**Software Test Report**

NASA Maestro EVA/IVA Heads-Up Display (HUD)

Version 4.0

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**Index of Revisions**

|  |  |  |  |
| --- | --- | --- | --- |
| Revision | Name | Date | Description |
| 1.0 | Laura Tamshen | 03/02/2020 | Initial draft and structure set up |
| 2.0 | Laura Tamshen | 03/15/2020 | Updated document with milestone 2 test results |
| 3.0 | Ali Alnaqeeb | 04/05/2020 | Updated document with milestone 3 test results |
| 4.0 | Laura Tamshen | 04/24/2020 | Updated document with additional test cases |

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# Test Summary

This Test Report summarizes the testing performed in Milestone 4 which consists of Sprint 6 (04/06/2020-4/26/2020).

The table below shows test results after defects were fixed and retested. See defect section 3 at the end of this document to see the number of defects found, fixed and retested.

|  |  |  |
| --- | --- | --- |
| **# Tests Executed** | **# Tests Passed** | **# Tests Failed** |
| **13** | **13** | **0** |

# Test Cases List

1. Select Procedure
2. Select Actor
3. Step Has a Warning
4. Warning Exists for Entire Procedure
5. Warning Exists for a Set of Steps
6. Figures Exist for a Step
7. Long Steps May Not be Broken Over Pages
8. All Steps are Displayed
9. Negative test - Try to go to previous step when on first step
10. Negative test - Try to go to next step on Procedure Complete
11. Negative test - Try to go to next step without using "Maestro"
12. Negative test - Try to choose a procedure that is not displayed
13. Negative test - Try to choose a role that is not displayed
14. Verify each page shows navigation help

## Test Case 1: Select Procedure

|  |  |
| --- | --- |
| **Description:** | Upon opening the application, the user is presented with a list of procedures to choose from and may only select one. |
| **Requirements:** | Based on approved workflow diagram – user must first select a procedure. |
| **Prerequisites:** | The application is opened and displayed on the HUD. |
| **Steps:** | * + - 1. User issues voice command “Maestro select procedure [*number*]” |
| **Expected result:** | The system displays a list of procedures upon opening.  The system displays the Select Actor screen after procedure selection. |
| **Assumptions:** |  |
| **Actual Result:** | User is able to select a procedure.  After procedure selection, the Role Selection screen is displayed. |
| **Pass/Fail:** | Pass |

## Test Case 2: Select Actor

|  |  |
| --- | --- |
| **Description:** | After selecting a procedure, the user must select an actor. |
| **Requirements:** | Create a basic format showing one actor’s steps. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure. |
| **Steps:** | 1. User issues voice command “Maestro select role [*number*]” |
| **Expected Result:** | The list contains the correct actors for the selected procedure. That is, only the actors for the given procedure are displayed – not all actors for other/all procedures.  After selection of the actor, the first step for that actor is displayed. |
| **Assumptions:** | The Select Procedure testcase has completed successfully. |
| **Actual Result:** | The user is able to one actor from a list.  After actor selection, the screen displays the first step for the actor. |
| **Pass/Fail:** | Pass |

## Test Case 3: Step Has Warning

|  |  |
| --- | --- |
| **Description:** | If the currently displayed step has an associated warning, it must also be displayed with the step. |
| **Requirements:** | Warnings can apply to one step, set of steps, or all steps and must also be displayed. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure and an actor. |
| **Steps:** | 1. User uses voice commands (e.g. “Maestro next step” or “Maestro previous step” to navigate to a step that has an associated warning. |
| **Expected Result:** | The warning text displays with the step text. |
| **Assumptions:** | The Select Procedure testcase has completed successfully.  The Select Actor testcase has completed successfully. |
| **Actual Result:** | The warning displays at the top of the screen with the associated step text below. |
| **Pass/Fail:** | Pass |

## Test Case 4: Warning Exists for Entire Procedure

|  |  |
| --- | --- |
| **Description:** | If the currently selected procedure has an associated warning, it must also be displayed with every step. |
| **Requirements:** | Warnings can apply to one step, set of steps, or all steps and must also be displayed. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure that has warnings associated with the entire procedure and an actor. |
| **Steps:** | 1. User views each step of the procedure. |
| **Expected Result:** | The warning text displays with each step text. |
| **Assumptions:** | The Select Procedure testcase has completed successfully.  The Select Actor testcase has completed successfully. |
| **Actual Result:** | No data available yet for this test. |
| **Pass/Fail:** | N/A |

## Test Case 5: Warning Exists for a Set of Steps

|  |  |
| --- | --- |
| **Description:** | If the currently selected procedure has a set of steps with associated warnings, the warnings display for each step in the set. |
| **Requirements:** | Warnings can apply to one step, set of steps, or all steps and must also be displayed. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure that has warnings associated with some of the steps in the procedure and an actor. |
| **Steps:** | 1. User views each step of the procedure. |
| **Expected Result:** | The warning text only displays for the appropriate set of steps. Warning does not display for all steps. |
| **Assumptions:** | The Select Procedure testcase has completed successfully.  The Select Actor testcase has completed successfully. |
| **Actual Result:** | Data not available yet for this test. |
| **Pass/Fail:** | Pass |

