

Caribbean Network of Fisherfolk Organizations Website Refinement

Report on Assignment submitted
to
The Caribbean Regional Fisheries Mechanism
by
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on behalf of
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I. Introduction

I.1 Background

The consultants understand that the Caribbean Network of Fisherfolk Organizations, CNFO, is highly motivated to achieve:

1. A sustainable fisheries industry
2. Fisherfolk who are knowledgeable members of the industry
3. Secure livelihoods for Caribbean fisherfolk
4. A good quality of life for Caribbean fisherfolk.

For this volunteer organization, in which efficient and effective communications within and external to the organization has been a perennial challenge, CNFO recognizes the need for the support of information and communications technologies (ICTs) to effect:

1. Efficient bidirectional communications from the primary level (fisherfolk) through to CNFO
2. Information sharing
3. Capacity building for fisherfolk inter alia, in participatory governance, sustainable management of the marine resource, advocacy and representation
4. Engagement and collaboration amongst key partners.

I.2 Terms of Reference

The Caribbean ICT Research Programme (CIRP) has been engaged by the Caribbean Regional Fisheries Mechanism (CRFM) to assist through the refinement of the CNFO website as follows:

Table 1 Summary of Agreement to Refine CNFO Website

Item	Time allotment	Cost Euros
Review Advocacy Strategy and Plan and review and assessment of existing CNFO website	1 day @ 370.00	370.00
Prepare brief report with recommendations for the refinement of the website, as well as likely software required	1 days @ 370.00	370.00
Refine and upgrade website	5 days @ 370.00	1,850.00
Training of CNFO staff in use and maintenance of website	2 days @ 370.00	740.00
Prepare consultancy report and terminal report	1 days @ 370.00	370.00
TOTAL	10 days @ Euro 370.00	3,700.00

I.3 The Executing Team

The consultancy was executed by the Caribbean ICT Research Programme, with key roles assigned as follows:

- Team Lead and Principal Investigator: Kim Mallalieu
- Lead Software Engineer: Kevon Andrews
- Software Engineer and Analyst: Daryl Samlal
- Computer Scientist: Nicholas Chamansingh
- Designer: Rishma Hansil.

II.1 Website Requirements Articulated in Advocacy Strategy and Plan

The CNFO's current Advocacy Plan on Fisherfolk's Positions on Critical Issues Concerning the Implementation of Regional Fisheries Policies in the Caribbean for the Period July 2013 to June 2015 (Roopchand, 2013) identifies a CNFO website as one of the channels to achieve the following strategic goals:

Strategic Goal 1: Ensure that appropriate regional fisheries policies are formulated, adopted and implemented, through the following specific objectives:

- 1. Ensure that all CARICOM members sign onto and implement CCCFP, including the designation of the CRFM as the competent agency in the CCCFP*
- 2. Promote the adoption of the International Guidelines for Securing Sustainable Small-scale Fisheries (SSF) at national and regional levels*
- 3. Encourage all CARICOM members to implement the Castries Declaration on IUU*
- 4. Initiate and develop inclusive fisheries value chain policies for equitable returns*
- 5. Encourage trade of legally harvested fish through the appropriate channels*
- 6. Amend existing, or enact new, legislation to enable the implementation of new regional fisheries policies*
- 7. Ensure small-scale fisherfolk are considered in the development and implementation of new legislation on quality assurance and safety in the fisheries sector.*

Strategic Goal 2: Mobilise resources for the implementation of the policies at national and regional levels, through the following specific objectives:

- 1. Financial resources made accessible for the development of local fisheries industries as well as human and institutional capacities of organisations*
- 2. Research findings and recommendation are available to Fisherfolk organisations and their partners and allies who use them as evidence for policy advocacy and decision making regarding the ecological, economic and social dimensions of fishing industry*
- 3. Technical expertise mobilised to assist PFOs, NFOs, CNFO and small scale fisheries enterprises to implement advocacy plan.*

Strategic Goal 3: Strengthen the capacity of the Fisherfolk organisation to undertake advocacy, through the following specific objectives:

- 1. Capacity strengthening of the PFOs, NFOs and CNFO for policy and advocacy influence*
- 2. In policy development, include collection / generation, repackaging of policy evidence*
- 3. Internal and external communication for policy purposes*
- 4. Resource mobilisation*

Strategic Goal 4: Cross-Cutting Communication and Work with Media, through the following specific objectives:

- 1. Ensure the general public, stakeholders and policy-makers are aware of key fisheries development issues and policy responses are triggered, implemented and monitored*
- 2. Ensure improved access to, and sharing of information between and among stakeholders and actors in regional fisheries policies*
- 3. Use of ICTs to mobilise people and attract attention*
- 4. Mobilise external resources for advocacy purposes.*

II.2 Review of Current Site vis a vis Advocacy Strategy and Plan

CNFO's current Advocacy Plan lays out the Organization's expectations to utilize the website as an important channel for their information and knowledge sharing; and for their advocacy work: to engage stakeholders within and external to the Organization and to reach decision-makers, senior technocrats and fisherfolk partners. It calls for the use of Web 2.0 and social media tools for information dissemination, policy networking and advocacy; and also as a means of attracting youth to the fisheries sector. The design of the site should therefore facilitate easily accessible information and communication facilities so that all members, regardless of technical expertise, can navigate for effective communication and open discussion, with the ultimate aim of engagement and output for (i) capacity building and (ii) participatory governance.

The current site, <http://www.caricom-fisheries.com/Default.aspx?alias=www.caricom-fisheries.com/cnfo>, was assessed against this backdrop using criteria established in W3C Standards as well as stylistic best practice. On the basis of W3C standards, the existing site was assessed as having critical shortcomings in the areas of performance, design, implementation and information

presentation; as well as with respect to the facilitation of policy development, advocacy and resource mobilization, as captured in Table 2. First and repeat view test statistics are expanded in Appendix I.

Table 2 Assessment of Existing CNFO Website – W3C Standards

Criteria	Comment
Performance	<ul style="list-style-type: none"> ➤ Time to load site: 5 Seconds ➤ Failed to compress images (Uses large images) ➤ Some Images resulted in “404 not found”.
Website Implementation	<ul style="list-style-type: none"> ➤ Used Silverlight to display images. This is an out dated and inefficient method. ➤ Using nested drop down menus only do not provide an effective means of accessing information.
Information Presented	<ul style="list-style-type: none"> ➤ Not much information presented on website, with several pages “under construction”.
Policy Development	<ul style="list-style-type: none"> ➤ No surveys, polls or other feedback mechanisms to facilitate engagement or participatory governance at any level
Advocacy	<ul style="list-style-type: none"> ➤ No communication at national or regional levels within or external to CNFO members
Resource Mobilization	<ul style="list-style-type: none"> ➤ Does not provide communication or posts via video and audio. ➤ Does not provide an area where CNFO member organizations or individuals can post current and upcoming events.

Stylistically, the current site was assessed as having significant room for improvements, as for example, according to the following:

Colour

The current CNFO site utilizes a three colour design palette with a pale blue paired with a mint green. The colour distracts from the content and presents an informal playful appearance to the site. Though consistent with the CNFO logo, do not convey the key themes of importance to CNFO.

Icons & Graphical Elements

The site lacks the use of graphical elements; such as icons, buttons, photographs, illustrations and data visualizations such as graphs and charts.

Font Choice & Textual Design

The current site uses a hard edged serif font for the headings and titles and a sans serif font for the content with a few inconsistencies among the different pages. This can sometimes be monotonous for readers.

