



Virtual Emergency
Operation Center

Master Test Plan

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Functionality Testing

Performed for testing of: all the links in web pages, checking the database connections, forms used in the web pages for submitting or getting information from user & Cookie testing.

Testing all the “Links”:

- Test the outgoing links from all the pages from specific domain under test.
- Test all internal links.
- Test links jumping on the same pages.
- Test links used to send the email to admin or other users from web pages.
- Test to check if there are any orphan pages.
- Lastly in link checking, check for broken links in all above-mentioned links.

Testing of the forms on the web pages:

Forms are the essential and integral part of any web site. Forms are used to get information from users and to keep interaction with them.

The following should be checked on the forms:

- Check all the validations on each field.
- Check for the default values of fields.
- Wrong inputs to the fields in the forms.
- Options to create forms if any, form delete, view or modify the forms.
- Check that no empty forms are created.
- There are different field validations like email-id's, user financial information, date, etc

All the above validations should be checked in a manual or an automated way.

Cookie Testing:

Cookies are small files stored on user machine that are basically used to maintain the sessions such as the 'login sessions'.

- Test the application by enabling or disabling the cookies in your browser options
- Test if the cookies are encrypted before writing to user machine
- During the test for session cookies (i.e. cookies expire after the sessions ends) check for login sessions and user stats after session end
- Check effect on application security by deleting the cookies

Validation (HTML/CSS/PHP):

- HTML/CSS validation is very important for optimizing the website for search engines.
- The site has full and correct Doctype
- The site uses character set
- The site uses valid XHTML
- The site uses valid CSS
- The site has no unnecessary ids or classes
- The site uses well structured code
- The site has no broken links
- The site has no JavaScript errors

The various Validation checklists tables:

HTML Validation		
Pass	Fail	Description
		Any exceptions to W3C HTML V4.0 standards have been approved and documented
		HTML code is W3C HTML V4.0 compliant (barring any approved exceptions)
		Web page renders correctly when viewed with opera 5.0 browser
		Comments and change control logs are not included in the HTML sent to the client

Image Validation		
Pass	Fail	Description
		The image adds value to the website
		If the image is animated it links to the appropriate page
		The image is stored in the most appropriate format (e.g. .GIF files for buttons and .JPG files for photos)
		If a GIF file, the image size is a multiple of 8 pixels
		The visual size of the image is appropriate for the size of the

		viewable screen (it does not occupy too much or too little of the screen real estate)
		The physical file size of the image is as small as possible without compromising the quality of the image i.e. the file was saved using the optimum compression ratio.
		An appropriate ALT Tag is included with this image.
		The WIDTH & HIGHT (expressed as page % and not absolute pixel sizes) tags have been specified for this image
		The image is not copyrighted or trademarked by someone else
		The total size of the image on the page does not exceed 50kbytes
		There is not more than one animated image on this page
		Photographic images aside (e.g. JPG images) no more than 256 colors are used on this web page
		Any image maps used are client side (as opposed to server side)

Font Validation		
Pass	Fail	Description
		The font is proportional

		The primary font is Verdana, with Ariel and Sans-Serif specified as alternates
		The browsers base font size is not altered
		Only relative font sizes are used (e.g. small medium and large) rather than specific point sizes
		No more than 3 font sizes are used on the web page
		Symbol fonts are used only when absolutely necessary
		If symbol fonts are used they are properly mapped to the private area of the developers Unicode
		Browser default colors are not overridden

Printer Friendly Validation		
Pass	Fail	Description
		The test on the web page is formatted correctly when printed via a 72 dpi printer using letter and A4 paper sizes
		The content of the web page is clearly readable when printed with a black and white printer
		The content of the web page is clearly readable when printed

		with a colored printer
		The background of the webpage is white
		Only dark colors are used for the text on the web page

Style sheet validation		
Pass	Fail	Description
		The style sheet is W3C level 1 compliant
		The style sheet is correctly interpreted by the 4X generation of the web browsers
		The style sheet complies with printer friendly standards
		The style sheet complies with the font standards
		The style sheet is defined as an external CSS style
		Web pages do not modify the style sheet dynamically
		Web pages that use the style sheet provide acceptable rendering when viewed by the browsers that do not support CSS or have CSS turned off by the client

Table Validation		
Pass	Fail	Description

		There are no unwanted spaces or carrier returns in the table
		No cell is overpopulated with too much verbiage
		Every cell in the table is populated (i.e. no null values) as some browsers collapse empty cells. Extra scrutiny should be applied if the information is imported from a database dynamically
		The WIDTH & HIGHT Tags were specified for all cells using screen % instead of absolute pixels wherever possible

