



Software Requirements Specification

Version 1.0

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11/4/2013

Web Publishing System

Submitted in partial fulfillment
Of the requirements of
e-DHR(Electronic Device History Records) Software Engineering

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1. Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of the Web Publishing System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document describes the software requirements, which comprises the stated Requirements and functional requirements along with various application layering and scope of development for the e-DHR Project.

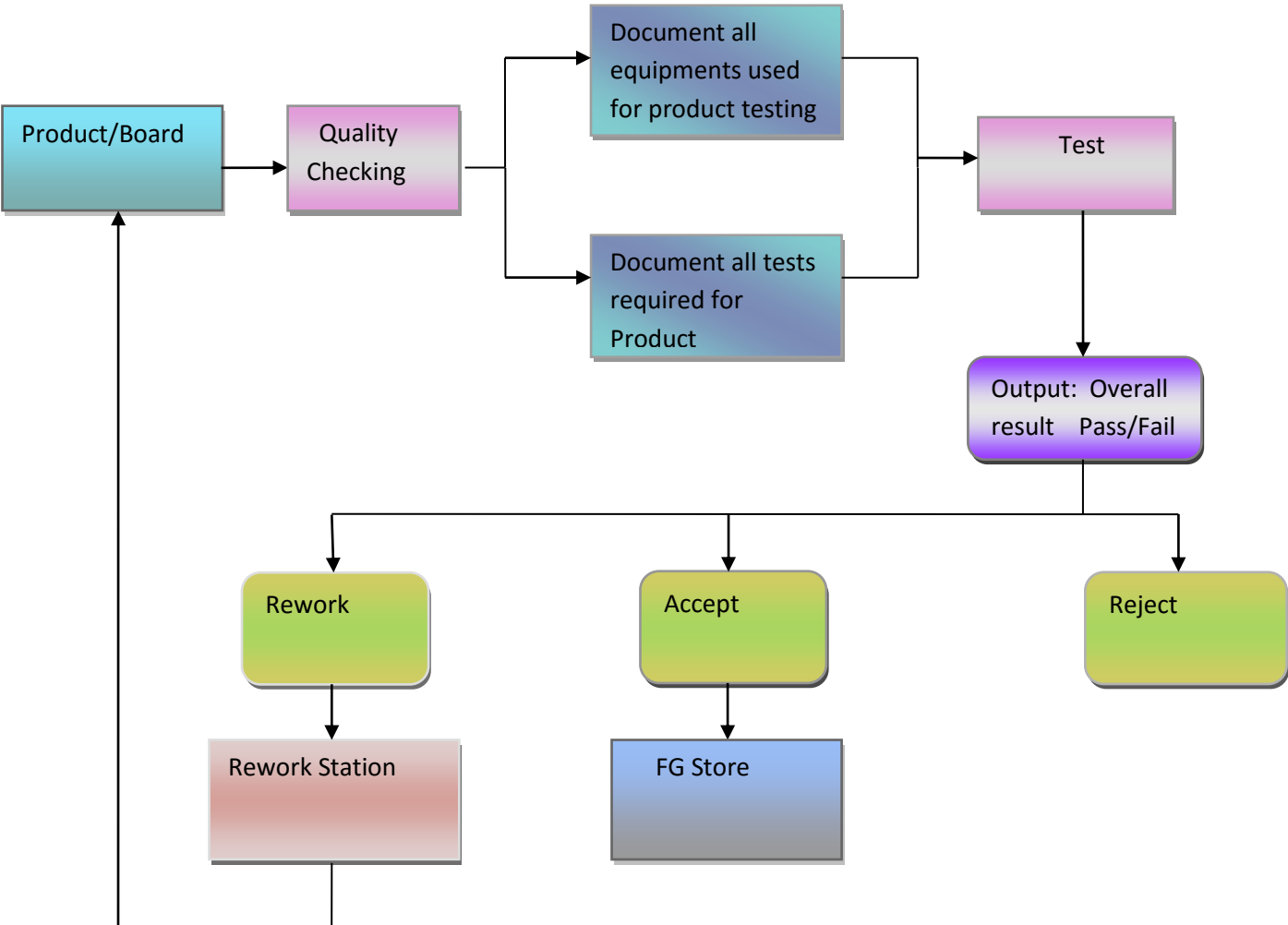
The e-DHR Project enables you to document all tests done for the product with its document number. The system will give you observed result and overall result of tests. According to the results, you can decide whether the product is required to be reworked. Also it captures equipment details used for the testing such as calibration due date etc.

1.2 Scope of project

This software system will be a Web Publishing System for the local users of SFO Technologies. This system will be designed to maximize productivity by providing tools to assist in automating Product Tests Process. By maximizing the users' work efficiency and production the system will meet the Quality Engineer's needs while remaining easy to understand and use.