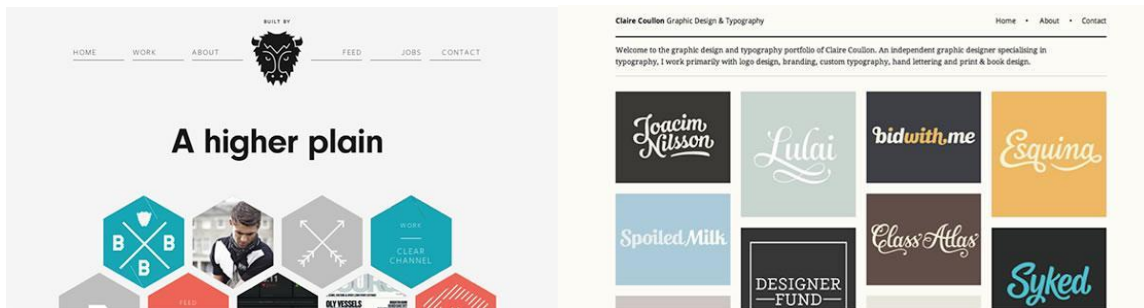
II.3 Recommendations for Site

Recommendations for immediate refinements of the existing site are as follows:

Colour and Style

Cool colours coupled with a modular layout can be more effective than a layout with different styles or spaces. Colour blocking for example can help define different segments using the positive space on the landing page, using icons, images and text to replace the solid blocks of colour.

Colour trends for 2013 show the use of the grey scale with bright accents. Essentially using a gray or off white background creates a crisp, clean professional look adding a pop of colour for headings, banners or icons to add visual stimuli to the website, as shown in Figure 1 (a) and (b).



(a) Gray Scale with bright accent

(b) Colour Blocking

Figure 1 Example Colour Palates for Crisp, Clean Look

Icons & Graphical Elements

Using icons and buttons can help users clearly identify sections of the page easily and emphasize important headings and titles. Using images on the homepage and throughout certain articles can help convey instantly the image of the Caribbean Network of Fisherfolk Organizations and capture

the attention of readers. Data visualization, for example as shown in Figure 2, helps to translate data effectively and presents information in different ways for those who may not clearly understand numerical data.

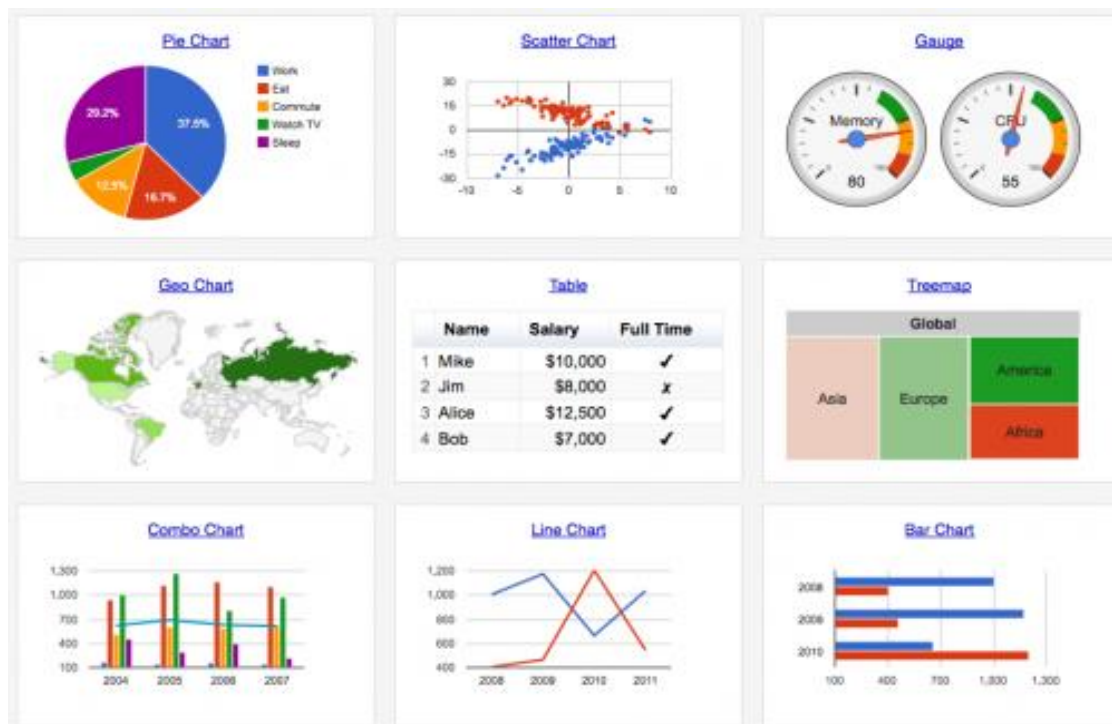


Figure 2 Examples of Data Visualization

Layout Design

The use of intuitive navigation is strongly recommended. Primary information should be placed at the top of the landing page with less important links at the bottom of the page in the footer. This layout should keep the user engaged by providing them with key information and updates as they first enter the site. The navigation to the top of the page should not be repeated in the sidebar and footer. Organizing the menus will help users find key information easier and faster.

The use of graphics as elements in the layout is also highly recommended. Examples include providing visual image icons as links, or simply wrapping text around images on the page to add to the aesthetics by changing the layout from textual to visual data.

Font Choice & Textual Design

Sans-serif fonts are much easier to read on computer monitors because the screen resolution is not as high as in print (Mayhew, 1992). The use of serif fonts for normal text can cause blurring together of characters on the screen making them hard to read. Large fonts with spaces between the letters are preferred. It is advisable to limit the number of different fonts. Using 2 or possibly 3 standard font families makes it easier to read and has a more professional appeal. Fonts such as Verdana, Geneva, Arial, and Helvetica create a clean look and work well on most browsers.

Online Discussions

The support for online discussions is a central requirement of the website upgrade. It is advisable to utilize existing and familiar platforms for this purpose. It is therefore recommended that the existing CNFO *Yahoo! Groups* online discussion board be linked to the CNFO site for least disruption to operating practice. An assessment of Yahoo! Groups is provided in following Table 3.

Table 3 Assessment of *Yahoo! Groups* Online Discussion Board to Fulfil CNFO Strategic Aims

Function	Comment
Facilitate public and private two way communication at national and regional levels. (Between CNFO members),	<p>Pros:</p> <ul style="list-style-type: none">➤ Yahoo groups offer users to join and communicate via emails.➤ Efficient and effective as it also allows users to reply to other conversations via email. <p>Cons:</p> <ul style="list-style-type: none">➤ There exists no Application Programming Interface (API) which would allow it to be easily integrated into a website or public platform.➤ All information is hidden until a user has joined.➤ Does not allow viewing of documents and newsletter from the web browser. Files must be downloaded to be viewed.

The Consulting Team has assessed that *Yahoo! Groups* is ultimately not an ideal Online Discussion Board for the purposes of satisfying CNFO Strategic Aims, primarily on the basis of its lack of an API. This limitation is most impactful in the inability to integrate into comprehensive website and application functionality; and the lack of support for analytics outside of a *Yahoo!* Platform. It is recommended that, ultimately, a more open forum is used, with a gradual transition strategy which will ensure little disruption and discomfort to existing users of the CNFO Yahoo! Group.

User Awareness

User-awareness, in the context of CNFO objectives, is essential. CIRP understands from the CNFO, for example, that many very knowledgeable fisherfolk do not attend face to face meetings but are happy to talk on the phone. These fishers have a wealth of knowledge that would contribute significantly to the achievement of CNFO Aims and Objectives. CIRP understands also that many fisherfolk are not computer literate. A solution aimed at including such fishers in governance must therefore contemplate methodologies for engagement that are context appropriate and user aware; and must necessarily be deployed alongside a deliberate and longitudinal strategy of capacity building and support. It is therefore recommended that voice-based communications facilities are included in the refined site.

