iBrowse – Cross Browser Compatibility Testing Framework

User Manual

Version 1.1



TCS Internal, Bhubaneswar, India

November 2011

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Document Release Notice

Notice No.:

Customer: Internal

Project: iBrowse Framework

Document details

Name	Version no.	Description
iBrowse Framework User Manual	Version 1.1	Edited Version

Revision details

Action taken	Previous	New page	Revision description
(add/del/change)	page no.	no.	
Edited Version(v 1.1)			

Change Register serial numbers covered:

The documents or revised pages are subject to document control.

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Authorised by:

Date:

Date:

Document Revision List

Customer: Internal

Project: iBrowse

Document Name: iBrowse Framework - User Manual

Release Notice Reference (for release)

Rev. No.	Revision date	Revision description	Page no.	Previous page no.	Action taken	Addenda/ New page	Release notice reference

About This Manual

Purpose

This manual has been written to help you understand and use the **iBrowse framewor**k for cross browser compatibility testing of web based applications. It presents the functional capabilities and graphical user interface features of the web applications and contains the procedures that you should know for performing your business tasks by using the iBrowse framework.

Intended Audience

This manual is primarily intended by using the iBrowse framework to handle the web applications respective to Graphical User Interface features

Prerequisites for Use

Following are the prerequisites for understanding this manual:

Functional – Basic understanding of recording and playback the web application using the iBrowse framework is required.

Technical - Basic understanding of Windows and GUI operations is required. You must be familiar with the process of installing and using plug-in of Selenium IDE.

Organisation of the Manual

This manual is organised as follows:

Introduction provides an overview of iBrowse framework. It also details the hardware and software requirements, and interfaces with other systems.

Getting Started takes you on a quick tour of iBrowse framework. It gives a brief introduction about the general working features of iBrowse framework that you should keep in mind while working.

Contents

Introduction	1
1.1 Why Browser Compatibility Testing Is Needed	1
1.2 What Is Browser Compatibility Testing 1.3 What Is Cross Browser Compatibility Testing	1 1
1.4 Software Requirements 1.5 Hardware Requirements	1 1
1.6 iBrowse Tool Details	1
1.7 Features of iBrowse Tool	2
Chesklist For iBrowse	4
iBrowse Setup in Loacl Machine	5
2.1Creating a New Project	5
2.2 Adding all Jar files into the Project	8
2.3 Creating a Package Under Project & How to import Main Class2.4 How to Run A Project	10 15
Generating Test Cases/Reports	16
3.1 Preparing Test Script	16
3.2 Preparing Test Cases	17
3.3 Executing The Application	
3.4 Results	19
Benefits By Using The iBrowse Automatio Tool	21

1. Introduction

This section provides an overview of the iBrowse Framework developed by TCS.

1.1 Why Browser Compatibility Testing Is Needed

Many website developers are developing their web applications using various upgradetechnologies and also web browsers having different versions are changing daytoday. So as a result the web contents are distracted across different browsers. So to maintain the web contents similar across all the browsers, browser compatibility testing helps to do.

1.2 What Is Browser Compatibility Testing

Web applications are tested on different web browsers, to ensure that users have the same visual experience irrespective of the browsers through which they view the web application and in terms of functionality, the application must behave and respond the same way across different browsers.

1.3 What Is Cross Browser Compatibility Testing

The ability for a website, web application, HTML construct or client-side script to support all the web browsers having different verions

1.4 Software Requirements

1.4.1 JRE (Java Run time Environment)1.4.2 Browsers (Ex. IE, Firefox, Googlechrome, Safari, Opera, etc.)1.4.3 Selenium IDE (Mozilla Firefox Add-on)

1.4.4 Selenium RC (Remote Control)

1.5 Hardware Requirements

1.5.1 1 GB RAM (Min.) **1.5.2** 40 GB Hard Disk (Min.)

1.6 iBrowse Tool Details

iBrowse is a Framework to automate the web based applications across all the versions of different web browsers. It helps to test the web applications for functionality as well as usability. This document will guide in different areas like generating excel sheet, HTML report capturing screen shot whenever the test step fails and co-ordinates of different objects.

1.7 Features of iBrowse Framework

iBrowse is developed by using the java language. It uses RAFT (Reusable Automation Framework Tool) prepared through recording the web application using Selenium IDE (Firefox Add-on), as an input to the tool for automating the applications and execute the test cases through selenium RC server across different browser versions.