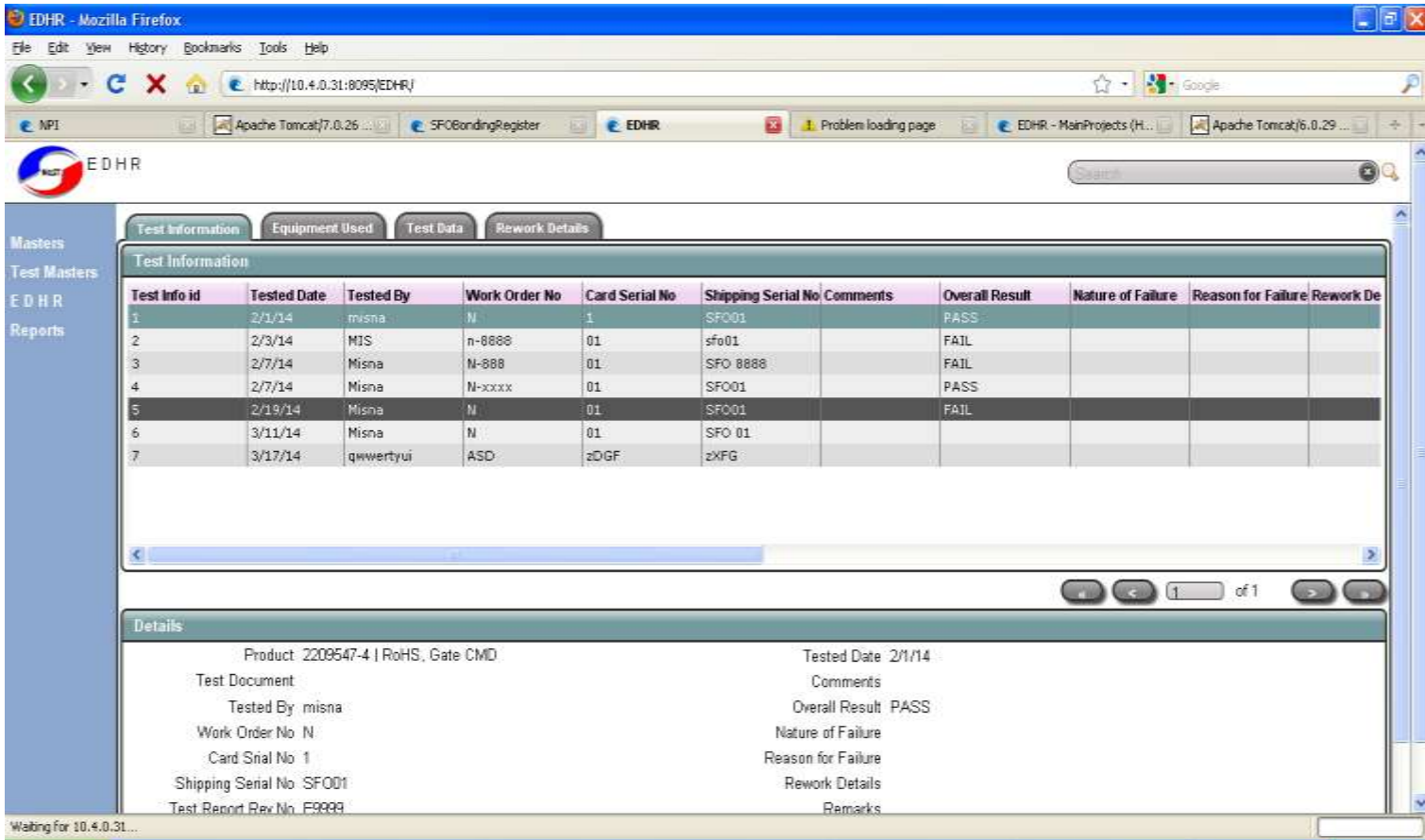
More specifically, this system is designed to allow an Quality Engineer to manage and communicate with their team. The system also contains a relational database containing Product, Document, Tests , Test assets, Test information ,Test Data, Equipment used and Rework.

2. System Overview



3. Functional Specification

3.1. Main Window:



3.2 Initial Step-By-Step Description:

- Masters should be defined before executing e-DHR.
- The product must be defined in the master.
- The Test Document for the product must be defined in the master.
- Necessary Equipment details should be retrievable from the ERP system.
- Test Master holds two types of documents: Test Asset and Tests
- The Tests and Test Asset must be pre-defined for each combination of product and test document
- Equipments to test for each product must be predefined in the Test Asset Master .
- E-DHR has four subdivisions – Test Information, Equipment used ,Test Data and Rework .
- When an operator enters the product and test document number in e-DHR ,the system will restore its corresponding equipments from Test asset master to equipment used and corresponding tests from Test master to Test Data .
- The system will calculate overall result of test based on the value of observed result of each tests .If the result is fail, the product will be sent to rework station. The rework details will be captured by rework Tab.
- Accessibility to each page is restricted based on the roles.

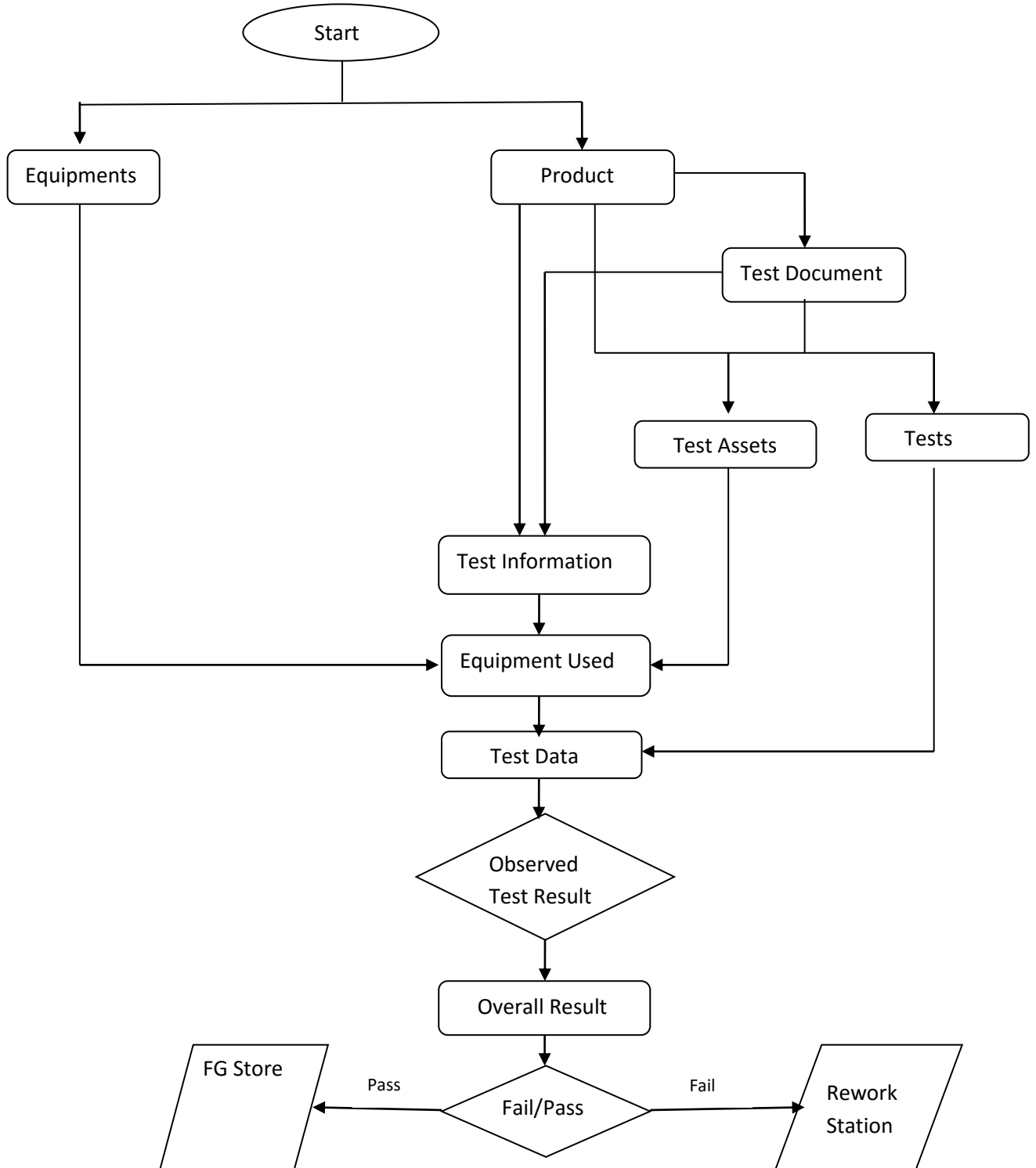
4. Requirements Specification

4.1. External Interface Requirements

The only link to an external system is the link to the Dynamic NAV Database.