Style guide and Template adherence		
Pass	Fail	Description
		The web page follows (except where documented/ approved) the style guidelines documented
		The web page was based on the most appropriate web page template

Plug in Validation		
Pass	Fail	Description
		The website (after

		requesting the clients permission) lists the plug ins and the versions to view all the content on the site
		The web site able to detect whether or not the required plug-ins are installed in the client side
		In the event that the web site is unable to accurately determine whether or not a plug-in is installed or not, the website contains an area that tells the user how to proceed

Test Station Validations		
Pass	Fail	Description
		Different versions of the same brand of browsers are installed in different instances of an operating system
		Only general release software is used. No OEM.SP or beta versions are used with the exception of any required Y2K patches that are necessary for this to work post Y2K
		All of the installations use the installation defaults for directory names, cache sizes, fonts plug-ins etc.
Packaged Application Validation		
Pass	Fail	Description
		Product

		documentation the exact order in which the components should be installed and the configuration settings that are required or recommended
		Product documentation explains how to uninstall the product cleanly
		Product documentation adequately describes when and how the data files or database should be reorganized
		Automatic updates install and operate correctly on all of the supported platforms
		Automatic updates install and operate correctly when other application have been added /removed before and after the update is performed

Links and URL Validation		
Pass	Fail	Description
		The link is not broken

		and goes to the most appropriate location
		If the link is in an internal link it uses all lower case characters
		If this link is an internal link it uses relative addressing (i.e. it does not use an absolute address)
		If this link is an internal link, it does not launch a new browser window unless it's a help page
		If this link is an external link, it does launch a new browser window
		This link adds value to the website, Links with little value add to the maintenance load (especially external links) and potentially make a webpage less usable
		The browsers GO/HISTORY list is updated correctly after using this link. Some developers manipulate the browsers history and thereby degrade the website's usability
		When using the BACK button the, previously entered data is not lost
		The link text does not wrap to two lines, this may confuse visitors into thinking that there are two links instead of one.

Redirect Validation		
Pass	Fail	Description
		The default 400,401,402,403 and 404 –error pages have been developed and properly configured on the production Web server(s)
		If the link is being redirected, it goes to the correct final destination and is not redirected
		If a link points to a directory (instead of a specific web page) the link ends with a slash

Bookmark/Favorite Validation		
Pass	Fail	Description
		Every web page has a bookmark that accurately reflects the contents of the webpage
		No bookmark is longer than 32 characters, since browsers typically truncate the display of verbose descriptions
		Each bookmark must start with "VEOC-"

Using the browsers that most of the clients have		
Pass	Fail	Description
		Pages using framesets

		are displayed correctly
		Frames are not resizable
		Pages within the framesets can be bookmarked
		The back button recalls the URL of the last frame viewed
		The initial frameset is downloaded in an acceptable period of time
		Pages using framesets can be printed correctly or an alternate page is available for printing
		Nested framesets (if used) have sufficient screen real estate assigned to each frame
		All external links launch new browser windows (i.e. third party web sites are not embedded inside VEOC frame set)
		Search engines can find all of the contents within the framesets

Website Organization Testing checklist		
Pass	Fail	Description
		"Core" web pages can be located within 4 clicks
		All the web pages in the website can be found by casually browsing the website

		(i.e. no need to resort to a site map or a search engine)
		Information on the site can be found using the search strategies that a visitor might consider
		The web site does not contain any orphaned files (i.e. files that cannot be reached by following any path from the home page)

Web site Map Validation		
Pass	Fail	Description
		All "core" web pages can be found using the site map
		Only "core" web pages are located on the site map
		Web pages are listed in an appropriate hierarchy
		Links are all functional and go to the correct pages

Search Engine Testing-Validate accuracy and performance under normal and stress loads		
Pass	Fail	Description
		The first set of results is returned within 5 seconds (excluding internet transmission times)
		The result is sorted appropriately (e.g. alphabetically or by %)

		likelihood)
		The search engine functions correctly when a user enters common words that are likely to generate a huge no. of hits such as “a”, “the ” or “VEOC”
		The search engine functions correctly when the user enters non-existent words that are unlikely to generate any valid answers such as “hggfkh”, “hjjgj” or null requests
		The search engine ignores the source code used to build a web page and only indexes, the content of the web page (e.g. requesting information on “JavaScript” will only return documents that reference JavaScript, not all of the web pages that use JavaScript in their source code)
		The search engine does not index sensitive words such as “secret” or “fraud” etc
		The search engine functions correctly when you enter a search string with a maximum number of characters plus one
		The search engine functions correctly

		when you enter multiple word requests with or without the Boolean operators “and”, “or”, “not”, “+” or “-“
		The search engine functions correctly when you enter one or more wildcards
		If fuzzy login is enabled, the search engine offers alternate suggestions for zero hit requests based on searches using a spellchecked version of the initial search string