Ecosystem Awareness

Small scale fisheries is naturally fraught with tensions arising from, inter alia, threatened marine resources, threatened livelihoods, long traditions of resource use by different types of agents, and issues of sovereignty. The CNFO has adopted an ecosystems approach to fisheries and will therefore necessarily be engaging with multiple stakeholders, each of which is associated with a unique set of interests, constraints and capacities.

The design of a CNFO website should therefore, among other things, be user-aware and ecosystem-aware. Its development should ideally be contemplated and executed on the basis of comprehensive requirements analysis derived from the inputs of a broad representation of stakeholders. Indeed, a meaningful and sustainable technology solution must be designed and developed alongside other strategic and operational interventions; and implemented in harmony and synchronization with built capacity. It is therefore recommended that the current assignment be followed with a comprehensive requirements analysis derived from the inputs of a broad representation of stakeholders, utilizing the refined website as a focal point.

II.4 Recommendations on Software and Hosting

A public website requires a number of physical, service and electronic resources. The website itself is a configured software application which is hosted on a physical server with supporting software. Public access to the site requires that the physical server has internet service and the site is assigned

a domain name. A domain name^{1 2} is a human-readable name which enables identification of Internet-accessible server resources. That is to say, the assignments of domain names are unique to ensure that conflicts do not occur. An example of a domain name is cirp.org.tt. For high availability, the server which hosts the website must have reliable internet access as well as reliable power. Additionally, it is best practice to maintain a backup of the site's contents to mitigate the effects of a catastrophic failure of the primary server.

The Consultants recommend the use of a scalable and robust content management system for the hosting of the CNFO website. Such a system will enable the CNFO to, among other things, easily build and serve repositories of resources, manage users, monitor basic usage and other analytics; and facilitate various basic forms of engagement. A well-established, extensible open source solution, with substantial stable adoption is recommended to reduce cost while at the same time assuring a useful support system and the capability to customise the software.

While the base components of open source content management systems may be used at no cost, extensions which will facilitate much of the functionality sought by the CNFO are commercially available or may be custom-developed. Also, some components of open source software are available, at a fee, with higher performance and functional specifications than their free counterparts. Judicious selection of the mix of open source and commercial components to support the open source content management system is advised for an ideal configuration of affordability, functionality and performance. Table 4 presents considerations and recommendations for hosting (domain and server hardware) as well as software.

Table 4 Considerations for Software and Hosting

Domain name	<p>The desired domain name proposed for the website is www.cnfo.org. A quick search produced the following results for a domain name under which the server resources of CNFO's website is reachable:</p> <ol style="list-style-type: none"> 1. www.cnfo.org, which is reported as being available through an auction process by GoDaddy hosting providers with a starting current bid of US \$1500.00³
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¹ Klensin, J., February 2003. RFC 3467, Role of the Domain Name System (DNS). Last accessed on November 18, 2013 from <http://tools.ietf.org/html/rfc3467#page-3>

² Introduction to Top-Level Domains (gTLDs). Last accessed on November 18, 2013 from <http://archive.icann.org/en/tlds/>

³ Last accessed on November 18, 2013 from <http://www.godaddy.com/domains/searchresults-new.aspx?ci=54814>

	<p>2. www.cnfo.org is also reported by DomainNameSales.com as being up for sale by its current owner⁴</p> <p>Other available options for domain names⁵ which will be similar to and convey the meaning of the name of the organisation are priced at a yearly renewal fee of US\$12.99 and are given below:</p> <ol style="list-style-type: none"> 1. www.carib-nfo.org 2. www.caribbean-nfo.org 3. www.caribbeannfo.org
Content Management System (CMS) Software on Server	<p>Joomla! CMS which is free and open source CMS which is recommended for the CNFO website. For version 2.5, the other free and open source software requirements include:</p> <ol style="list-style-type: none"> 1. Server-side Scripting Engine, PHP with minimum version of 5.2.4 2. Database Management System, MySQL with a minimum version of 5.0.4 3. HTTP Server Software, Apache with a minimum version of 2.x
Hosting Equipment	<p>This depends on the options chosen for hosting the website from the following:</p> <ol style="list-style-type: none"> 1. CNFO hosts website on newly acquired resources and all necessary supporting infrastructure 2. CNFO uses a commercial hosting provider, for example GoDaddy®, to host CNFO website 3. CIRP hosts the CNFO website. <p>With options 2 or 3, the hosting equipment already exists.</p> <p>With option 1, the hosting equipment required to host the software identified above must be acquired or accessed by the CNFO and must have at least the minimum hardware requirements to operate necessary software. In general these minimum hardware requirements are:</p> <ol style="list-style-type: none"> 1. A CPU with at least 2 CPU cores, for example Intel® Xeon™ processors 2. At least 2GB RAM 3. At least 2TB using RAID 1 for data storage, with a recommendation to use 4 x 500GB hard disk drives 4. 2 x 10/100Mbps Network Interface Card (NIC) 5. A 1 TB Network Attached Storage (NAS) drive for the purpose of storing backups of server 6. Uninterruptible Power Supply (UPS)
Cost	<p>This depends on the options chosen for hosting the website from the following:</p> <ol style="list-style-type: none"> 1. CNFO hosts website on its acquired resources 2. CNFO uses a hosting provider, for example GoDaddy®, to host CNFO website

⁴ Last accessed on November 18, 2013 from http://domainnamesales.com/search?options_open=0&kw=cnfo.org&other_tld=&starts-with=&ends-with=&exclude=&budget-max=100000&budget-min=0&max-character-length=20&min-character-length=1&max-number-of-words=6&min-number-of-words=1#section=search-bar

⁵ Last accessed on November 18, 2013 from GoDaddy® at www.godaddy.com

	<p>3. CIRP hosts the CNFO website.</p> <p>With option 3, the cost incurred comprises the cost to operate and maintain the hosting equipment and includes:</p> <ol style="list-style-type: none"> 1. Yearly renewal costs associated with keeping the domain name <p>With option 2, the cost incurred comprises the cost to operate and maintain the hosting equipment and may include:</p> <ol style="list-style-type: none"> 1. Yearly renewal costs associated with keeping the domain name 2. Additional charges in the electricity utility bills for operation of the equipment and cooling infrastructure for such equipment 3. Human resources cost associated with maintenance of the equipment and software resources 4. Cost of the required equipment, inclusive of an uninterruptible power supply providing backup power to equipment when a the mains power supply is absent <p>With option 3, the cost incurred comprises the cost to operate and maintain the hosting equipment and includes:</p> <ol style="list-style-type: none"> 1. Yearly renewal costs associated with keeping the domain name 2. Yearly renewal costs associated with hosting the website
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II.5 Refinement and Upgrade of Website

The CNFO site has been refined using Joomla! 2.5 with all necessary supporting software. It is temporarily located on CIRP server resources at The University of the West Indies St. Augustine Campus. The site is reachable using the publicly-accessible Uniform Resource Locator (URL) cirp.org.tt/cnfo.

Users and Characteristics

The website targets several audiences and takes account of their general characteristics as captured in Table 5.

Table 5 Target Users and Characteristics

Audience	Characteristics
Fisherfolk leaders, fishers and their organisations	These, primary users of the site, span a range of competencies with digital technologies, a significant majority having only basic knowledge and experience both with digital literacy as well as traditional literacy
Fisheries officials; CNFO partners; policy makers at the highest level; youth in fisheries and the public at large.	These users span a range of competencies with digital technologies, with a bias towards advanced levels of digital and traditional literacy.