## Test Case 6: Figures Exist for a Step

|  |  |
| --- | --- |
| **Description:** | If the currently selected step has an associated figure, display it with the step. |
| **Requirements:** | Steps may have reference to figures which would be nice to display as well. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure that has figure(s) associated with some of the steps in the procedure and an actor. |
| **Steps:** | 1. User views each step of the procedure.  2. User uses voice commands (e.g. “Maestro show image [*number*]”, “Maestro show next image page”, “Maestro show previous image page”) to display images associated with a step. |
| **Expected Result:** | The figure(s) only displays for the appropriate step(s). Figure does not display for all steps.  Note: More than one figure may be associated with a step. |
| **Assumptions:** | The Select Procedure testcase has completed successfully.  The Select Actor testcase has completed successfully. |
| **Actual Result:** | The figures display. |
| **Pass/Fail:** | Pass |

## Test Case 7: Long Steps May Not be Broken Over Pages

|  |  |
| --- | --- |
| **Description:** | If the currently selected step(s) is long, it must not be broken over pages. |
| **Requirements:** | Between one and five steps will fit on a page. Most procedures are dozens of steps. Steps must not be broken over two pages. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure and an actor. |
| **Steps:** | 1. User views each step of the procedure. |
| **Expected Result:** | Steps are not broken over pages. That is, only the steps that can be fully displayed on a page are displayed per page. |
| **Assumptions:** | The Select Procedure testcase has completed successfully.  The Select Actor testcase has completed successfully. |
| **Actual Result:** | Font size adjusts to display entire step on one page. |
| **Pass/Fail:** | Pass |

## Test Case 8: All Steps Are Displayed

|  |  |
| --- | --- |
| **Description:** | Verify that all steps per procedure/actor are displayed. |
| **Requirements:** | Steps must display in HUD. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure and an actor. |
| **Steps:** | 1. User views each step of each procedure for each actor. |
| **Expected Result:** | All Steps Are Displayed. That is, no steps are missing. All steps marked as warning/error display as such. All figures associated with steps are displayed. |
| **Assumptions:** | **NA** |
| **Description:** | Verify that all steps per procedure/actor are displayed. |
| **Requirements:** | Steps must display in HUD. |
| **Pass/Fail:** | Pass |

## Test Case 9: Negative Test - Try to go to previous step when on first step

|  |  |
| --- | --- |
| **Description:** | Negative test to verify that no action is performed when the user asks to go to the previous step while on the first step of a procedure. |
| **Requirements:** | Steps must display in HUD. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure and an actor. |
| **Steps:** | 1. User views the first step of the procedure.  2. User says “Maestro previous step”. |
| **Expected Result:** | The display remains on the first step of the selected procedure. |
| **Assumptions:** | **NA** |
| **Pass/Fail:** | Pass |

## Test Case 10: Negative Test - Try to go to next step on Procedure Complete

|  |  |
| --- | --- |
| **Description:** | Negative test to verify that no action is performed when the user asks to go to the next step while on the Procedure Complete screen of a procedure. |
| **Requirements:** | Steps must display in HUD. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure and an actor. |
| **Steps:** | 1. User navigates to the final step and waits for the Procedure Complete screen to display.  2. User says “Maestro next step”. |
| **Expected Result:** | The application ignores the command and goes to the Select Procedure screen. |
| **Assumptions:** | **NA** |
| **Pass/Fail:** | Pass |

## Test Case 11: Negative Test - Try to go to next step without using "Maestro"

|  |  |
| --- | --- |
| **Description:** | Negative test to verify that no action is performed when the user does not use the trigger word “Maestro”. |
| **Requirements:** | Steps must display in HUD. |
| **Prerequisites:** | The application is opened and displayed on the HUD.  The user has selected a procedure and an actor. |
| **Steps:** | 1. User navigates to the first step of the procedure  2. User says “next step”. |
| **Expected Result:** | The application ignores the command and remains on the current screen. |
| **Assumptions:** | **NA** |
| **Pass/Fail:** | Pass |

## Test Case 12: Negative Test - Try to choose a procedure that is not displayed

|  |  |
| --- | --- |
| **Description:** | Negative test to verify that no action is performed when the user attempts to select a non-existent procedure. |
| **Requirements:** | Steps must display in HUD. |
| **Prerequisites:** | The application is opened and the Select Procedure screen displays. |
| **Steps:** | 1. User uses voice command to attempt to select a procedure that does not exist. (e.g. “Maestro select procedure xxx”.) |
| **Expected Result:** | The application displays an error message. |
| **Assumptions:** | **NA** |
| **Pass/Fail:** | Pass |

## Test Case 13: Negative Test - Try to choose a role that is not displayed

|  |  |
| --- | --- |
| **Description:** | Negative test to verify that no action is performed when the user attempts to select a non-existent role. |
| **Requirements:** | Steps must display in HUD. |
| **Prerequisites:** | The application is opened and the user has selected a procedure. |
| **Steps:** | 1. User uses voice command to attempt to select a role that does not exist. (e.g. “Maestro select role xxx”.) |
| **Expected Result:** | The application displays an error message. |
| **Assumptions:** | **NA** |
| **Pass/Fail:** | Pass |

## Test Case 14: Verify each page shows navigation help

|  |  |
| --- | --- |
| **Description:** | Test to verify that each page of displays navigation help. Note that this was a late requirement and may not be implemented by project end. |
| **Requirements:** | Each screen shows navigation help. |
| **Prerequisites:** | The application is opened and the user has selected a procedure and role. |
| **Steps:** | 1. User uses voice commands to navigate through a procedure. |
| **Expected Result:** | Each page shows navigation help. |
| **Assumptions:** | **NA** |
| **Pass/Fail:** | Pass |

## 3. Defects

The following defects were found and fixed in Milestone 4:

