Real-Time Bridge Monitoring Acceptance Test

Version 1.1

Revision History

Date	Version	Description	Author
22/11/13	1.0	Initial Version	Miraldi Fifo
2014-01-13	1.1	Text Format	Andrea Bottoli

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1. SCOPE

1.1 System Overview

The bridge, we are monitoring, named “Borgoforte” is situated on the Po river. On the bridge some of the piles are enforced but there is one pile which is week and needs to be monitored. On this pile there is a number of sensors measuring physical forces that different sources make on bridge. Moreover, two cameras are providing pictures from both sides of the bridge. All data from sensors and pictures from cameras are stored in files and send to the server in packages each hour.

Our goal is to make a system for storing, calculating and presenting all relevant data of the bridge. We have to extract data from .txt files and store them to database. After that, calculations have to be done according to parameters. The calculated level of danger of the bridge is also stored in a database. Finally, both current and history data along with pictures can be presented to the user.

1.2 Document Overview

The test specifications document contains: scope, referenced documents, test specifications and procedures.

This document provides a detailed description of each test specification and the requirement it tests.

The test procedures explains the actions step-by-step, shows the expected result, and any special condition that is necessary for testing.

Each requirement from the Requirements Definition version 1.1 includes a unique identification (ID) and specified functionality.

The test cases will be used by the team to check if the system meets the requirements.

2. REFERENCED DOCUMENTS

The following documents are either referenced or used in preparation of this document:

2.1 Project Specific Document References

Requirements Definition version 1.0 for the project **Real-Time Bridge Monitoring**

November 6, 2013

Design Description version 1.3 for the project **Real-Time Bridge Monitoring**

November 19, 2013

3. TEST CASES

3.1 Features to be Tested

a) Admin Functions

b) Engineer Functions

c) Human Controller Functions

d) External User Functions

3.2 Features to not be Tested

a) Non-Functional Requirements

3.3 Features Pass/Fail Criteria

Any discrepancies identified are classified as one of three types defined in Table 3-1:

Table 3-1 Severity Rankings for Discrepancies

Severity	**Description**
Critical	
Major	
Minor	

3.4 Input Specifications

See the Operator Action column for the detailed input specifications in Section 3.6

3.5 Output Specifications

See the Expected Results column for the expected outputs of each operator action in Section 3.6

3.6 Test Cases

3.6.1 User Functionalities

External User

Test Name: Test Case 1: View of Stack image
Description: The external user should be able to see the stack image with each pylons, with also the flow direction.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the stack image.		

Test Name: Test Case 2: View of bridge pictures
Description: The external user should be able to see the latest pictures of the both sides of the bridge.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the latest bridge pictures.		

Test Name: Test Case 3: View of diagram of wind speed
Description: The external user should be able to see the diagram showing the change of value of wind speed for the current day.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the diagram that shows the change of value of wind speed.		

Test Name: Test Case 4: View of diagram of wind direction
Description: The external user should be able to see the diagram showing the change of value of wind direction for the current day.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the diagram that show the change of value of wind direction.		

Test Name: Test Case 5: View of diagram of water level
Description: The external user should be able to see the diagram showing the change of water level for the current day.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the diagram that show the change of value of water level.		

Test Name: Test Case 6: View of diagram of depth of river bed
Description: The external user should be able to see the diagram showing the change of depth of river bed for the current day.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the diagram that show the change of value of depth of river bed		

Test Name: Test Case 7: View of diagram of maximum wind speed
Description: The external user should be able to see the diagram showing the change of maximum wind speed for the current day.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the diagram that show the change of value of maximum wind speed		

Test Name: Test Case 8: View of diagram of maximum wind direction
Description: The external user should be able to see the diagram showing the change of maximum wind direction value for the current day.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the diagram that show the change of value of maximum wind direction		

Test Name: Test Case 9: View the flow rate
Description: The external user should be able to see the current value of the flow rate.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the current value of flow rate		

Test Name: Test Case 10: View the wind speed
Description: The external user should be able to see the current value of the wind speed
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the current value of wind speed		

Test Name: Test Case 11: View the water speed
Description: The external user should be able to see the current value of the water speed.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the current value of water speed		

Test Name: Test Case 12: View the wind direction
Description: The external user should be able to see the current value of the wind direction.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the current value of wind direction.		

Test Name: Test Case 13: View the water level
Description: The external user should be able to see the current value of the water level.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the current value of water level		

Test Name: Test Case 14: View the river bed level
Description: The external user should be able to see the current value of the river bed level.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows the current value of river bed level		

Test Name: Test Case 15: View Google Maps picture of bridge
Description: The external user should be able to see a Google maps picture of the bridge with a wind rose picture.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	External user enters in the “current state” session of the site.	The session shows a Google maps picture of the bridge with a wind rose picture.		

