

# **Request for Proposals**

# Web Design for Websites Hosting Shorebird and Monarch Information

for the projects

# Arctic Migratory Birds Initiative (AMBI) – the Americas' Flyway Action Plan and Engaging Farmers and Other Landowners to Support Monarch Butterfly and Pollinator Conservation

# **Commission for Environmental Cooperation**

# 2016

The Commission for Environmental Cooperation (CEC) is requesting proposals from prospective consultants to develop the design, graphical elements including logo and topic icons, and an interactive map for two project-related websites:

- 1) North American Red Knot and Semipalmated Sandpiper Sites of Importance
- 2) Compendium of North American Initiatives on Monarch Conservation

The CEC is an intergovernmental organization created by Canada, the United States and Mexico under the North American Agreement on Environmental Cooperation (NAAEC). The CEC was established to address regional environmental concerns, help prevent potential trade and environmental conflicts, and promote the effective enforcement of environmental law. The Agreement complements the environmental provisions of the North American Free Trade Agreement (NAFTA).

The CEC's Council, its governing body, approved the projects entitled *Arctic Migratory Birds Initiative (AMBI) – the Americas' Flyway Action Plan* (hereafter the AMBI project) and *Engaging Farmers and Other Landowners to Support Monarch Butterfly and Pollinator Conservation* (hereafter, the Monarchs project) as part of the Operational Plan for 2015–2016. The purpose of the AMBI project is to improve conservation outcomes for at-risk shorebirds by informing, engaging and connecting communities in Canada, Mexico and the United States at key sites that share responsibility for their well-being. The purpose of the Monarchs project is to promote the restoration and enhancement of monarch habitat along the migration flyway in Canada, Mexico, and the United States. For a complete description of the projects, including tasks and related budgets, please visit the CEC website at: <www.cec.org/our-work/projects/arctic-migratory-birdsinitiative-ambi-%E2%80%93-americas%E2%80%99-flyway-action-plan> and <www.cec.org/ourwork/projects/engaging-farmers-and-other-landowners-support-monarch-butterfly-and-pollinatorconservation>.

# **Terms of Reference**

### A. Overview and Scope

For both the AMBI and Monarchs projects, a website was identified as the best mechanism to

reach out to stakeholders, share information and nurture a network of conservation partners along the target species' migration paths. Under subtasks 1.1 and 3.1 of the AMBI project, it was agreed to make available a website to show sites and habitat characteristics that are important for Red Knots and Semipalmated Sandpipers (two species that have very broad breeding ranges and have been identified as key biodiversity indicators for other co-occurring species), and establish a linking program to connect communities along the flyway. Under subtask 3.1 of the Monarchs project, it was agreed to develop a user-friendly web portal and post all relevant information on habitat improvements and management including guidelines, incentive programs and case studies, to promote the adoption of monarch conservation and beneficial management practices.

The AMBI project website will host a compilation of information on Red Knot and Semipalmated Sandpiper sites of importance in North America, raise awareness among communities along the flyway that they steward a shared resource, and link these communities to facilitate the sharing of shorebird data, conservation strategies and results in order to enhance the conservation and sustainable use of habitats.

The Monarchs project website will host information on monarch-friendly practices and incentives for farmers, other landowners and land managers, raise awareness of monarch habitat along its migratory flyway, and facilitate the identification of potential partners to enhance the conservation of the monarch butterfly and its habitat.

Since partners for both projects are working across Canada, Mexico and the United States, both websites will be available in English, Spanish and French (with the possibility of adding a fourth language for the AMBI website).

The CEC is responsible for developing the website architecture (in WordPress) and content, and will provide to the Consultant wireframes and content outlines at the beginning of the contract. It is expected that the level of complexity of both websites will be similar to that of the *CEC Grasslands Beneficial Management Practices Online Tool* (www.nagrasslands.org).