Taking account of the vast range of digital and traditional literacies that must be accommodated, the website has been designed for ease of use, with a strong emphasis on graphical elements. Audio and video elements are also strategically featured, to the extent available through open source solutions; and to the extent possible within the 2-week implementation period for site design and implementation.

Functionality

Table 6 is a list of sample functions supported by the refined CNFO Website, along with the corresponding objectives. The main objectives were obtained from the Advocacy Strategy and Plan which were used to derive the sub functionalities.

Table 6 Mapping of Functionality to Objectives for Refined CNFO Site

Objective	Functionality
Facilitating Policy Development	<ul style="list-style-type: none"> ➤ Provide users to participate in voting and surveys ➤ Provide responses / results for these polls.
Facilitating Advocacy	<ul style="list-style-type: none"> ➤ Provide users Policy Briefs, Papers, Newsletters etc. ➤ Facilitate public and private two way communication at national and regional levels. (Between CNFO members),
Facilitating Resource Mobilization	<ul style="list-style-type: none"> ➤ Provide each CNFO member country with its own page to showcase its progress towards overarching Aims and Objectives. ➤ Allows other viewers and members of the public to view and leave comments. ➤ Provide communication and posts via video and audio. ➤ Provide area where CNFO and individual regions can post current and upcoming events.
Facilitating Capacity Strengthening	<ul style="list-style-type: none"> ➤ Provide information regarding training to fisher folk. ➤ Allow fisher folk to share and post information. ➤ Provide specialised training materials.

Other Key Features

- 1) The refined site has been built to be accessible form all standard browsers; and also accessible through both fixed and mobile channels. It resizes gracefully on all platforms;
- 2) The site can be translated to different languages facilitating the use by fisherfolk from different jurisdictions;
- 3) The refined site has a page that provides information and links to a variety of tools relevant to fisherfolk livelihoods;

- 4) Weather information is provided;
- 5) The site has the capability to link to other social and media groups for the CNFO e.g. Facebook, Twitter etc.

II.6 Site Map for Refined Website

Figure 3 shows the site map for the refined website.

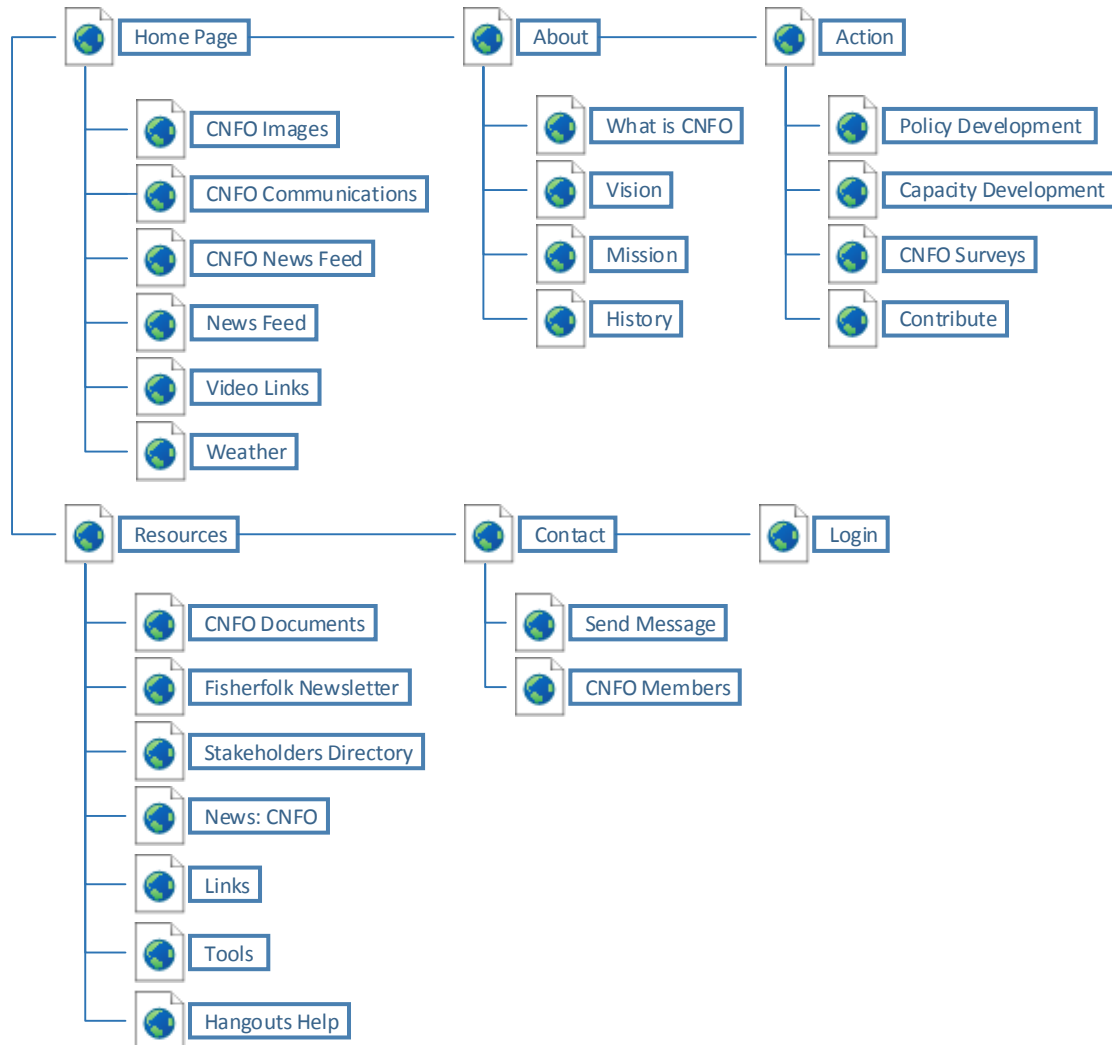
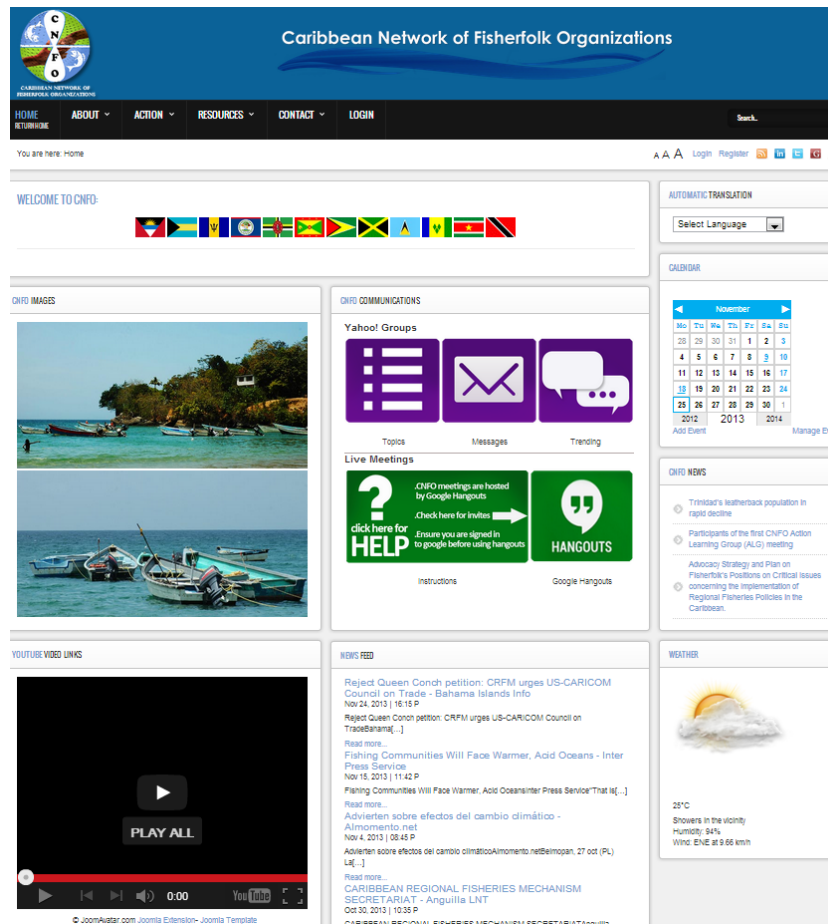