1.7.1 Selenium IDE (Integrated Development Environment)

Selenium IDE (Integrated Development Environment) is a prototyping tool for building test scripts. It is a Firefox plug-in and provides an easy-to-use interface for developing automated tests. Selenium IDE has a recording feature, which records user actions as they are performed and then exports them as a reusable script in one of many programming languages that can be later executed.

🕑 <u>F</u> ile Ba	Sele e <u>E</u> e se Uf	nium IDE dit <u>O</u> pti RL	1.0.8 ons <u>H</u> elj)				x
Б Та	ast able	Slow			₽ 0			0
	Co	mmand		Target		Value		
-								
<u>►</u>	Сог	mmand						-
	Tar	get				•	Find	
	Val	ue						
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	og	Referen	ce UI-E	ement	Rollup		Info∙	Clear

1.7.2 Selenium-RC (Remote Control)

Selenium Remote Control (RC) is a test tool that allows you to write automated web application UI tests in any programming language against any HTTP website using any mainstream JavaScript-enabled browser.

Selenium RC components are

▲ The Selenium Server which launches and kills browsers, interprets and runs the Selenese commands passed from the test program, and acts as an HTTP proxy, intercepting and verifying HTTP messages passed between the browser and the AUT.

▲ Client libraries which provide the interface between each programming language and the Selenium RC Server.



This diagram shows the client libraries communicate with the Server passing each Selenium command for execution. Then the server passes the Selenium command to the browser using Selenium-Core JavaScript commands. The browser, using its JavaScript interpreter, executes the Selenium command. This runs the Selenese action or verification you specified in your test script.

2.Checklist For iBrowse

Category	S. No	Check Points	DESCRIPTION	STATUS
Software		1 JRE*	Is JRE(1.5 or above) present in the testing System?	YES
		2 Browsers	Required Browser have been/can be installed?	YES
Application		1Web Application *	The application is a Web Application	YES
		2 Internal Site	Site is Internal to TCS network? (Starting with TCS Ian IP eg: 172.*)	YES/NO
		3 Security Issues	Security certificate provided for the URL	YES/NO
		4 Protocol	Does the site is in Http:// domain	YES/NO
		5 Protocol change:	Any change from http:// to https:// or vice-versa	YES/NO
		6 cross scripting involved:	Controls passing from www.domain1.com to www.domain2.com	YES/NO
				YES/NO
Network		1 Port Number:	ls port number -4444 is available?	YES/NO
Network		2 Proxy Set Up:	If you access the test URL through a proxy set-up	YES/NO
NELWOIK			ii you access the test of the thirough a proxy set-up	I LO/NO

Check Points* Mandatory points

Additional Queries

S. No	Questions	Comments
1	Rich content (High use of Flex, Flash, Ajax) ?	
2	Web Browser Preference, if any (It would be taken as the base-line browser)	
3	Name(s) of the Operating System(s) in client side for testing ?	
4	Use of any other automation Tool(Kindly mention the name of the tool, if any)	
5	Availability of manual test cases for the application under browser compatibility	

3.Browse Setup in Local Machine

For iBrowse setup in any machine, you ll need a Java Development Kit (JDK) version 1.4.2 and above as Eclipse requires it. After installation of JDK and Eclipse in your system, you just follow the following steps:

3.1 Creating a New Project

Step 1: This section introduces the steps for creating an Java Project named " Ibrowse".

Go to New->Project.



Step 2:It ll open a New Project Window.Just choose Java Project and cick Next button.



Step 3:It II create a New Java Project Window.Write Project Name as required like "IBrowse" and then click Finish button.

🗑 New Java Project				_ 🗆 🗙
Create a Java Project Create a Java project in the work	space or in an	external location		r
Project name: Ibrowse Contents Contents Create new project in work Create project from existin Directory: C:\Documents and JRE Use an execution environm Use a project specific JRE: Use default JRE (currently) Project layout Use project folder as root f Create separate folders for Working sets Add project to working sets Working sets:	space g source Settings\4773 ent JRE: Jav jre6') or sources and o	80\example\Ibro aSE-1.6 i I class files lass files		Browse
?	< Back	Next >	Finish	Cancel

3.2 Adding All Jar Files in to the Project

Step 1:Right Click on the Project name "Ibrowse", choose build path and click on Configure Build Path.