### **B. Description of Services**

The Consultant shall coordinate with the CEC's Ecosystems and Sustainable Communities Program Manager (or designated contacts) to accomplish the following for each website:

- 1) Define the user profile and optimal user experience, review existing similar websites from the three countries, and identify unique features that could differentiate the AMBI and Monarchs websites from what already exists.
- 2) Develop a color scheme and design approach that is compatible with WordPress, presents information from numerous tables in an accessible way, and will appeal to the target audience.
- 3) Develop branding elements (logos and icons) that will appeal to the target audience.
- 4) Define and design graphical elements, such as fonts, page backgrounds, tabs and icons, in consultation with the CEC.
- 5) Provide a flexible structure to allow for variations in text lengths for the three languages required.
- 6) Develop graphical elements for an interactive map that allows users to search for website information geospatially.

- 7) Develop a mock-up of no less than five (5) website pages including the homepage, interactive map page and three (3) additional pages mutually agreed upon by the Consultant and the CEC.
- 8) Incorporate CEC feedback on the page design, and deliver a final report to the CEC including all graphical and design elements to be included in the website.

#### Deliverables

- 1) Website design planning and feedback meetings: Participate in two (2) meetings (onsite or remotely) with CEC Secretariat
- 2) Progress report: For both the AMBI and Monarchs project websites, a user profile, website differentiation and optimal user experience analysis, logo and icons, website color scheme, and design approach.
- 3) Final report: Page mockups, source files (psd, ai, other), and optimized graphical elements in .png, .jpeg or other such web formats; interactive map graphical elements; and documentation as specified in the Technical Specifications for Software Application Development (see Annex 2).
- 4) Follow up: Five (5) hours of total additional work on both websites to adjust design elements following their integration into the WordPress architecture.

15 December 2016	Progress report
30 January 2017	Final report
15 February 2017	Completion of five (5) hours of follow up work on both websites

#### **C.** Periodic Reporting Requirements

#### **Quality of Deliverables**

The consultant is responsible for providing deliverables **of publishable quality** (i.e., copy-edited prior to submission) in English and, when applicable, for the technical editing of the materials. The consultant will submit to the CEC Secretariat all written material (including complete drafts and final reports) in Microsoft Word, following the format of the CEC's <u>Report Template</u> and adhering to the precepts of the <u>Guidelines for CEC Documents and Information Products</u>, as well as webpage mockups and source files (psd, ai, other), and optimized graphical elements in .png, .jpeg or other such web formats and documentation as specified in the Technical Specifications for Software Application Development (see Annex 2). Supporting documents for tables, figures and maps will be submitted with the report in their original file format (e.g., Excel or ArcGIS). Note that all amounts shall be presented in metric units. The CEC Secretariat will be responsible, when applicable, for translation, printing, publication and distribution of products from this activity.

Upon delivery by the consultant of a final version of the report or other written materials under the project, the CEC reserves the right to a 15-business day period to review the document(s), notify the consultant of any potential issues or errors, and return the document(s) to the consultant for appropriate corrections, at no extra cost. In all cases, contract payments will be

withheld if products submitted to the CEC fail to fulfill the quality and formatting requirements specified above. In the event that the consultant neglects to make the required corrections or if, following corrections, a deliverable remains unsatisfactory, the document shall be edited or revised by a third party designated by the Secretariat, the cost of which shall be deducted from the consultant's fees at a rate of C\$60 per hour.

#### Plagiarism

Plagiarism is the act of conveying someone else's original expression or creative ideas as one's own and can be a violation of copyright law. Neither intentional nor unintentional plagiarism is acceptable to the CEC. The consultant must follow good scholarly methodology in preparing reports and deliverables under the contract, including systematic referencing in footnotes or insentence references, for any secondary sources, quotations, data, etc., that do not originate with the author. Sources for tables and figures reproduced from other literature must be given in a "Source" attribution immediately below the table or figure. Failure to properly reference the source of such borrowed material constitutes plagiarism and will be considered a breach of contract. For further information, see <u>Guidelines for CEC Documents and Information Products</u>. In addition, for every written deliverable submitted, the Consultant must use iThenticate software, or an equivalent software approved by the Commission, to validate the written product in question and must forward the plagiarism review results to the CEC at the time of document submission. Contract payments will be retained if products do not fulfill these requirements.