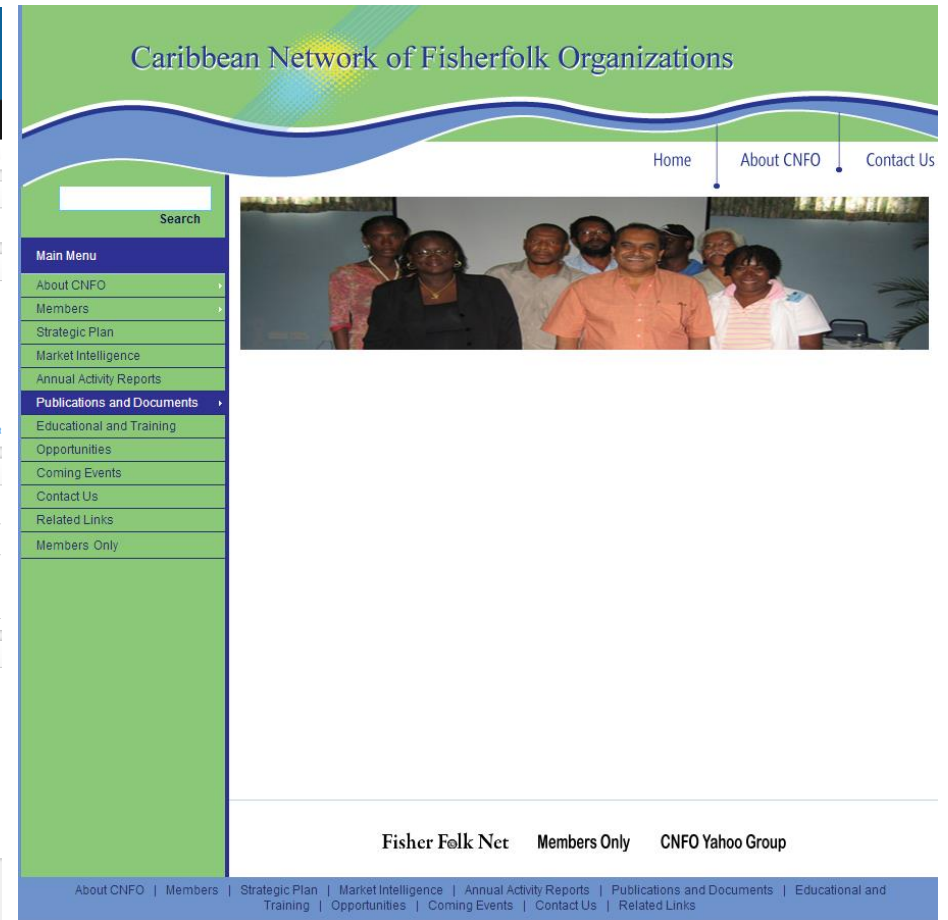
Figure 3 Site Map for Refined CNFO Website

II.7 CNFO Website User Interface: Before and After Refinement

Figures 4 (a) and (b) illustrate the CNFO website homepage before and after refinement. Figure 4 (c) and (d) show the homepage of the refined site viewed from two mobile devices: a tablet and a smart phone, respectively.



(a) Refined Site Home Page

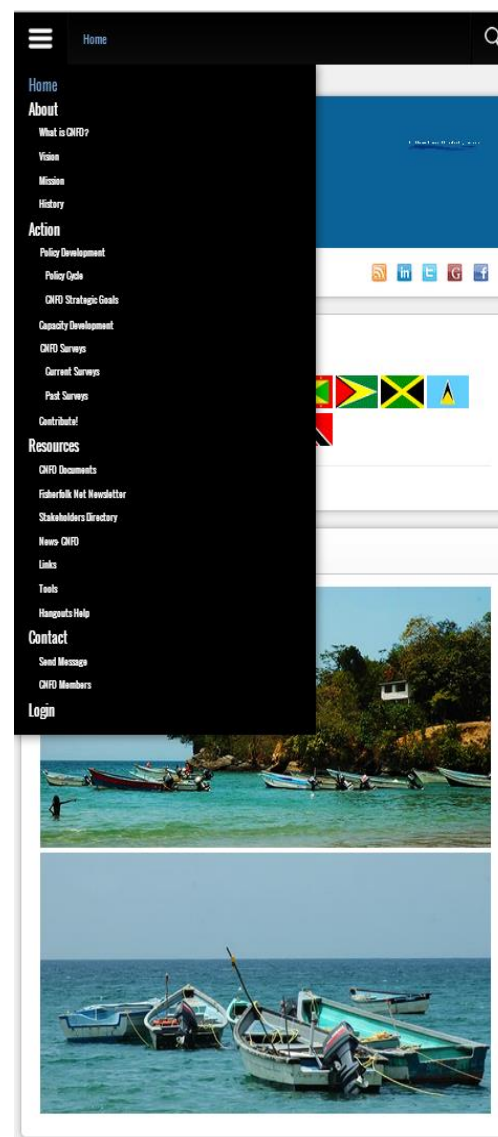


(b) Original Refined Site Home Page

Figure 4 CNFO Website Homepage Before and After Refinement



(c) Screen Shot of Website on Mobile Device (Tablet)



(d) Screen Shot of Website on Mobile Device (Mobile)

Figure 4 Refined CNFO Website Homepage Viewed from Tablet and Mobile Phone

III Terminal Report

III.1 User Testing

On 22 November 2013, the refined CNFO site was tested by two CNFO-CU members:

1. Joslyn Lee Quay: Deputy Coordinator, CNFO leequayj@yahoo.com
2. Ms. Nadine Nembhard: Executive Secretary of the Belize Fishermen Cooperative Association and Secretary, CNFO (nadine_nem@yahoo.com)

The tests were conducted synchronously by the Caribbean ICT Research Programme, with Mr. Lequay in attendance on the Campus of The University of the West Indies and Ms. Nembhard attending via Google Hangout from Belize. The following methodology was employed:

Step 1: CIRP asked users to perform a specific action.

Step 2: CIRP documented the steps the users took to perform the action.

Step 3: CIRP documented the observations.

Overall the results of the tests were satisfactory, as documented in Table 7.