Step 2: After clicking on the Configure Build Path, it II open the below window.Click on Libraries under Java Build Path and then click on ""Add Externel JARS...".Add all required jar files and also iBrowse Runnable Jar files mentioned as below.At last click on OK button.



3.3 Creating a Package under Project and How to add Main

class to that Package:

Then create a package under Project Ibrowse as mentioned below.

Step 1: Right Click on src,Click on New and choose Package.

🔘 Java - E	clipse			- 🗆 ×
File Edit So	ource Refactor Navigate S	earch Project Run Wi	ndow Help	
] ⊡ • ∷] ৡ • ঀ	ݠ│ 祢・○・ᅆ・ ・や ⇔ → → ・] 🖞 \\$` G` •] 🍃 🖨 ৵ •	🖹 🐉 Java 🧏 Java EE
Packa X	Hierar			□ □ ■ Task List 🛛 □ □
	New		🖄 🖄 Java Project	
	Open in New Window Open Type Hierarchy Show In	F4 Alt+Shift+W	Project Package Class	Find All Acl
	Copy	Ctrl+C	Interface Interface Interface	
	💼 Paste 💢 Delete	Ctrl+V Delete	Annotation Source Folder	E Outline 🛛 🗖 🗖
	Remove from Context Build Path Source Refactor	Ctrl+Alt+Shift+Down Alt+Shift+S Alt+Shift+S	Image: Set Image: Set	an outline is not available.
	import ⊿ Export		JUnit Test Case Task	
	Refresh Assign Working Sets	F5	Other Ctrl+N	
	Run As Debug As Profile As	1	c 😥 Declaration	

Step 2: It II open a New Java Package window like below. Give the package name as Version3, then click on Finish button.



Step 3: After creating the package ,we have to add the main class to this package.For that right click on the Package Version3 and click on "Import".



Step 4: It II open the page like mentioned below. Choose File System and then click next button.



Step 5:Browse the file where you have saved the Main class and put tick mark on the class which one you want to import. Then click on Finish button.

🔘 Java - Eclipse	🔘 Import	- 🗆 ×
File Edit Source Refactor Navigat	File system Import resources from the local file system.	a 🧏 Java EE
Browse Browse	From directory: C:\Documents and Settings\477380\Desktop\Main Class Browse Image: Comparison of the setting of the set	All > Activat
	Filter Types Select All Deselect All Into folder: Ibrowse/src/Version3 Browse	□□ ilable.
	Options Overwrite existing resources without warning Create complete folder structure Create selected folders only	_
	Sack Next > Finish Cancel	

After that Main class is imported into the package.

3.4 How to Run a Project

Step 1: Right Click on the Project name or src or package name(Version3),choose "Java Application" from Run As option.



Step 2: It II Open the "Niche Browser Compatibility Testing Framework" like mentioned as below.

🛓 Niche Browser C	ompatibility Testing Framework	- 🗆 🗙
Excel Path		Browse
Report path		Browse
Deviation in pixels		
Standard Browser	Firefox 💌	
-	Run	

4. Generating Test Cases/Reports 4.1 Preparing Test Script

Step -1 : Open the web application in Firefox web browser.

Step - 2: After opening the page, run the Selenium IDE from Firefox tools menu.

🕘 Downloads - Mozilla Firefox					
<u>File E</u> dit <u>V</u> iew Hi <u>s</u> tory <u>B</u> ookn	narks <u>T</u> ools	s) <u>H</u> elp			_
🔇 💽 - C 🗙 🏠		Web <u>S</u> ea	arch	Ctrl+K	😭 🔹 🚼 🗸 Google 🔎
Downloads		<u>D</u> ownlo	ads	Ctrl+J	
		<u>A</u> dd-on	s		
		Error <u>C</u> o	onsole	Ctrl+Shift+J	
💦 Seleniu	m	Ad <u>b</u> lock	Plus Preferences	Ctrl+Shift+E	GO
Web application testin	ig syste	Page <u>I</u> nf	fo		mentation Support About
	D	Sele <u>n</u> iur	m IDE		
Selenium Downloads	Bel	Start <u>P</u> ri	vate Browsing	Ctrl+Shift+P	es of all the Selenium projects. You
Previous Releases	cai	Clear Re	ecent <u>H</u> istory	Ctrl+Shift+Del	releases, source code, and
Nightly Releases	ad	<u>Options</u>	i		n is a popular Java build tool).
Source Code	Project	t	Release Date	Version	
Maven Repository	Seleniu	m Core	June 10, 2009	1.0.1	Download Changelog
Info	Seleniu	m IDE	Nov 5, 2010	1.0.8	Download Release Notes
	Seleniu	m RC	February 23, 20	010 1.0.3	Download
	Seleniu	m Grid	April 8, 2010	1.0.6	Download (zip) Changelog
	CubicTe	est	Nov 10, 2008	1.8.11	Download Changelog
	Bromine	e	July 25, 2010	3.0 RC 2	Download
	Seleniu	m 2	April 22, 2010	2.0 alpha !	5 <u>Download</u>
	Plugins	for Se	elenium IDE		
	Name		Author	License	Released Version
Dana					Sontombor 14
Done					h.