### **Requirements**

To be eligible for further consideration, all consultants must fulfill the following basic requirements.

The consultant, as well as all their personnel and subconsultants, must reside and be authorized to work legally in Canada, Mexico or the United States of America. If travel is required, the consultant must possess valid documentation to travel within these countries.

The consultant must possess:

- A degree in web graphic design or a minimum of five (5) years of web graphic design experience
- Proven experience in user profile, user experience, and website differentiation analysis
- Experience with multilingual website development and design
- Fluency in both written and spoken English; proficiency in Spanish and/or French is desirable.

The proposal should not exceed three (3) pages, exclusive of applicant resume or corporate brochures. It should include a detailed cost breakdown, including number of person/days of key and other personnel, direct and indirect costs, travel costs and applicable taxes.

Potential consultants must also submit any additional information that will assist the CEC Secretariat in the evaluation of their proposal, such as samples of previous work and letters of recommendation from previous assignments. This information is not subject to the three (3) page limit.

The consultant deemed best qualified will be selected on the basis of a competitive process, in accordance with sections 2.5-2.7 of the <u>CEC Consultant Services Procurement Manual</u>.

The CEC Secretariat intends to use its standard milestone-based contract for these services. A sample is available upon request.

The consultant will be paid in the following manner:

- Upon signature of the contract and invoice
- Upon receipt and approval of progress report and invoice
- Upon receipt and approval of final report and invoice
- Upon completion of five (5) hours of follow up work

Payment shall be made only for *bona fide* consultant fees and legitimate expenses incurred in accordance with the contract for professional services, and only upon receipt and documented acceptance by the Secretariat of statement(s) of account/invoice(s) from the consultant. Settlement of invoices that are acceptable for payment will normally be made 30 days from the date of receipt by the Commission.

The budget for this activity is expected to range between C\$15,000 and C\$20,000 (Canadian dollars), including professional fees and expenses. Reimbursable expenses are detailed in the CEC standard contract, available upon request; in addition, the cost of using iThenticate software to detect plagiarism (US\$50) should also be considered.

For universities and nongovernmental organizations, note that the CEC accepts that overhead be charged for administration and other indirect costs up to 15% of the total value of the contract.

If the proposal were presented by a consultant established in Mexico, the applicable valueadded tax will be 0%, in accordance with Article 29, section IV, paragraph a) of Mexico's VAT Act, as these are technical services that were engaged from abroad.

If a currency other than Canadian dollars is used, the consultant should indicate the total cost of the professional services in Canadian dollars as well as the currency of choice, for comparison purposes.

### **Conflict of Interest**

"Conflict of interest" means, but is not limited to, a situation where a consultant's personal interest is sufficiently connected with professional duties under the contract, such that it results in a reasonable apprehension that said personal interest may influence the exercise of professional responsibilities under the contract. For example, a direct conflict of interest exists when the consultant is also a CEC government official, or is related to or closely affiliated with a CEC government official, CEC staff member or third party involved with the performance of the services.

The consultant will inform the CEC Secretariat of any circumstance that existed prior to the execution of this contract or that could manifest during the performance of this contract, which could constitute a conflict of interest. The consultant will complete and sign, on behalf of all his or her personnel, the attached *Declaration of Acceptance and Impartiality and Independence* (see Annex 1). The Consultant will also take note of the <u>CEC Consultant Services Procurement</u> <u>Manual</u>.

### **Deadlines for Proposal Submission and Decision**

The proposal, including all relevant attachments, must be received by the CEC Secretariat offices by **17:00 EST on 11 November 2016**. Proposals submitted after this deadline will not be considered.

<u>Proposals must be submitted via e-mail to Irobidoux@cec.org</u>. Proposal format may be in Microsoft Word or Adobe PDF format. Once the proposal has been submitted electronically, the CEC will confirm receipt within three business days. If receipt is not confirmed by e-mail within this time, **applicants must contact the CEC**. The contact person is:

Lucie Robidoux Program Manager, Ecosystems and Sustainable Communities Commission for Environmental Cooperation 393, rue St-Jacques Ouest, bureau 200 Montreal, QC, Canada H2Y 1N9 Tel: 514-350-4300; Fax: 514-350-4314

The CEC Secretariat intends to select the consultant and notify the applicants within a reasonable period of time following the proposal submission deadline.