Operator

The operator can see everything that the external user sees. Here are the specific test cases for the functionalities that only the operator has.

Test Name: Test Case 16: Log in
Description: The human controller should be able to log into the system with user-name and password
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	The Operator enters the credentials.	The operator is logged in the system		

Test Name: Test Case 17: Change debris value
Description: The operator should be able to change the debris value. The debris value is a Boolean
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the check box “D” that the operator can change.		

Test Name: Test Case 18: Change traffic value
Description: The operator should be able to change the traffic value. The traffic value is a Boolean
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the check box “T” that the operator can change.		

Test Name: Test Case 19: View alarm button
Description: The operator should be able to see the alarm button.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “current state” session of the site.	The session shows the alarm state		

Test Name: Test Case 20: View worst-case table.
Description: The operator should see the table for CS values for each pylon, their combination label, and values N, M, Tx, Ty, Mx and My..
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “current state” session of the site.	The session shows the worst-case table		

Test Name: Test Case 21: View History Diagram of wind speed
Description: The operator should be able to see the history diagram showing wind speed during chosen period of time.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the history diagram of wind speed		

Test Name: Test Case 22: View History Diagram of wind direction
Description: The operator should be able to see the history diagram showing wind direction during chosen period of time.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the history diagram of wind direction		

Test Name: Test Case 23: View History Diagram of maximum wind speed
Description: The operator should be able to see the history diagram showing maximum wind speed during chosen period of time.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the history diagram of maximum wind speed		

Test Name: Test Case 24: View History Diagram of maximum wind direction
Description: The operator should be able to see the history diagram showing maximum wind direction during chosen period of time.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the history diagram of maximum wind direction		

Test Name: Test Case 25: View History Diagram of water level
Description: The operator should be able to see the history diagram showing water level during chosen period of time.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the history diagram of water level		

Test Name: Test Case 26: View History Diagram of river bed height
Description: The operator should be able to see the history diagram showing river bed height during chosen period of time.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the history diagram of river bed height.		

Test Name: Test Case 27: View History Diagram of safety factor
Description: The operator should be able to see the history diagram showing safety factor during chosen period of time.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows the history diagram of safety factor		

Test Name: Test Case 28: Select dates for historical diagrams
Description: The human controller can choose a start date and end date for the historical graphs.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows “start date” and “end date” that the operator can change		

Test Name: Test Case 29: Select a specific day for historical diagrams
Description: The human controller can choose a specific day for the historical graphs.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows “specific date” that the operator can change		

Test Name: Test Case 30: Select a specific month for historical diagrams
Description: The human controller can choose a specific day for the historical graphs.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows “specific month” that the operator can change		

Test Name: Test Case 31: Select a specific month for historical diagrams
Description: The human controller can choose a specific day for the historical graphs.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator enters in the “history diagrams” session of the site.	The session shows “specific month” that the operator can change		

Test Name: Test Case 32: Log-out
Description: The human controller should be able to log out of the system.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Operator clicks “log-out” button	Operator is logged out		

Engineer

The engineer can see everything that the external user and the operator sees. Here are the specific test cases for the functionalities that only the engineer has.

Test Name: Test Case 33: View parameters
Description: The engineer can view all the parameters that are stored in the database and used for calculations
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Engineer enters in the database.	The database shows all the parameters used for calculations.		

Administrator

Test Name: Test Case 35: Log in
Description: The administrator should be able to log into the system with user-name and password.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Administrator enters the credentials	The administrator is logged in.		

Test Name: Test Case 36: Register New User
Description: The administrator should be able to register a new user by entering information about the user: first name, last name, user-name, email and permission level (Engineer or Human Controller).
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Administrator enters all the information of the user and defines its permission level	A new user is registered.		

Test Name: Test Case 37: Edit User
Description: The administrator should be able to edit any information about any user (except password).
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Administrator edit the information of the user	The information of the user is updated		

Test Name: Test Case 38: Delete user
Description: The administrator should be able to delete a registered user from the system.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Administrator clicks on “delete user” button	The user is deleted		

Test Name: Test Case 39: Log out
Description: The administrator should be able to log out of the system.
Prerequisites: N/A

Step	Operator Action	Expected Results	Observed Results	Pass/Fail
1	Administrator clicks on “log out” button	The administrator is logged out.		