Figure 1.4

Step - 3 : Minimize the Selenium IDE and start the recording. **Step - 4** : After completion of recording stop the Selenium IDE and export the test script generated to the html format.

usedTab						
open	/tcsauto/control/main					
click.AndWait	USED					
select	rad1	label=New Delhi				
click.AndWait	//input[@value='Search' and @type='button' and @onclick='setOptions();']					
clickAndWait	//img[contains(@src,'http://172.18.228.27:8088/Images/iCarnationImage/DefaultImage/Small/default_Image.jpg')]					

HTML formatted Test Script

4.2 **Preparing Test Case**

Step - 1 : After creating test script in HTML format, copy all the contents from html formatted script to the RAFT as shown below and save it into a folder.

Global Sheet

1	13-10-2011-18-46e-CarnationUsedCars.xls - OpenOffice.org Calc											
<u>F</u> ile	e Edit View Insert Format Iools Data Window Help											
	🎬 • 😕 🖬 👒 i 😰 i 🔚 📇 🖎 i 🎸 🐝 i 📈 🖏 🛍 • 🛷 i ୭ • Cl • i 🍪 🕼 🤣 i 🏙 🕢 i 🆬 🖉 💼 🗟 🔍 i 😧 🖕 ind 📃 🔽 🚸 🌪											
9,	®/Arial ▼ 10 ▼ B/U E E E E E E E ■ 📕 % 😵 🗯 🤕 ∉ ∉ 🗆 • 🖄 • 🗛 • 🖕											
F7	·····································											
	А	В	С	D	E	F	G					
1	Test Case ID	Test Case Name	€est Case Sheet Name	Execution Status	Browser	URL	Timeout	_				
2	1	UsedCars	Login	Yes	firefox,iexploreproxy,googlechrome,opera,safari	http://172.18.228.27:7000/tcsauto/control/main	300000					
3												
4												
5												
6												
7												

Login Sheet

	A	В	C	D	E	F	G	
1	Test Case ID	Test Case Name	Transaction L#	Test Case Steps	Logical Name	Action Keyword	Parameter Value	
2	1	UsedCars						
3	Start			Maximize the window		windowMaximize		
4				Select Used Tab	USED	click		
5				Wait For Page ToLoad		waitForPageToLoad	60000	
6				Select New Delhi	rad1	select	label=New Delhi	
7				Click on Search Button	ns();']	• click		
8				Wait For Page ToLoad		waitForPageToLoad	50000	
9				Click on the Chevrolet Ima	ault_Image.jpg')]	• click		_
10				Wait For Page ToLoad		waitForPageToLoad	50000	
11	End			Close the Browser		close		
12								

4.3 Executing the application

Step – 1: Open Eclipse IDE. Create a Java Project. Include all the necessary java class files to the projects. Also Include all the jar files to execute the application.

🍯 Niche Browser C	🛃 Niche Browser Compatibility Testing Framework 🛛 🗖 🗙										
Excel Path	:\Documents and Settin	igs\333302\My Documents\google.xls	Browse								
Report path	C:\Documents and Set	tings\333302\My Documents	Browse								
Deviation in pixels	5										
Standard Browser	Firefox < Firefox IE Google Chrome	Run									
	Opera Safari										

Step – 2: Then click run or F5 in the Eclipse IDE to run the application.

The window will open and ask for :

Excel path : where the excel sheet is

Report Path : where the result will be stored

Deviation in Pixels : Type some value that will compare co-ordinates across all the browsers. For Example, if deviation is 5 then it will check x and y co-ordinate of all the objects across all the browsers. If the difference is greater than 5 then it will show false otherwise true.

Standard Browser : Choose the browser you want to standardize means that browser will be base browser. According to that browser, the X and Y co-ordinate will be compare in every browser.