**ANNEX 1** (see also Schedule D in CEC standard contract)

### CONSULTANT'S DECLARATION OF ACCEPTANCE AND IMPARTIALITY AND INDEPENDENCE FOR CONTRACT

I, the undersigned,

Last Name: \_\_\_\_\_\_ First Name: \_\_\_\_\_

#### ACCEPTANCE

hereby declare that I accept to serve as consultant in the subject contract.

#### IMPARTIALITY AND INDEPENDENCE

(If you accept to serve as a consultant, please check one of the two following boxes. The choice of which box to check will be determined after you have taken into account, <u>inter alia</u>, whether there exists any past or present relationship, direct or indirect, with any of the Parties to the North American Agreement on Environmental Cooperation ("NAAEC") or their Commission for Environmental Cooperation ("CEC") representatives, Secretariat staff, and/or third parties involved in the performance of this contract, whether financial, professional, familial, or of another kind and whether the nature of any such relationship is such that disclosure is called for pursuant to the criteria set out below. Any doubt should be resolved in favor of disclosure.)

■ I am impartial and independent with respect to the NAAEC Parties and their CEC representatives, CEC Secretariat staff, and third parties involved in the performance of this contract, and intend to remain so; to the best of my knowledge, there are no facts or circumstances, past or present that need be disclosed because they are likely to give rise to justifiable doubts as to my impartiality or independence, and that may constitute a conflict of interest.

OR

I am impartial and independent with respect to the NAAEC Parties and their CEC representatives, Secretariat staff, and/or third parties involved in the performance of this contract, and intend to remain so; however, I wish to call your attention to the following facts or circumstances which I hereafter disclose because they might be of such a nature as to give rise to justifiable doubts as to my impartiality or independence, and that may constitute a conflict of interest. Where facts or circumstances exist that might give rise to the latter such doubts, I may set out measures I intend to take to mitigate or eliminate any doubts regarding my impartiality and independence, and/or a possible conflict of interest. (Use separate sheet and attach.)

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**ANNEX 2** 

# Technical Specifications for Software Application Development and Acquisition



# Commission for Environmental Cooperation Revised July 2016

Prepared by Jean-Sébastien Goulet Manager, Information Services

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### Abstract

For all development or purchase of software, applications or websites intended to be installed, hosted, managed or maintained by the CEC, it is imperative for the Web Development and Information Services to be involved with the project from start to finish. The following document provides guidelines to CEC consultants who are required to develop such applications, as well as to CEC Secretariat staff who are considering purchasing new applications.

# **1 CEC Application Development / General Specifications**

### 1.1 Languages

The CEC operates in three official languages, English, Spanish and French, and delivers information to the public in each language. Any application designated for the public must include the flexibility of delivering information in the three languages (e.g., including three text fields per element, one for each language in the database architecture).

#### 1.2 Database Compatibility

The CEC supports two technologies for database architecture:

- **Microsoft SQL Server**. Microsoft SQL Server is a relational database management system produced by Microsoft. It supports a superset of Structured Query Language (SQL), the most common database language and is equally suitable for and used by small to quite large databases. The CEC strongly recommends the Microsoft SQL Server as the primary choice for Web applications. We currently use MS SQL 2014 Service Pack 1 (12.0.4213.0).
- **MySQL.** MySQL is a popular choice for databases used in Web applications, and is a central component of the widely used LAMP open-source Web application software stack—LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python." MySQL is an open-source database management system and is used in some of the most frequently visited websites on the Internet. Our server currently runs version 5.1.73.

It is the responsibility of the developer to ensure that the database format is compatible with the CEC operating system and, for databases intended for online availability, the Web interface. The author must seek prior, written approval from the CEC to use a technology other than those listed above.

The consultant is responsible for making sure that every trigger, stored procedure, and special database architecture is described in the Application Delivery Document (see chapter 3).