Microsoft Dynamics NAV 2009 is a complete enterprise resource planning (ERP) software solution.

4.2 Data Flow Diagram



4.3 Data Entities

- The Product master holds the following fields :

Field	Type
Product id	int
Product part no	nvarchar(50)
Product description	varchar(255)
Product status	bit
Created date	date

- The Test Document master holds the following fields :

Field	Type
Testdoc id	int
Testdoc refno	nvarchar(50)
Product part no	nvarchar(50)
Testdoc revision	float
Testdoc status	bit
Created date	date
Test report no	nvarchar(100)

- The Equipment details are already defined in Nav Dynamic ERP system. The e-DHR system pulls necessary details from ERP system .

Field	Type
Machine No_	varchar(30)
Machine Description	varchar(250)
Machine Category	varchar(50)
Caliberation Required	tinyint
Caliberation Date	datetime
Last Caliberation Date	datetime
Next Caliberation Due on	datetime

➤ The Test Master holds the following fields :

Field	Type
Test id	int
Test ref no	nvarchar(50)
Testdoc refno	nvarchar(50)
Product part no	nvarchar(50)
Test serial no	int
Test requirement	varchar(255)
Test type	varchar(50)
Test point	varchar(100)

Field	Type
Required result	varchar(255)
Normal value	decimal(18, 0)
LSL	decimal(18, 4)
USL	decimal(18, 4)
Test comments	nvarchar(MAX)
Test stage	nvarchar(100)
Pos attr result	nvarchar(50)
Neg attr result	nvarchar(50)

Limitations:

Depending on the value of test type some fields will be editable/non-editable:

- ✓ If the test type is Value, the following fields will be editable:
 - Test point
 - Normal Value
 - LSL
 - USL
- ✓ If the test type is Attribute, the following fields will be editable:
 - Test point
 - Positive Required result
 - Negative Required result
- ✓ Serial No must be auto incremented based on the combination of product and test document.
- ✓ The tests can be filtered by product and test document.

➤ The Test Asset Master holds the following fields :

Field	Type
Test asset id	int
Test asset refno	nvarchar(50)
Test doc refno	nvarchar(50)
Product part no	nvarchar(50)
Asset Description	nvarchar(500)
Serial no	int

Limitations:

- ✓ Serial No must be auto incremented based on the combination of product and test document.
- ✓ The Test assets can be filtered by product and test document.

➤ e-DHR Test Information holds the following fields :

Field	Type
Test report id	
Created date	date
Tested by	varchar(255)
Product part no	nvarchar(50)
Work order no	nvarchar(100)
Card serial no	nvarchar(100)
Shipping serial no	nvarchar(100)
Test doc ref no	nvarchar(50)

Field	Type
comments	varchar(255)
Overall result	varchar(255)
Nature of failure	varchar(255)
Reason for failure	varchar(255)
Rework details	varchar(255)
Remarks	varchar(255)
Id	int
Test report no	nvarchar(100)

Limitations and Requirements:

- ✓ Mandatory fields:
 - Product
 - Test Document
 - Tested By
 - Work Order No.
 - Card Serial No.
 - Shipping serial no
- ✓ Test document must be filtered on the basis of given Product
- ✓ Test Report Rev No must be auto generated from Test document Master
- ✓ Special files can be up loadable and downloadable

➤ e-DHR Equipment Used holds the following fields :

Field	Type
Equip id	int
Test report id	nvarchar(50)
Product part no	nvarchar(50)
Testdoc ref no	nvarchar(50)
Test asset ref no	nvarchar(50)
Asset type	nvarchar(50)
Calibration needed	bit

Field	Type
Last calibration date	date
Calibration due date	date
Used	bit
Nav asset	nvarchar(500)
Serial no	int
Asset description	nvarchar(500)
Nav asset description	nvarchar(500)

➤ e-DHR Test Data holds the following fields :

Field	Type
Test data id	int
Test report id	nvarchar(50)
Test doc refno	nvarchar(50)
Product part no	nvarchar(100)
Test stage	nvarchar(100)
Test serial no	int
Test requirement	varchar(255)
Test type	varchar(50)
Test point	varchar(100)
Required result	varchar(255)

Field	Type
Normal value	decimal(18, 5)
LSL	decimal(18, 5)
USL	decimal(18, 5)
Measured value	decimal(18, 5)
Observed result	int
Test status	bit
Observed attr result	int
Pos result	nvarchar(50)
Neg result	nvarchar(50)

➤ e-DHR Rework holds the following fields :

Field	Type
Rework id	int
Serial no	int
Tes treport id	nvarchar(100)
Nature of failure	nvarchar(1000)
Reason for failure	nvarchar(1000)
Rework details	nvarchar(1000)
Remarks	nvarchar(1000)
Rework date	date

5. Test Asset Window

EDHR - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://10.4.0.31:8095/EDHR/

Filters: Product 2300401-3 JAC DC Board Test Document 52170281.001|1

Masters
Test Masters
EDHR
Reports

Serial No	Product Description	Product Part No	Test Doc Refno	Test Doc Rev	Navasset
1	AC DC Board	2300401-3	52170281.001	1	Test fixture
2	AC DC Board	2300401-3	52170281.001	1	DMM

Serial No 2
Product 2300401-3 JAC DC Board
Test document 52170281.001|1
Asset Description DMM

New Update Delete

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Done

6. Tests Window

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File Edit View History Bookmarks Tools Help

http://10.4.0.31:8095/EDHR/

NPI Apache Tomcat/7.0.26 SFOBondingRegister EDHR Problems loading page EDHR - MainProjects (H... Apache Tomcat/6.0.29

EDHR

Filters : Product 2209547-4 (RoHS, Gate CMI) Test Document 52328112.001(2)

Masters
Test Masters
EDHR
Reports

SerialNo	Test Requirement	Test Type	Test Point	Required Result	Normal Value	LSL	USL	Test Comments
1		Attribute	DS300					
2		Attribute	DS201					
3		Attribute	DS202					
4		Attribute	DS101					
5		Attribute	DS102					
6		Value	CHANNEL 1 & 0V			-10.25	-0.75	
7		Value	Channel 1 & 0V			22	24	
8	Channel 2	Value				-13	-12	

of 1

Details

Product Test Point
Test Document Required Result
Testserialno 0 +ve -ve
Test Stage Normalvalue 0
Test Requirement LSL 0
Test Type USL 0
Test comments

Done

7. Test Document Window

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File Edit View History Bookmarks Tools Help

http://10.4.0.31:8095/EDHR/

NPI Apache Tomcat/7.0.26 SFOBondingRegister EDHR Problem loading page EDHR - MainProjects (H... Apache Tomcat/6.0.29

EDHR

Masters
Test Masters
EDHR
Reports

Test Document Archive Data

Test Doc id	Test document	Test Doc Revis	Test Doc Status	Created Date	Product part no	Product description	Test Report No.
14	1.001	1	true	3/11/14	1	A	E1
12	52170281.001	1	true	2/7/14	2300401-3	AC DC Board	E5357
13	52328112.001	2	true	2/19/14	2209547-4	RoHS, Gate CMD	P5357

of 1

Details

Test document 1.001
test doc Revision 1
Test doc status
Product 11.A

Transferring data from 10.4.0.31...