Step -3: Click on RUN button in the pop up window. It will open two pop up windows. One is for Selenium command execution and another is for executing the application automatically in all the browsers that you have mentioned in the input excel sheet one by one and will give the result in the excel sheet and HTML format.

4.4 Results

After successful execution of the application, the results will be created in the specified directory.

1	13-10-2011-18-46e-CarnationUsedCars.xks - OpenOffice.org Calc											
ile	Edit View Insert Format	<u>T</u> ools <u>D</u> ata <u>W</u> indow	Help									
1	- 😕 🔜 🛃 🔒	🖴 🕓 I 🖑 🦊	🖣 🛱 • 🛷 🖻) • 🖉 • 🚳 🐉	🔥 🏦 🏏 🏙	Ø 🖻 🗟 🔍 🛛 🕑	Find	🗄 🅐 👢				
9.	Arial	10 • B I	Ŭ∣≣≣≣	= 📰 📕 % [!]	🏟 🐋 ا 🎇 號 🍕	🗌 • 🖄 • 🗛 •						
<27	💌 🏂 🗵	=										
_	F	G	н	I	J	К	L	М	N	0	Р	
1	Action Keyword	Parameter Value	Firefox 3.6.8	Description	IE 6.0	Description	Chrome 5.0.396.0	Description	Opera 10.10	Description	Safari 3.1	
2	-		Done		Done		Done		Done		Done	
3	windowMaximize		Pass		Pass		Pass		Pass		Pass	
4	click		Pass		Pass		Pass		Pass		Pass	
5	waitForPageToLoad	60000	Pass		Pass		Pass		Pass		Pass	
6	select	label=New Delhi	Pass		Pass		Pass		Pass		Pass	
7	click		Pass		Pass		Pass		Pass		Pass	
8	waitForPageToLoad	50000	Pass		Pass		Pass		Pass		Pass	
9	click		Pass		Pass		Pass		Pass		Pass	
10	waitForPageToLoad	50000	Pass		Fail	Timed out after 5	Pass		Pass		Fail	
11	close		Pass		Pass		Pass		Pass		Pass	
12												

This is the excel report with the result PASS/FAIL

iBrowse - Cross Browser	Compatibility Testing Tool
est Case Name : e-CarnationUsedCars	Execution Date : 10/13/2011
iest Script : UsedCars	Execution Start Time : 6:46:58 PM

Nindows XP / Firefox 3.6.8

SL No.	Test Case Step	Result	Error Message	Co-Ordinates	Screenshot
1	Maximize the window	Pass			Screen Shot
2	Select Used Tab	Pass		(306,109)	Screen Shot
3	Wait For Page ToLoad	Pass			Screen Shot
4	Select New Delhi	Pass		(187,276)	Screen Shot
5	Click on Search Button	Pass		(669,428)	Screen Shot
6	Wait For Page ToLoad	Pass			Screen Shot
7	Click on the Chevrolet Image	Pass		(166,377)	Screen Shot
8	Wait For Page ToLoad	Pass			Screen Shot

Windows XP	Vindows XP / IE 6.0								
SL No.	Test Case Step	Result	Error Message	Co-Ordinates	Screenshot				
1	Maximize the window	Pass			Screen Shot				
2	Select Used Tab	Pass		(231,179)	Screen Shot				
3	Wait For Page ToLoad	Pass			Screen Shot				
4	Select New Delhi	Pass		(112,362)	Screen Shot				
5	Click on Search Button	Pass		(594,485)	Screen Shot				
6	Wait For Page ToLoad	Pass			Screen Shot				
7	Click on the Chevrolet Image	Pass		(167,545)	Screen Shot				
8	Wait For Page ToLoad	Pass			Screen Shot				
9	Close the Browser	Pass			Screen Shot				

Windows XP / Chrome 5.0.396.0

SL No.	Test Case Step	Result	Error Message	Co-Ordinates	Screenshot
1	Maximize the window	Pass			Screen Shot
2	Select Used Tab	Pass		(310,109)	Screen Shot
3	Wait For Page ToLoad	Pass			Screen Shot
4	Select New Delhi	Pass		(191,276)	Screen Shot
5	Click on Search Button	Pass		(673,428)	Screen Shot
6	Wait For Page ToLoad	Pass			Screen Shot
7	Click on the Chevrolet Image	Pass		(170,377)	Screen Shot
8	Wait For Page ToLoad	Pass			Screen Shot
9	Close the Browser	Pass			Screen Shot