Link-checking Tools testing checklist		
Pass	Fail	Description
		External links can be checked but (optionally) cannot be scanned any further
		When encountering a recursive loop, the tool does not go into a death spiral
		Tools do not ignore duplicate links
		The tool is able to handle dynamic links
		The tool is able to handle framesets
		The tool is able to handle cookies (session/persistent)
		The tool can handle pages that require user

		inputs (e.g. forms)
		The tool facilitates identifying suspiciously large or small pages
		The tool specifies identifying absolute links
		The tool facilitates identifying the pages that are too deep

Validating Forms on a Web site		
Pass	Fail	Description
		All data entry fields have HTML size attribute set correctly (size is used to specify the width of the field)
		All the data entry fields have the HTML MAXLENGTH SET correctly (max length of characters a user can enter)
		If radio controls are used a default is always selected
		All required fields use a visual cue to indicate to the user that the field is mandatory
		If a form uses a drop down data entry field (control) the options are sorted appropriately and the fields is wide enough to display all of the options
		Data is not lost when the user clicks the browsers back button

		(and subsequently forward) buttons through a series of forms
		Data is not lost when the user clicks the browsers forward button (and subsequently back) buttons midway through a series of forms
		Data is not lost when the user clicks the GO/HISTORY buttons to revisit previous forms
		Data is not lost when the user clicks the bookmark or favorite midway through a series of forms
		Data is not lost when the user clicks the browser reload button midway through a series of forms
		Data is not lost when the user resizes the browser window
		Duplicate data is not added to the database when a user presses any combination of the forward, back, go/history, bookmark/favorite, reload, resize buttons midway through a series of forms
		The browser places the cursor on the most appropriate field/control where the

		form is first viewed
		Using the browsers tab key allows the client to tab through the input fields on the form in a top to bottom, left to right order
		If the form data is send back to the web server using the HTTP GET command, the data is not truncated

Client vs. Server Side Validation:

Validating Data on a Form		
Pass	Fail	Description
		All data entry fields are checked for invalid data. An appropriate error message is displayed if the data is found to be invalid
		All validations are performed (error messages displayed) in a top-down, left-right fashion
		All required fields are checked on the client side
		Whenever possible, all fields co-dependencies are checked on the client side
		All basic data checks are performed on the client side
		All client-side checks are rechecked on the server-side

Validating DHTML Pages		
Pass	Fail	Description
		DHTML is appropriate for most of the user browsers
		All the DHTML code conforms to the W3C DHTML standard
		The pages are displayed and viewed correctly in different browsers

Validating Pop-ups		
Pass	Fail	Descriptions
		Website is able to detect the browser that has disabled or (does not support) JavaScript /java/ActiveX and provides the user with an appropriate message
		The pop-up follows the web GUI standard
		The pop-up is not too large for the parent window and its initial screen positioning is appropriate

Streaming Content Checklist		
Pass	Fail	Description

		The streaming quote server and the network is able to handle the expected demand for this service
		Clients are able to suspend/restart this service without needing to unsubscribe / re-subscribe
		Clients are able to adjust the frequency of updates to cater the different client side bandwidths

Common Gateway Interface (CGI) script validation		
Pass	Fail	Description
		The CGI script is able to parse input parameters containing quotation marks, carriage returns, ampersand symbols, dollar signs, question marks and other control characters
		The CGI script is robust enough to handle, missing and out of range parameters
		The CGI script is robust enough to handle null values being returned from the database
		The CGI script is robust enough to handle "no record found" code being returned by the database
		The CGI script is robust

		enough to handle a “duplicate record inserted ” code being returned by the database
		The CGI is robust enough to handle multiple records being returned by the database
		The CGI script is robust enough to handle a database timeout code being returned by the database
		The web server has sufficient resources to handle the expected number of the CGI scripts that are likely to be initiated

Data Integrity Validation		
Pass	Fail	Description
		A new record is inserted into the database
		A new record can be accurately read from the database
		The record is accurately updated into the database
		A record is completely deleted from the database

Server Side Includes:

Server-Side Includes Validation

Pass	Fail	Description
		All SSI and XSSI selection criteria are accurately documented and each include file contains a "start of file" and "end of file" comment
		No JSSI files are used
		The appropriate content is displayed and formatted correctly for each of the possible selection criteria
		No "include" file references another "include" file. While technically possible, this programming style can be difficult to debug and can also impact performance