8 Installation Qualification (IQ)

Architecture : Web application

Script : Javascript

Programming Language : Java

RAD Tool : Wavemaker 6.3.3GA

Operating System : Windows XP

Database : Microsoft SQL Server 2008 R2

WebServer : Apache Tomcat 8.0

Minimum Specification : Firefox 2 or 3, Internet Explorer 7, or Safari 3

1 GB System Memory

250 MB Disk Space

1024 x 768 Screen Resolution

Java Container running on JDK 1.5 or above, or JDK 1.6.0_04 or above

8.1 Components

WaveMaker consists of WaveMaker Studio and WaveMaker Runtime

WaveMaker is bundled with Tomcat Server and Hypersonic Database. WaveMaker supports other servers and databases as well.

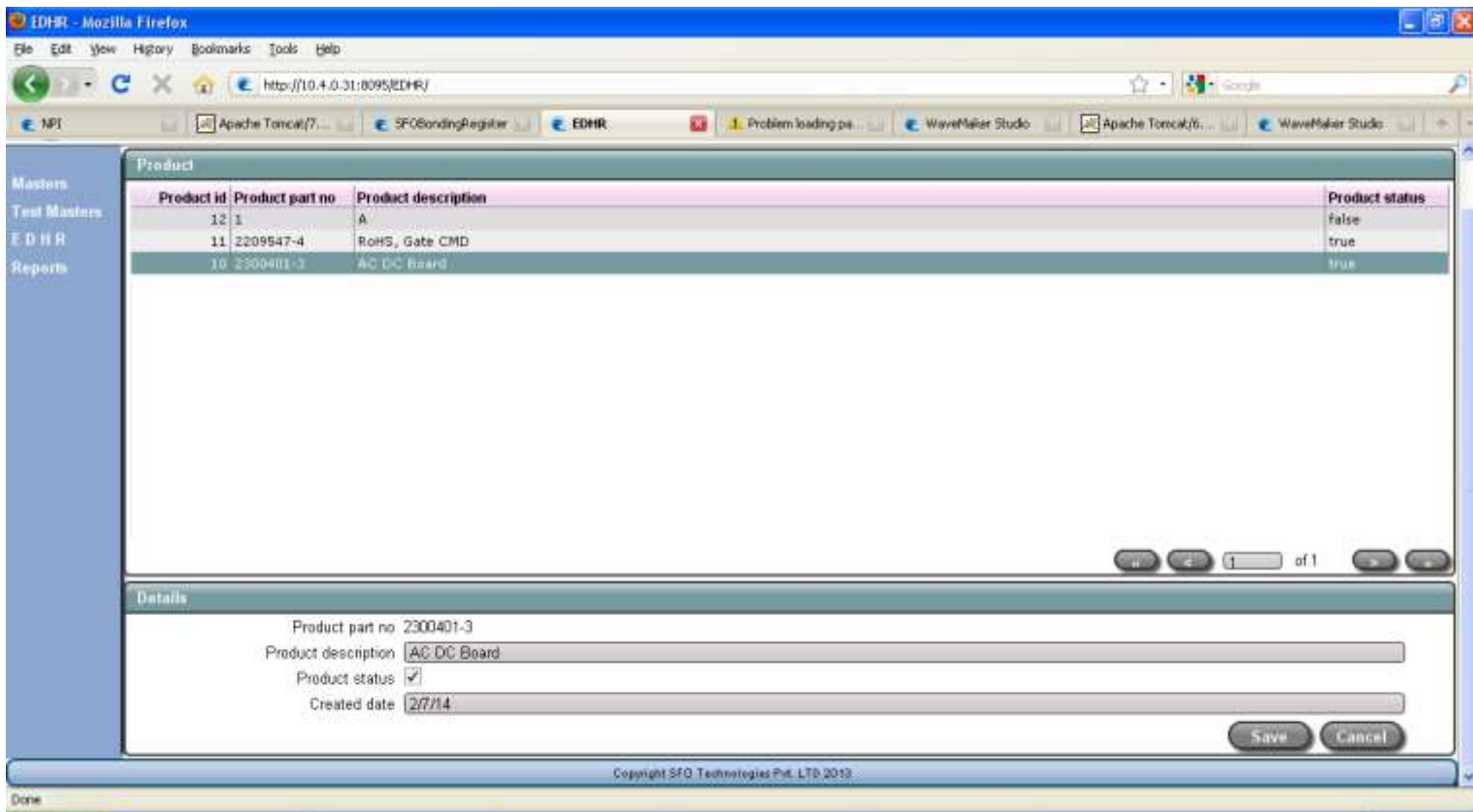
WaveMaker Studio is a visual and intuitive drag-and-drop development environment that you use to build standards-based web applications. It runs in a browser. The WaveMaker installation includes a full web application stack, including a web server (Tomcat).

WaveMaker Runtime is a runtime server and client framework that is embedded in the application created by Studio. You deploy WaveMaker applications using standard Java WAR files that can run in any Java server. Applications built with WaveMaker use standard web infrastructure, including SpringSource components that provide scalability, performance, and portability.