Table 7 Mapping of Functionality to Objectives for Refined CNFO Site

Instruction	Steps	Comments
Go to the <i>Yahoo! Groups</i>	<ul style="list-style-type: none">➤ Locate the Yahoo Groups Button.➤ Go to Yahoo Groups➤ Navigate back to the home page	Users found the <i>Yahoo! Groups</i> easily and quickly.
Select an item presented in the News Feed	<ul style="list-style-type: none">➤ Navigate to the News Feed Section➤ Click on the News Item of choice	Users found the news feed easily and quickly.
Select an Item presented in the CNFO News	<ul style="list-style-type: none">➤ Navigate to the CNFO News Feed Section➤ Click on the CNFO News Item of choice.	Users found the CNFO news feed easily and quickly.
Go to the CNFO surveys	<ul style="list-style-type: none">➤ View the Surveys homepage➤ Select the Current Surveys Page➤ Fill out the Survey Provided➤ View Past Surveys	Found the survey easily. One user had difficulty in switching between surveys.
Go to Capacity	<ul style="list-style-type: none">➤ Select the Capacity development.	One user found it with prompting

Development		to go to menu Other user found it without prompt
Add an Event to the Calendar	<ul style="list-style-type: none"> ➤ Select add event to the calendar ➤ Fill out information ➤ Submit ➤ Select the manage Calendar option 	<p>Found the Calendar</p> <p>Both didn't use the easy calendar option to select event date.</p> <p>Some difficulties inserting time.</p> <p>Successfully created the meeting and retrieved it.</p>
Send Message to the CNFO. From the contacts option.	<ul style="list-style-type: none"> ➤ Select contact tab ➤ Fill out form ➤ Send message 	<p>Some difficulties in finding contact CNFO</p> <p>Selected CNFO Members first</p> <p>Captcha was inserted without any difficulties.</p>
Translate page to other languages		Was performed easily

Users Comments

- Translation feature is very useful
- The website has all the features that are necessary
- Features can be navigated easily
- Fonts (writing can be a bit sharper) and the search option a little larger
- You also have two homes, one can be removed
- Combine the two menus into one.

Consultant Response to User Feedback

As recommended by one user, the two menus in the test site were combined into a single menu.

III.2 Training

The team suggests training dates of Tuesday 26th to Thursday 28th between the hours of 9 a.m. – 12 noon and 1 p.m. to 4 p.m. (Atlantic Standard Time).

III.3 Recommendations for Equipment for Website Administrator

It is recommended that the following equipment be acquired to facilitate the administration and maintenance of the website:

1. A laptop, supporting (i) video playback and chat capability (ii) image and video editing software (iii) office productivity software (iv) anti-virus software, in addition to facilitating mobility, should have:
 - a. A quad-core CPU at speed faster than 2GHz
 - b. A hard drive of at least 500GB
 - c. Memory (RAM) of at least 8GB
 - d. An LCD screen with size not larger than 15 inches
 - e. A dedicated video graphics card with at least 1GB memory
 - f. A high resolution web camera
 - g. Two small, external speakers
 - h. An external microphone with hardware mute button
 - i. An ethernet NIC
 - j. WiFi capability
 - k. Bluetooth capability
 - l. A wireless mouse
 - m. A 9-cell battery
 - n. A carrying case
 - o. Extended warranty, at least 3 years, in addition to weighing no more than 7 lbs

An example of such a laptop is given in Appendix II and its estimated cost in US\$2660.00.

2. A camera that can
 - a. Capture excellent quality still and video images to place on the website and print media
 - b. Capture still images in wet conditions
 - c. Digitally store still images and video clips.

An example of such a camera is given in Appendix III and its estimated cost in US\$400.00.

III.4 Maintenance

In order for the CNFO website to be usefully engaged as one of the channels used to realize the Organization's strategic goals, it is imperative that resources, particularly human resources, are allocated for its administration and maintenance. Human requirements comprise both technical and thematic competence and are required to:

1. Ensure swift response to queries and other comments posed via the site's feedback facilities
2. Ensure that the site is physically available and to perform swift corrective action if it is not
3. Ensure that content is fresh and interesting
4. Monitor the use of the engagement channels
5. Manage and moderate the engagement channels to ensure most profit in alignment with the CNFO strategic and operational goals
6. Encourage users to gather and repose at the site, to contribute to it and to gather value from it
7. Utilize the significant potential and power of information and communications to acquire, process, communicate, analyse, display and visual data for strategic advantage.

The consultants recommend that the Caribbean ICT Research Programme, or some other competent agent, be contracted to:

1. Host the CNFO website for a period of one year, during which period a thorough analysis of ultimate hosting and maintenance options is conducted, on the basis of use and assessments of the site administrator/s;
2. Work along with the CNFO to capture and analyse data regarding the usefulness of the website to realize the goals and objectives as outlined in the *Caribbean Network of Fisherfolk Organizations (CNFO) Advocacy Strategy and Plan for Fisherfolk's Positions on Critical Issues concerning the Implementation of Regional Fisheries Policies in the Caribbean* (Roopchand, 2013) and, on that basis, to recommend a full portfolio of open source software and tools, with only those commercial extensions that would provide significant and necessary advantage.

III.5 Extension of Functionality

A website, ultimately linked with integrated mobile channels, is a strategic and operational imperative for the CNFO. If properly designed, this virtual space has the potential to effect CNFO objectives for efficient multi-directional, multi-dimensional, communications; information sharing, engagement, capacity building, collaboration and participatory governance. In the longer term, CIRP recognizes the additional potential of Information and Communications Technology (ICT) to effect additional profit through the use, for example, of data acquisition, aggregation, analysis and visualization for all agents in the Caribbean fisheries eco-system from primary fisher to policy maker.

During the period which follows the delivery of the website, the consultants recommend that the CNFO consider future developments of the website as outlined in Table 8.

Table 8 Further Development of Website

<u>Future Development</u>	
Additional Features	Additional features include updates to existing operational features of the website, as well as new features to add or replace existing functionality on the website.
Cost	CIRP, is available to work with the CNFO on continued development of the website. In exchange for such services, remuneration would be sought to cover the cost of human resources to execute requirements analysis, design, implementation, testing and maintenance. This cost is estimated at US\$3000.00 per month. An estimate of the period in which the development will occur can only be provided after a preliminary appraisal of the additional requests of the CNFO for website upgrades.

IV References

Mayhew, D. (1992). Principles and Guidelines in User Interface Design. Prentice-Hall, Inc. Upper Saddle River, NJ, USA ©1992.

Roopchand, A. Z. (2013). “Caribbean Network of Fisherfolk Organizations (CNFO) Advocacy Strategy and Plan for Fisherfolk’s Positions on Critical Issues concerning the Implementation of Regional Fisheries Policies in the Caribbean”. CRFM Technical & Advisory Document – Number 2013 / 06, 71p.