Windows XP	/ Opera 10.10				
SL No.	Test Case Step	Result	Error Message	Co-Ordinates	Screenshot
1	Maximize the window	Pass			Screen Shot
2	Select Used Tab	Pass		(310,109)	Screen Shot
3	Wait For Page ToLoad	Pass			Screen Shot
4	Select New Delhi	Pass		(191,276)	Screen Shot
5	Click on Search Button	Pass		(673,428)	Screen Shot
6	Wait For Page ToLoad	Pass			Screen Shot
7	Click on the Chevrolet Image	Pass		(171,378)	Screen Shot
8	Wait For Page ToLoad	Pass			Screen Shot
9	Close the Browser	Pass			Screen Shot

Windows XP / Safari 3.1.2

SL No.	Test Case Step	Result	Error Message	Co-Ordinates	Screenshot
1	Maximize the window	Pass			Screen Shot
2	Select Used Tab	Pass		(309,109)	Screen Shot
3	Wait For Page ToLoad	Pass			Screen Shot
4	Select New Delhi	Pass		(190,276)	Screen Shot
5	Click on Search Button	Pass		(672,378)	Screen Shot
6	Wait For Page ToLoad	Pass			Screen Shot
7	Click on the Chevrolet Image	Pass		(169,377)	Screen Shot
8	Wait For Page ToLoad	Pass			Screen Shot

This is the HTML report with screenshots across all the browsers

ľ	13-10-2011-18-46e-Carn	ationUsedCars	s.xls - OpenOffice.o	rg Calc										
le Edit View Insert Format Tools Data Window Help														
	🎬 + 😕 🗔 🖙 📝 📓 📇 🖎 🌾 🐝 💫 🖏 🛍 • 🛷 ୭ • 🥙 + 🎯 🐈 🤧 🏙 🖉 🏙 🖉 💼 🗑 🔍 🚱 🦕 💏 💽 Find													
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10														
	A	В	С	D	E	F	G	Н	I	J	K	L		
1	NAME)	F	Firefox		Internet Explorer		MATCH(R,B)	Googl	Google Chrome		MATCH(R,B)		Ope	
2		(LEFT,TOP)	(RIGHT,BOTTOM)	(LEFT,TOP)	(RIGHT, BOTTOM)			(LEFT, TOP)	(RIGHT,BOTTOM)			(LEFT,TOP)	(R	
3	USED	(306,109)	(463,158)	(231,179)	(388,228)	FALSE	FALSE	(310,109)	(467,158)	TRUE	TRUE	(310,109)		
4	rad1	(187,276)	(378,306)	(112,362)	(293,383)	FALSE	FALSE	(191,276)	(382,306)	TRUE	TRUE	(191,276)		
5	and @type="button" and @onclick='setOptions();	(669,428)	(769,458)	(594,485)	(694,515)	FALSE	FALSE	(673,428)	(773,458)	TRUE	TRUE	(673,428)		
6	7/mgconcaihs@src,nc p://172.18.228.27:8088/ mages/iCarnationImage/ DefaultImage/Small/defa	(166,377)	(358,527)	(167,545)	(359,695)	FALSE	FALSE	(170,377)	(362,527)	TRUE	TRUE	(171,378)		
7	in technologia													
8														
9				Tolerance in Pixels :		(+/-) 7								
n														

This is the Excel report of Co-ordinates of each element

5 Benefits by using iBrowse Automation Tool

- It is a Hybrid test automation framework designed to increase the re-usability and minimize the maintenance effort.
- > Supports all the platform/OS and browsers irrespective of any version constraints.
- Help the user to maintain the object properties in a common repository for easier maintenance.
- > Application and technology independence.
- > Comprehensive reporting that enables easy metrics capture and debugging.
- Test Case Sheet integrated with Test Data entry to allow easy entry and one on one mapping with the test Step.
- Allows multiple Test Case sheets to have better grouping of Test Cases based on Business Functions.
- Externalization of test data into an external datasheet to ensure data-driven testing.
- > It supports all the OS Platforms and Browsers supported by Selenium
- > The automation script can also be reused with some minimal changes or additions of code.
- > Helps user maintain object properties in a common repository for easier maintenance.
- All the test cases are stored in excel resulting in minimal maintenance effort when there are frequent changes in applications.
- > No Special tools / configurations are required.