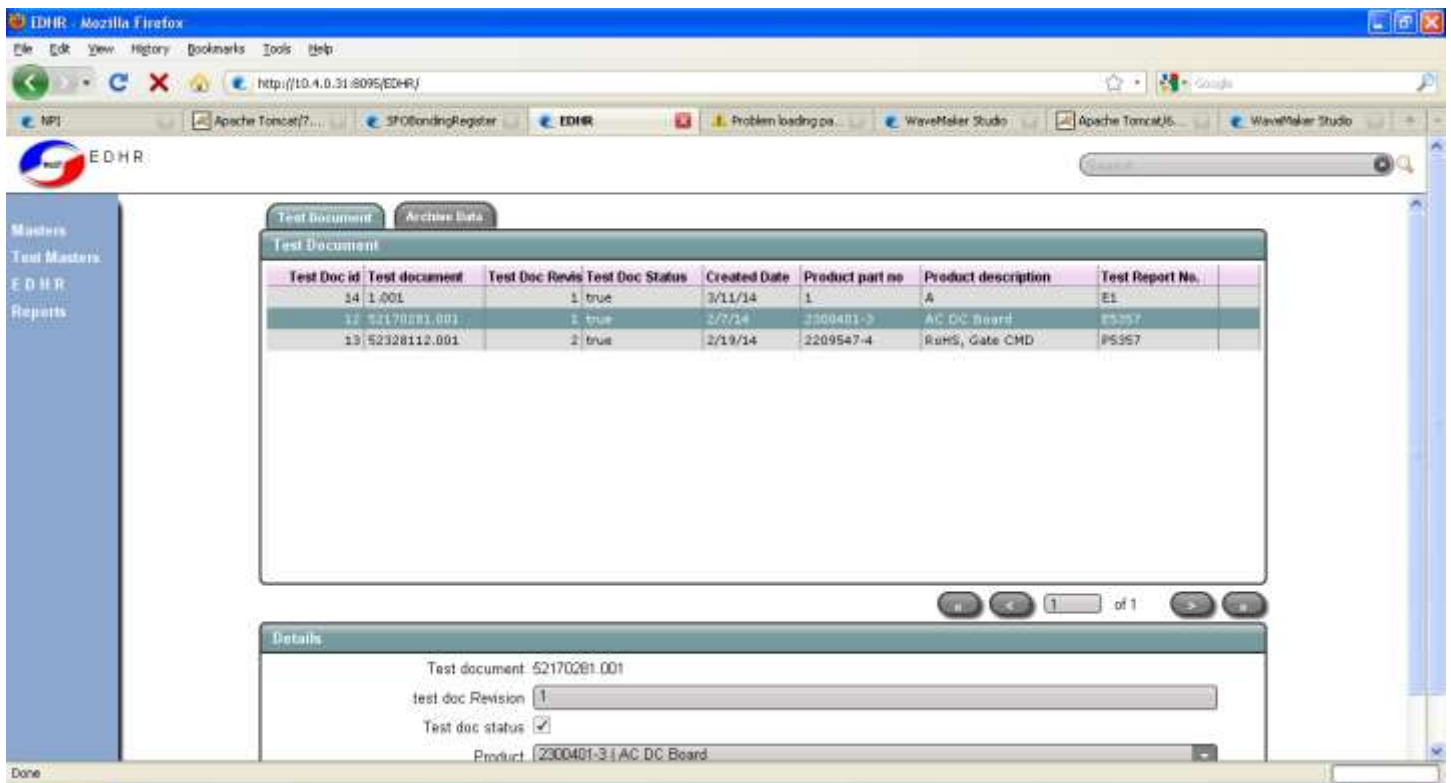
9 Operational Qualification (OQ)

9.1 Functional Testing

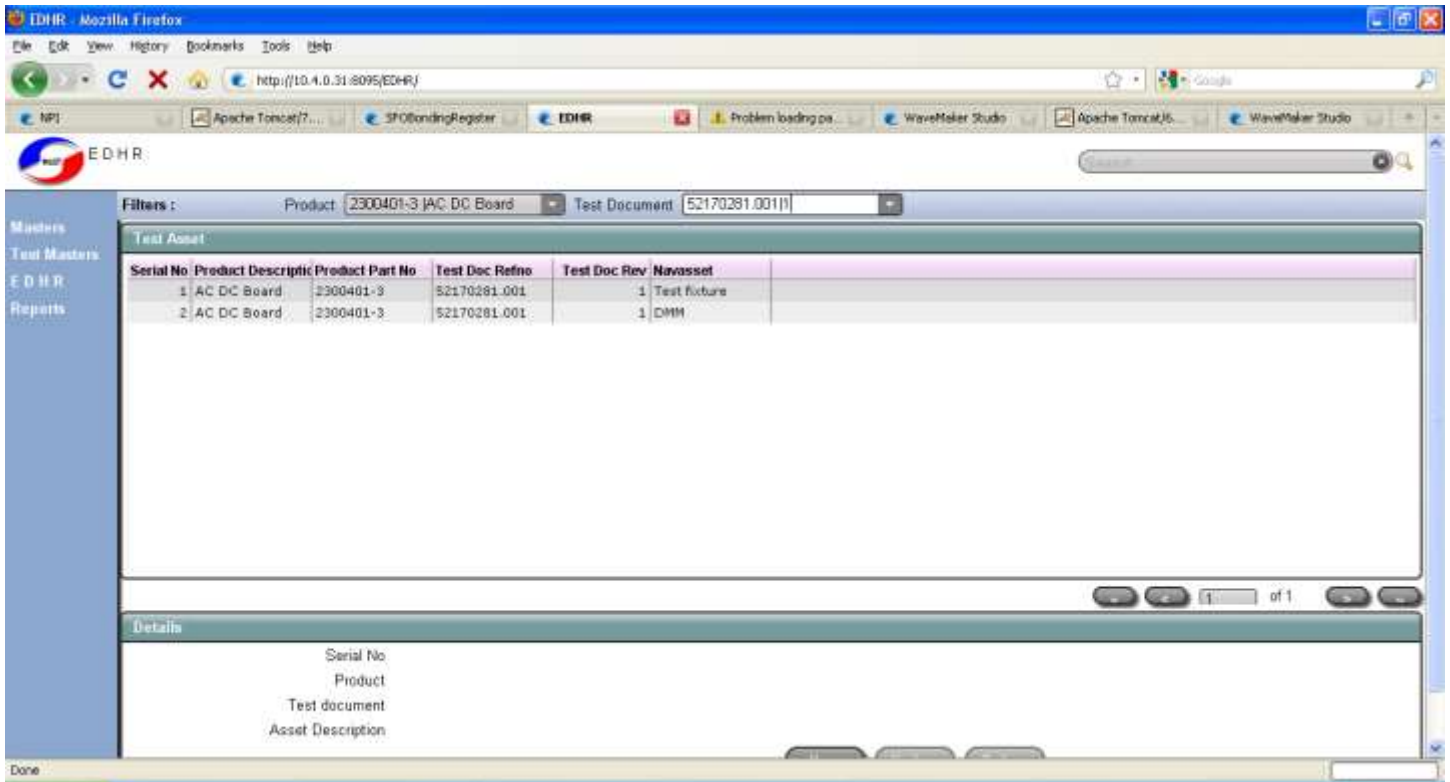
Product Master :



