.4.1.6	Sprint	Not Tested	Similar Testing performed for Program
#001	Successful Data Entry into the Database	6.4.1.7	Capability	Not Tested	Similar Testing performed for Program
#001	Successful Data Entry into the Database	6.4.1.8	Relationship Tables	6,10	
#002	Successful Data output from the database	6.4.2	User Interface Modules	4	
#002	Successful Data output from the database	6.4.1.1	Program	4	
#002	Successful Data output from the database	6.4.1.2	Product	Not Tested	Similar UI Testing performed for Program
#002	Successful Data output from the database	6.4.1.3	WBS	Not Tested	Similar UI Testing performed for Program
#002	Successful Data output from the database	6.4.1.4	CPCR	Not Tested	Similar UI Testing performed for Program
#002	Successful Data output	6.4.1.5	Development	Not Tested	Similar UI Testing

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	from the database				performed for Program
#002	Successful Data output from the database	6.4.1.6	Sprint	Not Tested	Similar UI Testing performed for Program
#002	Successful Data output from the database	6.4.1.7	Capability	Not Tested	Similar UI Testing performed for Program
#003	Easy to understand interface	6.4.2	User Interface Modules	Not Tested	Overall UI Testing
#004	Easy to use interface	6.4.2	User Interface Modules	Not Tested	Refer to all UI Testing
#005	Able to take in previous project and store them into the database	6.4.2.1	Insert/Search/Edit	2,3,8	
#006	Database is able to take in information on a current project and make an accurate basis of estimate for the project	6.4.2.1	Insert/Search/Edit	Untestable	Has not be developed
#007	Data analysis on	6.4.2.1	Insert/Search/Edit	Untestable	Has not be

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	inputted information is efficient in time to make an output				developed
#008	Documented so that the database can be easily used and worked on by another team in the future	3.1.2	Development View	Untestable	Refer to Design document

10.1.2. Solution Requirements Traceability

Req#	Requirement Description	Design Doc #	Design Doc Name	Test Performed	Comments
#001	Create a excel sheet that depicts layout of database	6.3.2	Data Types	Untestable	can view csv file in excel spreadsheet
#002	Create ER diagram for the database	6.3.2	Data Types	Untestable	can view ER diagram from design document
#003	Using Mariadb to program the database	3.1	System Architecture	Untestable	changed to mysql
#004	Using PHP to make the front end user interface	5.2	PHP/ Codeigniter configuration	Untestable	changed design

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#005	A product table that stores Product_code(PK), Product_name, and PID(FK)	6.3.1	Database and collections of data	Untestable	changed design
#006	A Project table that stores PID(PK), P_name, Build_date, and End_date	6.3.2	Database and collections of data	Untestable	changed design
#007	A WBS table that stores WBS_ID(PK), WBS_name, and Hour_code(FK)	6.3.3	Database and collections of data	Untestable	changed design
#008	A relationship table called contains that uses PID and Product_code both are FK	6.3.4	Database and collections of data	Untestable	changed design
#009	A relationship table called Describes that uses Product_code and WBS_ID. both are FK	6.3.5	Database and collections of data	Untestable	changed design
#010	A hours charged table that stores Hour_code(PK),	6.3.6	Database and collections of data	Untestable	changed design

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	Num_hours, and line_code(FK)				
#011	A bug table that stores BID(PK), B_status, Product code(FK), and WBS_ID(FK)	6.3.7	Database and collections of data	Untestable	changed design
#012	A Line code table that stores line_code(PK) and stock	6.3.8	Database and collections of data	Untestable	changed design
#013	Equations that compute metrics for future projects based off of the metrics of past projects	2.1.1	Exclusions	Untestable	Has not be developed
#014	If a user inputs incomplete data alert the user and preventing incomplete data being inserted into database	3.1.3	Process View	6	
#014.5	Allow handling for this error either by user or by automation	3.1.3	Process View	Untestable	Has not be developed
#015	If a user tries to input a file not allowed by the database, let the user	6.4.2.2	Upload	6	

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	know				
#015.5	Handle this error by rejecting the file	6.4.2.2	Upload	6	
#016	The database can store vast amounts of data inputted without getting slow	4.1.1	Servers	Untestable	depends on how large or small the input is
#017	The database can store vast amount of data inputted and still be scalable in that respect	4.1.1	Servers	Untestable	depends on how the host system is configured

10.1.3. Compliance Requirements Traceability

Req#	Requirement Description	Design Doc #	Design Doc Name	Test Performed	Comments
#001	Database that can hold information from csv files	6.4.2.1	Insert/Search/Edit	6	
#001.5	Database that can hold information	2.1.3	Limitations	Untestable	Has not be developed

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	from other file types				
#002	Website where data can be inputted into the database securely	6.4.2.1	Insert/Search/Edit	2,6	
#002.5	Only allow those with certain authority to input the data	2.1.3	Limitations	Not Tested	If the user has an account, they should be able to
#003	Website where data from database can be outputted to	6.4.2.1	Insert/Search/Edit	4	
#003.5	Only allow those with the right access see the output from files	2.1.3	Limitations	Not Tested	Has not be developed
#004	Security like whitelisting	2.1.3	Limitations	Untestable	Has not been configured to whitelist IP addresses

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10.2. Appendix B: Test Scripts

Script Name	Create, Revise, Refer	Script Identifier	Comments
Login to web user interface		1	
Search Program through User Interface		2	
Edit Program through User Interface		3	
Search Program through User Interface		4	
Program Upload through User Interface		5	
OBS insert through User Interface		6	
Insert Program through database server		7	
Edit Program through database server		8	
Search Program through database server		9	
Insert OBS through database server		10	