v Appendix I: First and Repeat View Test Statistics: Existing Site

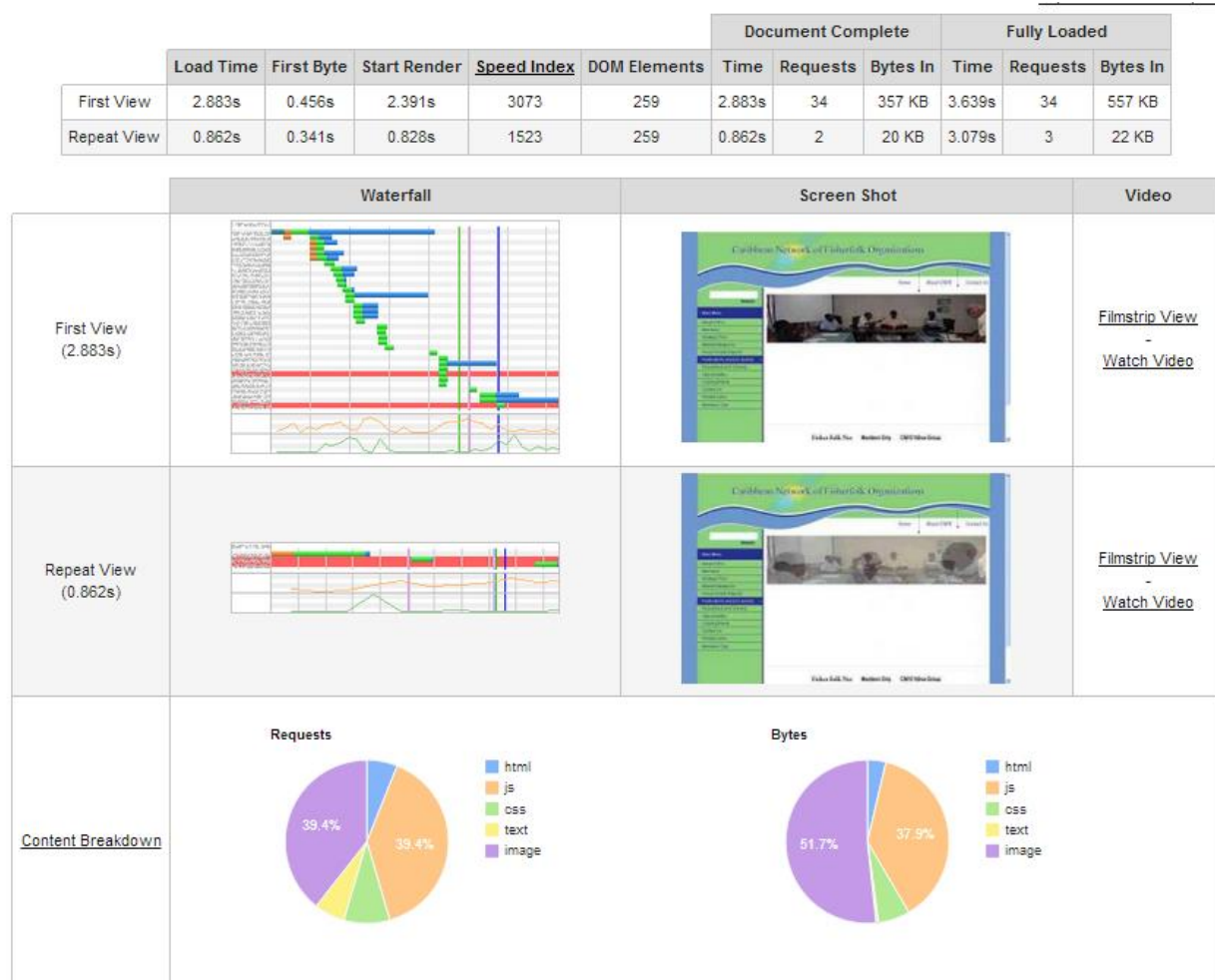


Figure A1: First and Repeat View Test Statistics: Existing CNFO Site

VI Appendix II: Sample Laptop Features

• Dell XPS 15

Date	25/11/2013 11:56:46 AM Central Standard Time			
Catalog Number	2020 Retail bzdhs1			
Catalog Number / Description	Product Code	Qty	SKU	Id
Operating System: Windows® 7 Professional, 64bit, English	W71P6E	1	[421-5804]	11
Processor: 3rd Generation Intel® Core™ i7-3632QM processor (6M Cache, up to 3.2 GHz)	7H59K2	1	[338-BBNN]	2
Office Productivity Software (Pre-Installed): MS OFFICE H AND B 2013, LATAM	OHB13L	1	[630-AABS]	22
Anti-Virus/Security Suite (Pre-installed): McAfee LiveSafe 36 Month Subscription	MCSM36M	1	[461-AAAJ]	25
Hardware Support Services: 3 Year Basic Limited Warranty and 3 Yr NBD On-Site Service	L3OS	1	[992-5234][992-5244][992-5304][992-5324]	29
CompleteCare: COMPLETE CARE, 3 YEARS	LCCY3	1	[992-5374]	33
Video Card: NVIDIA® GeForce® GT 640M with 2GB GDDR5 VRAM	N13PG2G	1	[320-3538]	6
XPS 15: XPS 15	PNX15LX	1	[225-2991]	1
Extended Services: INTERNATIONAL PROCESSING	INTER	1	[499-9998]	30
Memory: 16GB Dual Channel DDR3 1600MHz (8GBx2)	16G2D	1	[319-0067]	3
Keyboard: US English Keyboard	W8KBEU	1	[331-9396]	4
LCD: 15.6 LED Backlit Display with Truelife and FHD resolution (1920 x 1080)	HDTLED	1	[320-3536]	5
Wireless Driver: SRV Software for Killer Wireless-N, 1202 for Video & Voice w/ BT 4.0	SR1202	1	[421-9525]	7
Additional Software: Additional Software	CYCL23M	1	[421-7650][421-7995]	26
Hard Drive Software: No SSD SW Required	NOSSDSW	1	[469-2152]	707
Hard Drive:	1TB52	1	[342-4474]	8

1TB 5400 rpm SATA Hard Drive + 32GB mSATA Solid State Drive				
Adobe Reader: Adobe® Reader	ADOBER	1	[410-0548]	15
Entertainment and Editing Software: No Adobe Elements Software Requested	NOPEPE	1	[412-1089]	195
Optical Driver: Slot Load Blu-ray Disc BD-Combo (Reads BD and Writes to DVD/CD)	BDR0M	1	[318-2092]	16
Sound: Waves Maxx Audio 4.0	INTSND	1	[318-1493]	17
Wireless: Killer™ Wireless-N 1202 for Video & Voice + Bluetooth 4.0	KN1202	1	[430-4966]	19
PowerCord: PowerCord 125V 1M C5	PWRDAO	1	[331-1894]	20
Documentation: English Documentation	DOCENG	1	[331-3872][331-7186][331-7187]	21
Shipping Material: Shipping Material Clear	SHPCLR	1	[331-7266]	24
Optical Drive Software: Cyberlink Power DVD BD 9.6	PDVDBD	1	[421-4550]	28
Primary Battery: 65 WHr 9-cell Battery	9CBATT	1	[312-1338]	27
Wireless Display: No Wireless Display Application and Driver	NOWIDI	1	[310-4388]	36
Energy Star: ENERGY STAR® qualified/EPEAT registered	ESTAR	1	[469-2120]	44
FGA Module: PPAN1403_017/BTO	FG0080	1	[730-4384]	572
CFI Included (Smart Selection): CFI Not Included	CFINO	1	[469-2486]	706
Labels: Retail Palmrest Label - English	PLMLEN	1	[331-8793]	750
Retail Software: Retail Registration	RTLREG	1	[421-8626]	61
Mouse & Keyboard: Dell Wireless Mouse WM311 with Nano Receiver - Obsidian Black	330-6856	1	[330-6856]	6659
Speakers: System AX210 USB Stereo speakers	313-7362	1	[313-7362]	6661
Backpacks and Sleeves: Dell Energy Backpack 17.3-inch	331-5361	1	[331-5361]	6663