Dynamic Server Page Validation		
Pass	Fail	Description
		The dynamically generated page is not a candidate for being replaced by one or more static pages
		Developers used a single language for all scripts within all dynamically generated web page
		No "template" file references another "template" file. While technically possible, this programming style can be difficult to

		debug and can also impact performance
		All DSP templates have been inspected by at least one senior developer who was not the author of the template
		All high frequency pages have been generated and manually tested
		All high risk pages have been generated and manually tested

Cookie Validation		
Pass	Fail	Description
When cookies are:		
		<p>Disabled before accessing the site before, either one of the two things happens:</p> <ul style="list-style-type: none"> ▪ The site works correctly ▪ The site issues warning messages telling the visitor that cookies turned on can access the site.
		Disabled midway through a transaction, the site is able to detect the situation and handle it gracefully
		Deleted mid way

		through a transaction
When cookie is edited and some parameters are:		
		Added, the site detects the situation and handles it gracefully
		Deleted, the site detects the situation and handles it gracefully
		Swapped, the site detects the situation and handles it gracefully
		Set to null, the site detects the situation and handles it gracefully
		Some parameters are edited and set to invalid values, the site detects the situation and handles it gracefully
Other Validation Tests include the following		
		When the clients PC memory or disk cache is cleared midway through the transaction, the site detects the situation and handles it gracefully. Sessions cookies are stored in the memory and typically don't get saved to the hard disk. Persistent cookies may need to be deleted manually
		When control characters or special operating system commands are added

		to a cookie, the site detects the situation and handles it gracefully
		When multiple entries for a website are added to the browser's cookies.txt file, the site detects the situation and handles it gracefully
		When the user identification field in the cookie is changed midway through a transaction, the site detects the situation and handles it gracefully. Consider replacing the regular user-id account with values such as admin, test, super user or guest

Maintaining a Session		
Pass	Fail	Description
		The web application is capable of maintaining a single session through multiple browsers running on the same client
		The web application is capable of simultaneously accessing the same account through multiple clients
		Adequate database locking capabilities have been documented in the

		specification and have been properly implemented
		The web application time/date stamps transactions using the clock on the web server, not the clock on the client
		The web application is able to handle a user disabling cookies (session and/or persistent) midway through a transaction
		The web application is able to handle a user clearing the cache (disk or memory) midway through a session
		The web application is able to handle a user disabling JavaScript and/or VBScript midway through a transaction
		The web application is able to handle a user disabling the java applets and/or ActiveX controls midway through a session
		The web application is able to handle a user deleting the query portion of the website's URL midway through a session
		The load balancer (if used) is able to maintain a session

Managing Concurrent Users		
Pass	Fail	Description
		Server memory is freed when a user completes a session or transaction
		Network connections are closed when a user completes a session or a transaction
		Disk space is freed when a user completes a session or a transaction

Site Level Usability Validation		
Pass	Fail	Description
		There are no framesets in the website. Framesets can be difficult to navigate, take too long to download and cause print problems
		Content is structured in terms of simple hierarchies
		The user mental mode is consistent across the entire website. Webpage controls behavior and aesthetics remain consistent
		The amount of time (based on the number of pages) needed to complete a multi page task is perceived by the user

Page Level Usability Validation		
Pass	Fail	Description
		Graphics and other bandwidth intensive elements are kept to a minimum
		Key functions such as search and help buttons are easy to find
		There are no competing options that might confuse or cause him or her to make an error
		The content is current and the previous content is available via an archive
		Related information on the same page has been grouped, thereby minimizing eye movement
		Critical information has not been placed on the lower portion of the webpage. If the position of this information requires the user to scroll down, most visitors are unlikely to ever read it
		Content makeup 50% to 80% of the screen real estate
		Vertical scrolling has been kept to a minimum, especially on navigational pages
		When viewed via the anticipated clients hardware/software, the

		page fits without the need of a horizontal scrollbar
		When printed via the anticipated clients, the page prints without being truncated
		Name and logo of the emergency center is visible on the page
		Browser (e.g. HTML, JavaScript etc) features that have been available for less than 1 year have not been used. A significant number of users use browsers that are less than 1 year old
		No popup that open new browser windows are launched
		All links ad graphics have a TITLE or ALT tag defined. Decorative images (e.g. white space or formatting borders) should have a blank tag defined
		URL's are all lower case
		There are no areas of large bright colors
		No more than 4 colors (ignoring graphics) have been used on the page
		The page background color is not dark
		All controls have been outlined in black for clarity, unless they are exceptionally small i.e. less than 16x16 pixels

		Browsers default link colors have not been overridden or altered
		Page object size have been specified as % of available screen, rather than a fixed pixel size
		Text has not been placed inside graphic files. This approach takes longer to download, can be more work to translate for multilingual websites and may have quality issues with low resolution displays such as WebTV
		If using CSS, the web page's presentation is still turned off or not available
		Three (3) alternative fonts (in the same order) have been specified for all text
		Font sizes have been specified as relative sizes (e.g. heading 1) rather than as absolute sizes

Readability Validation		
Pass	Fail	Description

		A random selection of passages all scored 16 when measured using the fry algorithm
		A random selection of passages all scored less than 25 when measured using the fry algorithm

Language Validation		
Pass	Fail	Description
		No presentation problems occur when page is displayed in English
		No local slangs are used anywhere on the page
		No offensive terms (when translated) are used
		Character sets for foreign languages are displayed correctly
		Foreign currencies are displayed correctly and converted if necessary
		Date and time formats are displayed correctly for the target countries (e.g. 20.01.00 for European versus 01/20/00 for U.S)
		Address formats are displayed correctly
		Translated words have been placed in the correct order on each webpage, unlike American and

		European languages that read from left to right, some languages read from top to bottom and others read from right to left
		Each webpage can be viewed using a browser without any special modifications (e.g. the user doesn't have to install any non-standard fonts)
		Alphabetic lists are sorted correctly for each language
		Supporting documentation has been translated to English (e.g. help systems, error messages order manuals audio and video clips)
		The colors and symbols used on this website has a consistent meaning across all of the required languages (e.g. red implies danger in North America and happiness in China)
		Databases are setup to allow non standard alphabets (e.g. double byte characters)

Color Validation		
Pass	Fail	Description
		The colors used on this

		website are friendly to color blind users
		The colors used on the website are accurately displayed when using the minimum expected number of colors on a client
		All colors used on this website are browser safe

Screen size and Pixel resolution Validation		
Pass	Fail	Description
		The website has been designed to fit the requirements of the lowest likely screen size and pixel resolution used by a client. If the client's capabilities vary significantly then multiple websites have been developed to accommodate each client.
		The appearance of each web page has been tested using different browsers/versions to ensure that the page is displayed as intended (e.g. no horizontal scroll bars)

Accessibility Validation		
Pass	Fail	Description
		ALT tags are included

		with all images and TITLE tags are included with all links
		Color should be used as a sole means of conveying information
		Web pages that make use of style sheets should still be usable in browsers that do not support or have turned off this functionality
		Techniques that cause screen flicker are not used
		If image maps are used an alternate list of corresponding lists is provided
		If applets or scripts are used, the web page is still usable if the functionality is turned off or not supported by the browser
		If video files are used sub titles are also available
		If audio files are used, transcripts are also provided. In addition to viewers with hearing difficulties, some viewers may not have speakers installed.
		The web page is understandable when heard through an audio only browser
		The web page is understandable when viewed through a text only browser

		Multiple key combinations can be entered sequentially or are mapped to a single key
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Privacy Validation		
Pass	Fail	Description
		The website has a legally valid privacy statement posted
		The website is approved by at least one external auditor
		The third party seal of approval is accurately displayed alongside the privacy statement

Acceptable Response Times	
Time in Seconds	Description of action

Less than 0.1 seconds	This is the limit for having the user feel that the system is reacting instantaneously. That is no feedback regarding the time delay is necessary other than displaying the results. Example action includes button clicks or client side dropdown menu's
Less than 1.0s	This is the limit for the users flow of thought to be uninterrupted even though the user will notice a slight delay. Normally no feedback is necessary for delays between 0.1 and 1.0 seconds. The user may lose the feeling of operating directly on the data .Example actions include ,the initiation of page navigation or java applet execution
Less than 10 s	This is the maximum amount of time that can lapse while keeping the users attention focused on the dialogue. Example actions include completion of page navigation

Average Response Time under normal conditions		
Pass	Fail	Description
		95% of the web pages download in less than 10 seconds when using a 28kbps modem from any location within the continental US
		Orders are completed within 2 minutes of the user requests
		Confirmations of the request actions are made within 30 seconds

Determining Stress Points

Maximum Value	Description
	Determine the maximum number of requests/actions per second the website can handle
	Determine the maximum number of session initiations per hour that the website can be expected to support
	Determine the maximum number of concurrent users that the website can be expected to support

System Approaches Maximum Capacity		
Pass	Fail	Description
At 80% Capacity		
		Until the system returns to normal operating conditions, new clients who try to log on will be given a message to try again later
		Inactive clients will be given a warning message that they may be dropped from the system and not be permitted to log on again until conditions return to normal
		Non critical services will be shut down in the order of least to most important
		Pager or email notification of potential gridlock is sent to technical support personnel
At 90% Capacity		
		Inactive clients will be logged off

		Backup websites will be activated
		Pager or email notification of potential gridlock are resent to technical support personnel
At 100+% capacity		
		The system does not allow any new requests to be initiated
		The system does not reboot itself
		The system does not shut down security services
		The system does not suspend any transaction logging
		The system does not gridlock
		Hardware components do not fuse or meltdown
		Page or email notification of impending gridlock are sent to technical support
At any Capacity		
		The system maintains its functional integrity

Performance during spikes		
Pass	Fail	Description
		No user who were logged in to the website prior to the spike

		are dropped
		Transactions/Requests/Actions that were started before the spike are still in progress and successfully completed after the spike
		New users are able to login to the website during and after the spike
		Security services remain active during the spike

Database Testing:

- Check for data integrity and errors while you edit, delete, modify the forms or do any database related functionality.
- Check if all the database queries are executing correctly and data is retrieved correctly and also updated correctly.

Usability Testing

Objective:

The goals of usability testing include establishing a baseline of user performance, establishing and validating user performance measures, and identifying potential design concerns to be addressed in order to improve the efficiency, productivity, and end-user satisfaction.

The usability test objectives are:

- To determine design inconsistencies and usability problem areas within the user interface and content areas. Potential sources of error may include:
 - **Navigation errors** – failure to locate functions, excessive keystrokes to complete a function, failure to follow recommended screen flow.
 - **Presentation errors** – failure to locate and properly act upon desired information in screens, selection errors due to labeling ambiguities.
 - **Control usage problems** – improper toolbar or entry field usage.
- Exercise the application or web site under controlled test conditions with representative users. Data will be used to assess whether usability goals regarding an effective, efficient, and well-received user interface have been achieved.
- Establish baseline user performance and user-satisfaction levels of the user interface for future usability evaluations.

Basic Usability:

- The site should have clear hierarchy
- Headings clearly indicate the structure of the document
- Navigation should be easy to understand
- Navigation is consistent throughout the site
- The site uses underlined links
- The site uses consistent and appropriate language
- The site has easy to find sitemap and contact page
- The site has a search tool
- The site has a link to home page on every page
- The site has clearly defined visited links

Methodology:

- Describe briefly the number of participants
- The setting of the usability test sessions

- Tools used to facilitate the participant's interaction with the application (ex: browser)
- The measures to be collected, such as demographic information, satisfaction assessment, and suggestions for improvement

Participants:

- Thoroughly describe the number of participants expected, how they will be recruited, characteristics of their eligibility, and expected skills/knowledge.
- The participants' responsibilities will be to attempt to complete a set of representative task scenarios presented to them in as efficient and timely a manner as possible, and to provide feedback regarding the usability and acceptability of the user interface. The participants will be directed to provide honest opinions regarding the usability of the application, and to participate in post-session subjective questionnaires and debriefing.
- Describe how the team will select test participants to meet stated requirements. Explain if participants will have certain skills and/or background requirements, if they will be familiar with the evaluation tasks, or have experience with performing certain tasks.

Training:

- The participants will receive an overview of the usability test procedure, equipment and software
- The parts of the test environment or testing situation that may be nonfunctional

Procedure:

[Lab Testing]

Participants will take part in the usability test at [Florida International University] in [Emergency Operation Center]. A [type of computer]

with the Web site/Web application and supporting software will be used in a typical office environment. The facilitator seated in the same office will monitor the participant's interaction with the Web site/Web application. Note takers and data logger(s) will monitor the sessions in observation room, connected by video camera feed. The test sessions will be videotaped.

The facilitator will brief the participants on the Web site/Web application and instruct the participant that they are evaluating the application, rather than the facilitator evaluating the participant. Participants will sign an informed consent that acknowledges: the participation is voluntary, that participation can cease at any time, and that the session will be videotaped but their privacy of identification will be safeguarded. The facilitator will ask the participant if they have any questions.

Participants will complete a pretest demographic and background information questionnaire. The facilitator will explain that the amount of time taken to complete the test task will be measured and that exploratory behavior outside the task flow should not occur until after task completion. At the start of each task, the participant will read aloud the task description from the printed copy and begin the task. Time-on-task measurement begins when the participant starts the task.

The facilitator will instruct the participant to 'think aloud' so that a verbal record exists of their interaction with the Web site/Web application. The facilitator will observe and enter user behavior, user comments, and system actions in the data logging application [describe how these metrics will be recorded if a data logging application is not used.]

After each task, the participant will complete the post-task questionnaire and elaborate on the task session with the facilitator. After all task scenarios are attempted, the participant will complete the post-test satisfaction questionnaire.