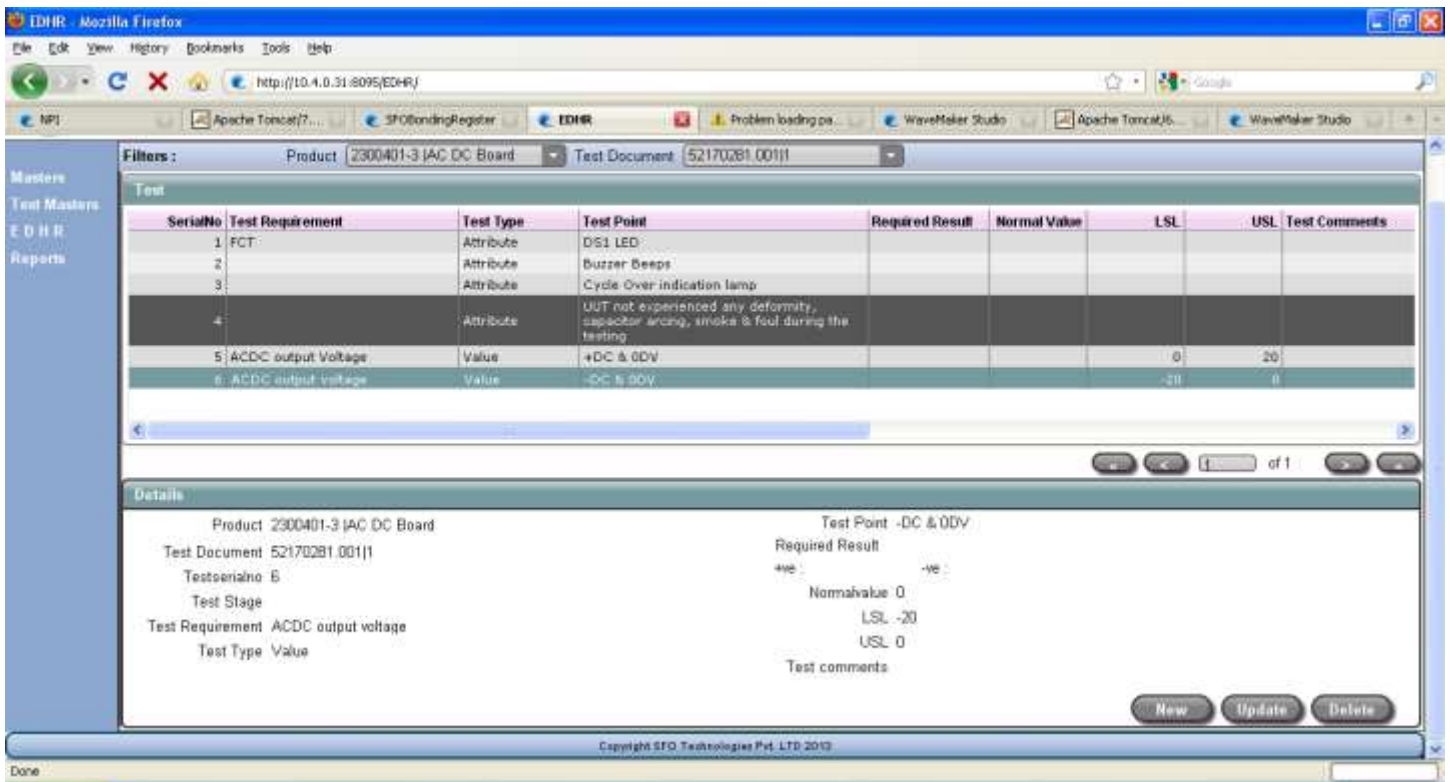
Test Document Master :



Test Asset Master :



Test Master :



e-DHR- Test Information :

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http://10.4.0.31:8095/EDHR/

NP1 Apache Tomcat/7... SFOBondingRegister EDHR Problem loading pa... WaveMaker Studio Apache Tomcat/6... WaveMaker Studio

Masters
Test Masters
EDHR
Reports

Test Information Equipment Used Test Data Rework Details

Test Information

Test info id	Tested Date	Tested By	Work Order No	Card Serial No	Shipping Serial No	Comments	Overall Result	Nature of Failure	Reason for Failure	Rework De
1	2/1/14	misna	N	1	SFO01		PASS			
2	2/3/14	MIS	n-8888	01	sfo01		FAIL			
3	2/7/14	Misna	N-888	01	SFO 8888		FAIL			
4	2/7/14	Misna	N-xxxx	01	SFO01		PASS			
5	2/19/14	Misna	N	01	SFO01		FAIL			
6	3/11/14	Misna	N	01	SFO 01					
7	3/17/14	qwertyui	ASD	JDGF	ZKFG					

Details

Product: 2300401-3 | AC DC Board
 Test Document: 52170281.001|1
 Tested By: Misna
 Work Order No: N-xxxx
 Card Serial No: 01
 Shipping Serial No: SFO01
 Test Report Rev No: E5357

Tested Date: 2/7/14
 Comments:
 Overall Result: PASS
 Nature of Failure:
 Reason for Failure:
 Rework Details:
 Remarks:

No files selected

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e-DHR-Equipment Used :

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http://10.4.0.31:8095/EDHR/

NP1 Apache Tomcat/7... SFOBondingRegister EDHR Problem loading pa... WaveMaker Studio Apache Tomcat/6... WaveMaker Studio

Masters
Test Masters
EDHR
Reports

Serial No / Asset	Asset Description	Last Calibration Date	Asset Type	Calibration Due Date	Calibration Needed	Test Document	Used	Test Asset De
1 TS-000364			OSCILLOSCOPE		true	52170281.001	true	Test fixture
2 INS-8888		3/13/13	INSTRUMENT	3/13/14	true	52170281.001	true	DMM

Details

Product: 2300401-3 | AC DC Board
 Test Document: 52170281.001|1
 Asset Description: DMM
 MW Asset: INS-0008 | DIGITAL MULTIMETER
 Used

Serial No: 2
 Asset Type: INSTRUMENT
 Calibration Needed: true
 Last calibration date: 3/13/13
 Calibration due date: 3/13/14

Next New Update Delete

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e-DHR-Test Data :

EDHR - Mozilla Firefox

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http://10.4.0.31:8095/EDHR/

NP1 Apache Tomcat/7.0.29 SFOBondingRegister EDHR Problem loading pa WaveMaker Studio Apache Tomcat/6.0.29 WaveMaker Studio