VII Appendix III: Sample Camera Features

Metrics	
Dimensions (W x H x D)	103.5 x 64.0 x 26.5 mm / (4.07 x 2.52 x 1.04 inch)
Weight	Approx. 175g without Battery and SD Memory Card (0.39 lb) / Approx. 197g with Battery and SD Memory Card (0.43 lb)
Optics	
Camera Effective Pixels	12.1 Megapixels
Sensor Size / Total Pixels / Filter	1/2.33-inch CCD sensor / 12.5 Total Megapixels / Primary Color Filter
Aperture	F3.3 - 5.9 / 2-Step (F3.3 / 10 (W), F5.9 / 18 (T))
Optical Zoom	4.6x
Focal Length	f=4.9 - 22.8mm (28 - 128mm in 35mm equiv.) / (30 - 140mm in 35mm equiv. in video recording)
Extra Optical Zoom (EZ)	5.7x (4:3 / 8M), 7.3x (4:3 / 5M), 9.1x (under 3M)
Intelligent Zoom	9.3x
Lens	LEICA DC VARIO-ELMAR / 10 elements in 8 groups / (5 Aspherical Lenses / 6 Aspherical surfaces / 1 ED Lens)
Optical Image Stabilizer ¹	Power O.I.S. (On with Active Mode(only for motion picture) / Off)
Digital Zoom ²	4x
Focusing Area	Normal: Wide / Tele 30 cm - infinity / Macro / Intelligent AUTO/ motion picture: Wide 5 cm - infinity / Tele 30cm - infinity
AF Assist Lamp	Yes (LED light in motion picture mode)
Focus	Normal, AF Macro, Zoom Macro / Quick AF On/Off(On in Intelligent Auto), Continuous AF(only for motion picture) / AF Tracking
AF Metering	Face / AF Tracking / 23pt / 1pt / Spot
Shutter Speed	approx. 60 - 1/1300 sec
Recording	
File Format	Still Image: JPEG(DCF/Exif2.3) / 3D Image: MPO / Motion picture: AVCHD, MP4
Mode Dial / Mode Button	Intelligent AUTO, P, M, Sports, Snow, Miniature Effect, Beach&Snorkeling, Underwater, SCN, 3D Photo
Still Image Scene Mode	Portrait, Soft Skin, Scenery, Panorama Shot, Night Portrait, Night Scenery, Handheld Night Shot, Food, Baby1, Baby2, Pet, Sunset, High Sensitivity, Glass Through
Continuous Shooting Mode	Full-Resolution Image, 3.7 frames/sec Max. 6 images / High-speed Burst Mode: approx. 10 frames/sec / (recorded in 3M for 4:3, 2.5M for 3:2, 2M for 16:9, 2.5M for 1:1) , Max. 100 images / Time Lapse Shot
Motion Picture Recording (*2)	[HD Video] 1920 x 1080 pixels, 60i (GFS: 17Mbps, FSH: 17Mbps / AVCHD) (Sensor output is 30p) / 1280 x 720 pixels, 60p (GS: 17Mbps, SH: 17Mbps / AVCHD) (Sensor output is 30p) / 1920 x 1080 pixels, 30 fps (FHD: 20Mbps / MP4) / 1280 x 720 pixels, 30 fps (HD: 10Mbps / MP4) / [STD Video] 640 x 480 pixels, 30 fps (VGA: 4Mbps / MP4)
AVCHD (Continuous recordable time [motion pictures])	approx. 100 min (GFS, FSH), 110 min (GS, SH)
MP4 (Continuous recordable time [motion pictures])	approx. 100 min (FHD)
AVCHD (Actual recordable time [motion pictures])	approx. 50 min (GFS, FSH), 55 min (GS, SH)

MP4 (Actual recordable time [motion pictures])	approx. 50 min (FHD)
Exposure	Program AE, Manual
Exposure Compensation	1/3 EV step, +/-2 EV
Auto (AE) Bracketing	1/3 -1EV step, Max +/-1EV, 3 frames
Light Metering	Intelligent Multiple
ISO Sensitivity	Auto / i.ISO / 100 / 200 / 400 / 800 / 1600 / High Sensitivity mode (ISO 1600-6400)
Still Picture Recording	[1:1] 2992x2992 (9M) / 2448x2448 (6M EZ) / 1920x1920 (3.5M EZ) / 1536x1536 (2.5M EZ) / 480x480 (0.2M EZ) / [4:3] 4000x3000 (12M) / 3264x2448 (8M EZ) / 2560x1920 (5M EZ) / 2048x1536 (3M EZ) / 1600x1200 (2M EZ) / 640x480 (0.3M EZ) / [3:2] 4000x2672 (10.5M) / 3264x2176 (7M EZ) / 2560x1712 (4.5M EZ) / 2048x1360 (2.5M EZ) / 640x424 (0.3M EZ) / [16:9] 4000x2248 (9M) / 3264x1840 (6M EZ) / 2560x1440 (3.5M EZ) / 1920x1080 (2M EZ) / 640x360 (0.2M EZ)
Image Quality	Fine / Standard (3D mode: MPO Fine / MPO Standard)
White Balance	Auto / Daylight / Cloudy / Shade / Incandescent / White Set / White Balance Adjustment
Color Mode / Color Effect / My color	Color Mode : Standard, Black&White, Sepia, Vivid (in P / M mode), Happy (only in iA Mode)
Digital Red Eye Correction (Red-Eye Removal)	Yes
GPS	Yes
Zoom in Motion Picture	Yes
Self Timer	2sec / 10sec
Playback	
Playback Mode ³	Normal Playback, Slideshow, Filtering Playback (Picture Only, Video Only, 3D, GPS Area, Altimeter Log, Travel, Category, Favorites), Calendar Playback
Thumbnails / Zoomed Playback	12,30-thumbnails / Yes
Calendar Display / Dual-Image Playback	Yes / No
Set Favorites / Rotate Image	Yes / No
Show Histogram	Yes
DPOF Print Setting / Set Protection	Yes / Yes
Retouch	Auto Retouch
Resize / Cropping / Aspect Conv. / Leveling	Yes / Yes / No / No
Copy / Title Edit / Text Stamp	Yes / Yes / Yes
Cut Animation	Yes
Video Divide	Yes
PictBridge Support	Single / Multi / All / Favorites / DPOF
Setup	
OSD language	English, Spanish
Others	
LCD Monitor ⁴	2.7"(6.7cm) TFT Screen LCD Display (230K dots), AR Coating / Field of View : approx. 100% Wide Viewing Angle / Power LCD mode, AUTO Power LCD mode
Built-in-Flash	Auto, Auto/Red-eye Reduction, Forced On, Slow Sync./Red-eye Reduction, Forced Off, / 0.3 - 5.6m (Wide/ISO Auto), 0.3 - 3.1m (Tele/ISO Auto)
Recording Media	Built-in Memory, SD Memory Card, SDHC Memory Card, SDXC Memory Card
Built-in-Memory	Approx.20MB

Microphone / Speaker	Mono / Mono
Interface	micro HDMI, AV Output (NTSC), USB2.0 High speed
Power ⁵	Li-ion Battery Pack (3.6V, Minimum: 940mAh)
Battery life (approx.)	310 pictures (CIPA Standard)*1
Included Software	PHOTOfunSTUDIO 8.1 Advanced Edition / Adobe Reader
Standard Accessories	Battery Pack, Battery Charger, Brush, AV Cable, USB Cable, Hand Strap, CD-ROM
Further Specifications	
NOTE	<p>*1 / Recording conditions by CIPA standard / - CIPA is an abbreviation of [Camera & Imaging Products Association]. / - Temperature: 23 oC (73.4 oF)/Humidity: 50%RH when LCD monitor is on. / - Using a Panasonic SD Memory Card (32 MB). / - Using the supplied battery. / - Starting recording 30 seconds after the camera is turned on. (When the optical image stabilizer function is set to [ON].) / - Recording once every 30 seconds with full flash every second recording. / - Rotating the zoom lever from Tele to Wide or vice versa in every recording. / - Turning the camera off every 10 recordings and leaving it until the temperature of the battery decreases. / *2 / - These are standard times taken at a temperature of 23 oC (73.4 oF) and a humidity of 50%RH. / - The time available for recording varies depending on the environment, the interval between recordings, and the manner of use. / - Actual recordable time is the time available for recording when repeating actions such as switching the power supply [ON] / [OFF], starting/stopping recording, zoom operation etc. / *3 / - Maximum time to record motion pictures continuously with [AVCHD] is 29 minutes 59 seconds. (excluding when [GS] or [SH] is set) / - Motion pictures in [MP4] can be recorded continuously for up to 29 minutes 59 seconds. Also, motion picture recorded continuously in [MP4] is up to 4 GB.</p>