[For Remote Testing]

Participants will take part in the usability test via remote screen-sharing technology. The participant will be seated at their workstation in their work environment. Verbal communication will be supported via telephone.

The facilitator will brief the participant and instruct that he or she is evaluating the Web site/Web application, rather than the facilitator evaluating the participant. Participants will complete a pretest demographic and background information questionnaire. Sessions will begin when the facilitator answers all participant questions. The facilitator will inform the participant that time-on-task will be measured and that exploratory behavior outside the task flow should not occur until after task completion.

The facilitator will instruct the participant to read aloud the task description from the printed copy and begin the task. Time-on-task measure will begin. The facilitator will encourage the participants to 'think aloud' and that a verbal record will exist of the task-system interaction. The facilitator will observe and enter user behavior and comments, and system interaction in a data logging application.

After each task, the participant will complete the post-task questionnaire and elaborate on the task session. After all tasks have been attempted, the participant will complete a post-test satisfaction questionnaire.

Roles:

The roles involved in a usability test are as follows. An individual may play multiple roles and tests may not require all roles.

Trainer:

- Provide training overview prior to usability testing

Facilitator:

- Provides overview of study to participants
- Defines usability and purpose of usability testing to participants
- Assists in conduct of participant and observer debriefing sessions
- Responds to participant's requests for assistance

Data Logger:

- Records participant's actions and comments

Test Observers:

- Silent observer

- Assists the data logger in identifying problems, concerns, coding bugs, and procedural errors
- Serve as note takers.

Test Participants:

- Provides overview of study to participants
- Defines usability and purpose of usability testing to participants
- Assists in conduct of participant and observer debriefing sessions
- Responds to participant's requests for assistance

Usability Metrics

Usability metrics refers to user performance measured against specific performance goals necessary to satisfy usability requirements. Scenario completion success rates, adherence to dialog scripts, error rates, and subjective evaluations will be used. Time-to-completion of scenarios will also be collected.

Scenario Completion

Each scenario will require, or request, that the participant obtains or inputs specific data that would be used in course of a typical task. The scenario is completed when the participant indicates the scenario's goal has been obtained (whether successfully or unsuccessfully) or the participant requests and receives sufficient guidance as to warrant scoring the scenario as a critical error.

Critical Errors

Critical errors are deviations at completion from the targets of the scenario. Obtaining or otherwise reporting of the wrong data value due to participant workflow is a critical error. Participants may or may not be aware that the task goal is incorrect or incomplete.

Independent completion of the scenario is a universal goal; help obtained from the other usability test roles is cause to score the scenario a critical error. Critical errors can also be assigned when the participant initiates (or attempts to initiate) an action that will result in the goal state becoming unobtainable. In general, critical errors are unresolved errors during the process of completing the task or errors that produce an incorrect outcome.

Non-critical Errors

Non-critical errors are errors that are recovered from by the participant or, if not detected, do not result in processing problems or unexpected results. Although non-critical errors can be undetected by the participant, when they are detected they are generally frustrating to the participant.

These errors may be procedural, in which the participant does not complete a scenario in the most optimal means (e.g., excessive steps and keystrokes). These errors may also be errors of confusion (ex., initially selecting the wrong function, using a user-interface control incorrectly such as attempting to edit an un-editable field).

Noncritical errors can always be recovered from during the process of completing the scenario. Exploratory behavior, such as opening the wrong menu while searching for a function, [will, will not (edit Procedure)] is coded as a non-critical error.

Subjective Evaluations

Subjective evaluations regarding ease of use and satisfaction will be collected via questionnaires, and during debriefing at the conclusion of the session. The questionnaires will utilize free-form responses and rating scales.

Scenario Completion Time (time on task)

The time to complete each scenario, not including subjective evaluation durations, will be recorded.

Usability Goals

The usability goals are as follows:

Completion Rate

Completion rate is the percentage of test participants who successfully complete the task without critical errors. A critical error is defined as an error that results in an incorrect or incomplete outcome. In other words, the completion rate represents the percentage of participants who, when they are finished with the specified task, have an "output" that is correct. Note: If a participant requires assistance in order to achieve a correct

output then the task will be scored as a critical error and the overall completion rate for the task will be affected.

A completion rate of [100%/enter completion rate] is the goal for each task in this usability test.

Error-free rate

Error-free rate is the percentage of test participants who complete the task without any errors (critical **or** non-critical errors). A non-critical error is an error that would not have an impact on the final output of the task but would result in the task being completed less efficiently.

An error-free rate of [80%/enter error-free rate] is the goal for each task in this usability test.