Masters
Test Masters
EDHR
Reports

Test Information Equipment Used Test Data Rework Details

Testdata

Test Serial	Test Stage	Test Requirement	Test Type	Test Point	Required Result	Normal Value	Measured Value	LSL	USL
1	LED check	FCT	Attribute	DS1 LED	ON				
2	FCT		Attribute	Buzzer Beeps	Yes				
3	FCT		Attribute	Cycle Over indication lamp	Blinking				
4	FCT		Attribute	UUT not experienced any deformity, capacitor arcing, smoke & foul during the testing	No				
5	FCT	ACDC output voltage	Value	+DC & 0DV			-10	0	
6	FCT	ACDC output voltage	Value	-DC & 0DV			-10	-20	

Details

Product AC DC Board
 Test Document 52170281.001|1
 Test Stage FCT
 Test serialno 5
 Test requirement ACDC output Voltage
 Test type Value

Test point +DC & 0DV
 Required Result
 Normal value 0
 Lsl 0
 Usl 20
 Measured value -10

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Done

e-DHR-Rework Details :

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File Edit View History Bookmarks Tools Help

http://10.4.0.31:8095/EDHR/

NP1 Apache Tomcat/7.0.29 SFOBondingRegister EDHR WaveMaker Studio Apache Tomcat/6.0.29 WaveMaker Studio

EDHR

Masters
Test Masters
EDHR
Reports

Test Information Equipment Used Test Data Rework Details

Serial No	Rework Date	Nature of Failure	Reason for Failure	Rework Details	Remarks
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Done

Report

Reporting Services - D:\RTestReportforBoard - Mozilla Firefox

http://chrvn06/sforeports/_layouts/ReportServer/RSViewerPage.aspx?rv:RelativeReportUrl=/sforeports/reportslibrary/npl/dhrtestreportforboard.rdl

Reports Library > npl

Actions - 14 1 of 2 Find Next

SFO TECHNOLOGIES
A TEST GROUP COMPANY

Test report for Board Name AC DC Board, P/N 2300401-3

WO#	N-XXXX	Equipments		
Card Number	01	SL No./ Asset	Description	Calibration Due Date
Serial Number	SFO01	1 TS-000364		
Test Document number	52170081.001	2 INS-0008		3/13/2014

SL No	Test Stage	Test Requirement	Test Point	Required Result	Normal Value	LSL	USL	Measured Value	Obvy. Result
1	LED check	PCT	D51 LED	ON					PASS
2	PCT		Buzzer Beeps	Yes					PASS
3	PCT		Cycle Over indication lamp	Blinking					PASS
4	PCT		UUT not experienced any deformity, capacitor arcing, smoke & foul during the testing	No					PASS
5	PCT	ACDC output voltage	+DC @ 00V		0.00000		20.00000	10.00000	PASS
6		ACDC output voltage	-DC @ 00V			-20.00000	0.00000	-10.00000	PASS
Final Test Status:									PASS

Tested By : Mina

Done

Parameters
Product Partno
2300401-3

Apply

9.2 Challenge testing

Fields with red *(asteric) are mandatory fields. Save button will not be active till all mandatory fields are entered.

If the value given in the combo box is not valid ,the system will prompt with error symbol in the corresponding fields.

EDHR - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://10.4.0.31:8095/EDHR/

NP1 Apache Tomcat/7... SPOBondingRegister EDHR Problem loading pa... WaveMaker Studio Apache Tomcat/6... WaveMaker Studio

Test ID	Test Date	Tested by	Work Order No	Card Serial No	Shipping Serial No	Comments	Overall Result	Nature of Failure	Reason for Failure	Network Details
1	2/1/14	misna	N	1	SFO01		PASS			
2	2/3/14	MIS	n-8888	01	rf001		FAIL			
3	2/7/14	Misna	N-888	01	SFO 8888		FAIL			
4	2/7/14	Misna	N-xcccc	01	SFO01		PASS			
5	2/19/14	Misna	N	01	SFO01		FAIL			
6	3/11/14	Misna	N	01	SFO 01					
7	3/17/14	qwertyui	ASD	zDGF	zXFG					

1 of 1

Details

Product *

Test Document *

Tested By *

Work Order No *

Card Serial No *

Shipping Serial No *

Test Report Rev No *

No files selected

Tested Date: 3/27/14

Comments:

Overall Result:

Nature of Failure:

Reason for Failure:

Rework Details:

Remarks:

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Done

EDHR - Mozilla Firefox

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http://10.4.0.31:8095/EDHR/

NP1 Apache Tomcat/7... SPOBondingRegister EDHR Problem loading pa... WaveMaker Studio Apache Tomcat/6... WaveMaker Studio

Test ID	Test Date	Tested by	Work Order No	Card Serial No	Shipping Serial No	Comments	Overall Result	Nature of Failure	Reason for Failure	Network Details
1	2/1/14	misna	N	1	SFO01		PASS			
2	2/3/14	MIS	n-8888	01	rf001		FAIL			
3	2/7/14	Misna	N-888	01	SFO 8888		FAIL			
4	2/7/14	Misna	N-xcccc	01	SFO01		PASS			
5	2/19/14	Misna	N	01	SFO01		FAIL			
6	3/11/14	Misna	N	01	SFO 01					
7	3/17/14	qwertyui	ASD	zDGF	zXFG					

1 of 1

Details

Product *

Test Document *

Tested By *

Work Order No *

Card Serial No *

Shipping Serial No *

Test Report Rev No *

No files selected

Tested Date: 3/27/14

Comments:

Overall Result:

Nature of Failure:

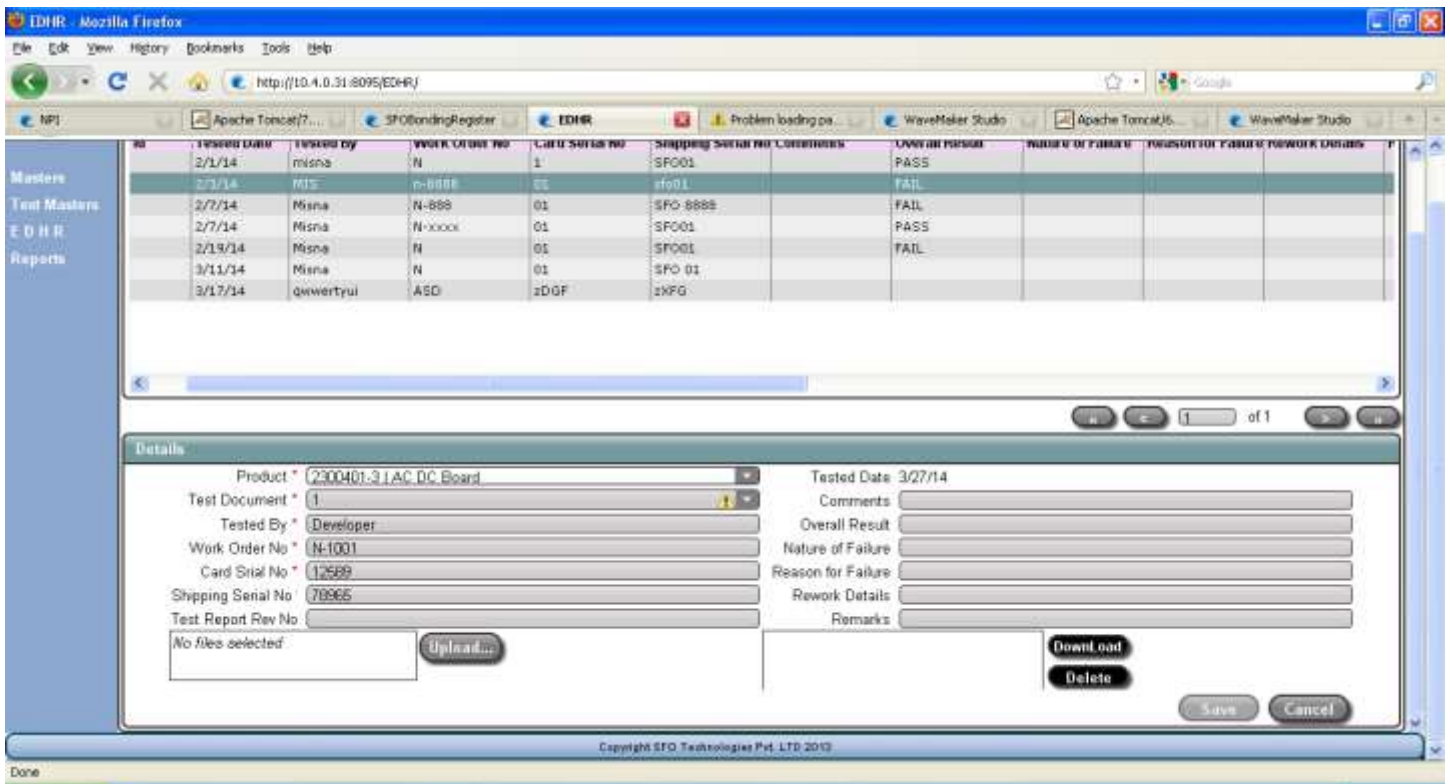
Reason for Failure:

Rework Details:

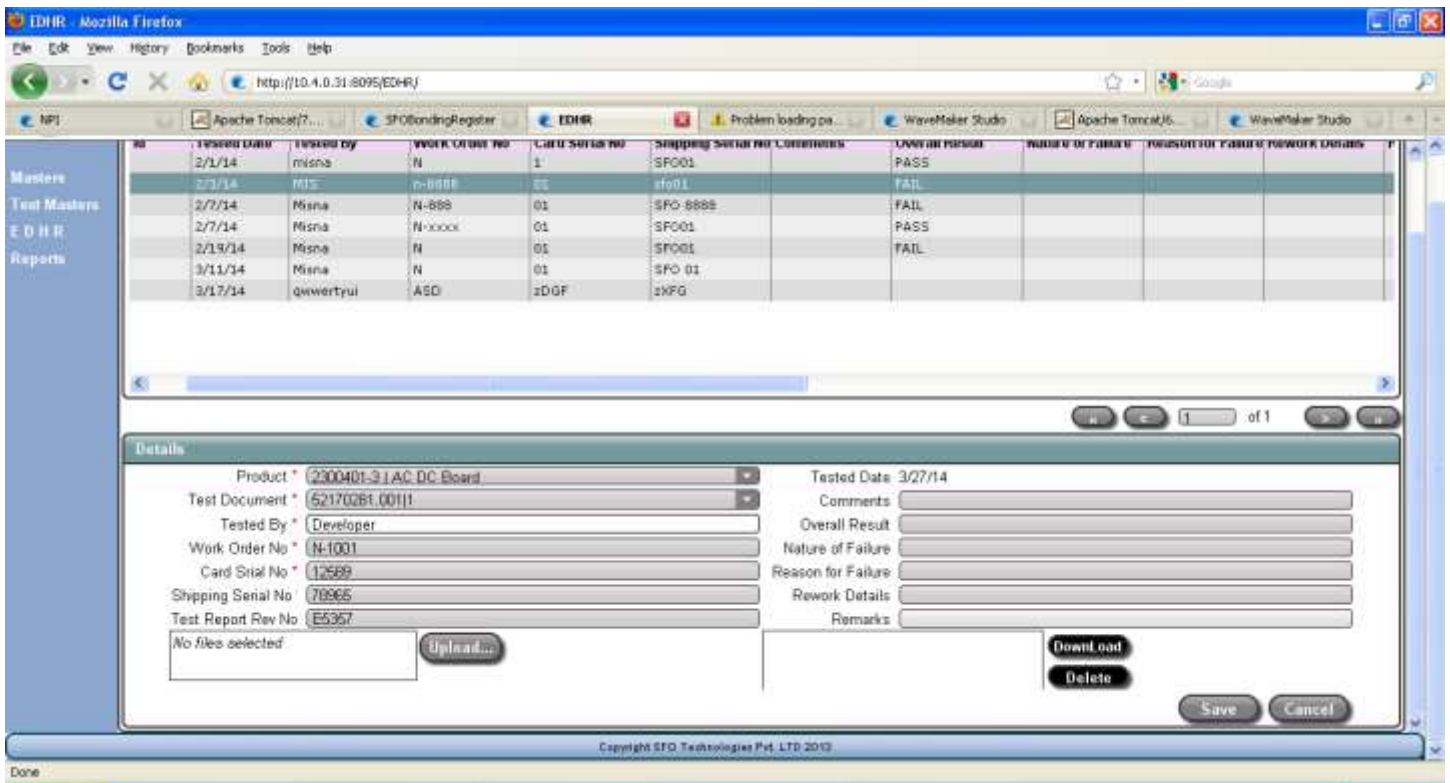
Remarks:

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Done



Now Save button is active after all entries are filled.



The system will prompt with error message if the preceding entries are not completed in Equipment used and Test data.



9.2.1 Test Cases

Refer EDHR-SystemTestcase.xls

10 Performance Qualification (PQ)

10.1 User Acceptance Testing

Refer UAT.xls

10.2 System Performance Testing

Refer EDHR-SystemTestcase.xls

11 Conclusion:

- Web applications can be accessed without installing any software's.
- Web based applications can dramatically lower costs due to reduced support and maintenance, lower requirements on the end user system and simplified architecture.
- The beauty of the web applications is that they work on multiple platforms. Most of the applications work on different Internet browsers like Mozilla Firefox, and Google Chrome etc.