Time on Task (TOT)

The time to complete a scenario is referred to as "time on task". It is measured from the time the person begins the scenario to the time he/she signals completion.

Subjective Measures

Subjective opinions about specific tasks, time to perform each task, features, and functionality will be surveyed. At the end of the test, participants will rate their satisfaction with the overall system. Combined with the interview/debriefing session, these data are used to assess attitudes of the participants.

Problem Severity

To prioritize recommendations, a method of problem severity classification will be used in the analysis of the data collected during evaluation activities. The approach treats problem severity as a combination of two factors - the impact of the problem and the frequency of users experiencing the problem during the evaluation.

Impact

Impact is the ranking of the consequences of the problem by defining the level of impact that the problem has on successful task completion. There are three levels of impact:

- High - prevents the user from completing the task (critical error)
- Moderate - causes user difficulty but the task can be completed (non-critical error)
- Low - minor problems that do not significantly affect the task completion (non-critical error)

Frequency

Frequency is the percentage of participants who experience the problem when working on a task.

- High: 30% or more of the participants experience the problem
- Moderate: 11% - 29% of participants experience the problem
- Low: 10% or fewer of the participants experience the problem

Problem Severity Classification

The identified severity for each problem implies a general reward for resolving it, and a general risk for not addressing it, in the current release.

Severity 1 - High impact problems that often prevent a user from correctly completing a task. They occur in varying frequency and are characteristic of calls to the Help Desk. Reward for resolution is typically exhibited in fewer Help Desk calls and reduced redevelopment costs.

Severity 2 - Moderate to high frequency problems with moderate to low impact are typical of erroneous actions that the participant recognizes needs to be undone. Reward for resolution is typically exhibited in reduced time on task and decreased training costs.

Severity 3 - Either moderate problems with low frequency or low problems with moderate frequency; these are minor annoyance problems faced by a number of participants. Reward for resolution is typically exhibited in reduced time on task and increased data integrity.

Severity 4 - Low impact problems faced by few participants; there is low risk to not resolving these problems. Reward for resolution is typically exhibited in increased user satisfaction.

Compatibility Testing

Browser compatibility: Some applications are very dependent on browsers. Different browsers have different configurations and settings that the web page should be compatible with. The web site coding should be cross browser platform compatible. If the site is using JavaScript or AJAX it calls for UI functionality, performing security checks or validations then give more stress on browser compatibility testing of the web application. Test web application on different browsers like Internet explorer, Firefox, Netscape navigator, AOL, Safari, Opera browsers with different versions.

OS compatibility:

Some functionality in the web application may not be compatible with all operating systems. All new technologies used in web development like graphics designs, interface calls like different API's may not be available in all Operating Systems. Testing the web application on different operating systems like Windows, Unix, MAC, Linux, Solaris with different OS flavors.

Mobile browsing:

This is new technology age. Mobile browsing will be the future for Internet browsing. Testing the web pages on mobile browsers is highly important. Compatibility issues may be there on mobile. Currently ,the system is not designed for mobile browsing, although this is an area we can add in future.

Printing options:

Website page-printing options: make sure fonts, page alignment, page graphics get printed properly. Pages should fit to paper size or as per the size mentioned in printing option.

Performance testing:

Web application should sustain to heavy load. Web performance testing should include: Web Load Testing & Web Stress Testing

Test application performance on different Internet connection speeds. In **web load testing** test if many users are accessing or requesting the same page. Can system sustain in peak load times? Site should handle many simultaneous user requests, large input data from users, Simultaneous connection to DB, heavy load on specific pages etc.

Stress tests: Generally stress means stretching the system beyond its specification limits. Web stress testing is performed to break the site by giving stress and checked how system reacts to stress and how system recovers from crashes. Stress is generally given on input fields, login and sign up areas.

In web performance testing web site functionality on different operating systems, different hardware platforms are checked for software, hardware memory leakage errors.

Security Testing

- Test by pasting internal URL directly into browser address bar without login. Internal pages should not open.
- If you are logged in using username and password and browsing internal pages then try changing URL options directly. I.e. If you are checking some publisher site statistics with publisher site ID= 123. Try directly changing the URL site ID parameter to different site ID, which is not related to, logged in user. Access should deny for this user to view others stats.
- Try some invalid inputs in input fields like login username, password, and input text boxes. Check the system reaction on all invalid inputs.
- Web directories or files should not be accessible directly unless given download option.
- Test the CAPTCHA for automates scripts logins.
- Test if SSL is used for security measures. If used proper message should get displayed when user switch from non-secure http:// pages to secure https:// pages and vice versa.
- All transactions, error messages, security breach attempts should get logged-in log files somewhere on web server.