#### 1.3 Database Basics

All databases need full documentation and to have undergone transparent quality assurance verification. At a minimum, the CEC requires the following:

- Proper file-naming (CEC\_project reference.extension) must be used.
- The dataset, database or information service must have a clearly marked title.
- The database category (project or ongoing) must be specified. These categories are defined in Template 2 on page 23 of the CEC's <u>Quality Assurance Policy and Procedures</u> (QAPP).
- The file name and narrative description (including title, date, time period, geographic specifications, acronyms, and field and type descriptions), in a separate document, are to be submitted with the dataset, database or information service. If the database uses data from a previous publication or is an ongoing database, an historical record of the database must also be included in the narrative description.
- Complete database architect and contact information must be supplied (i.e., name of individual/position within the organization responsible for the data, passwords, and authority to edit, change, maintain, or dispose of the information product or service).

#### 1.4 Maintenance and Archiving Plans

The dataset and database architecture must be designed according to updating needs. If the project is ongoing, it is particularly important to:

• build data capacity flexibility into the architecture to provide for expanded data sets and languages; and

• select software and technology to support long-term database updating, development and maintenance needs.

Clear documentation of how the database was built must be recorded to ensure traceability and knowledge transfer capability. Lastly, a record of metadata must be submitted along with the dataset or database, for CEC archiving purposes.

#### **1.5 Database Structure and Consistency**

The CEC generates and stores large amounts of data for North America. The information products commissioned or contracted by the CEC must be consistent with previous work, to provide for cross-connection of datasets. The data classification system must be designed to be coherent within the context of CEC programming and past work. This also applies to nomenclature, definition of terms, labels, abbreviations, acronyms, and units (including number format, decimal numbers, rounding, etc.). Datasets must be organized in fully documented relational databases. Data must be checked for accuracy, consistency and compatibility: the developer should verify that measurements, numerical data, units and definitions are consistent across sampling locations and with previous work. Validation criteria (e.g., field properties, validation rules, and input masks) should be implemented to ensure data are entered correctly.

#### 1.6 Quality Assurance

Data quality is addressed in the CEC's *Quality Assurance Policy and Procedures* (QAPP), specifically section 3.3: "Data and Information Management Procedures." The developer is expected to read the procedures specified in the QAPP document and follow the Data and Information Quality Assurance Plan (DIQAP) completed by the responsible project manager in the early stages of the project planning process.

The CEC applies quality assurance throughout all stages, from data assembly through data analysis and use, to archiving. It is the responsibility of the developer to seek knowledge of end-uses that may result from the project (e.g., digital information products such as online databases, downloadable datasets, query services, or GIS maps) and plan the work to include controls at each step of the project.

For more information, visit the CEC's Useful Documents page (<<u>www.cec.org/about-us/opportunities/useful-documents</u>>) and the Quality Assurance Requirements page (<<u>www.cec.org/about-us/secretariat/quality-assurance-requirements</u>>).

### **2** Application and Data Architecture

The consultant is responsible for creating the design and architecture for the application he is developing. This step should proceed at the beginning of the project. Note: In some cases, the CEC can request the consultant to present his architecture and/or design plan in order to help us analyze and prepare for the integration and deployment of his solution.

The consultant will receive some support from the CEC's Web Development and Information Services department in order to help with the development and understanding of the specifications.

### 2.1 Internet Application

#### 2.1.1 Static Web Pages

Static Web pages consist of text, images, and HTML formatting tags. These pages are created manually and maintained so that when information changes, so must the page. This usually involves loading the page into an editor, which makes the changes, then reformatting text (if needed), and saving the file. Not everyone in the organization can make these changes. The Web Developer or Web Publisher is responsible for maintaining the site and implementing all changes and enhancements. Please also see the "Graphics and Design" section (2.3) in order to be familiar with CEC graphics and design specifications.

#### 2.1.2 Dynamic Web Pages

Dynamic Web pages contain very little text. Instead, they pull the needed information from other applications or databases.

#### Web Programming

If the contract stipulates that a specific programming language should be used to develop the application, the consultant must respect it. Otherwise, the consultant can choose from the following list to develop the application needed by the CEC. Please note that the CEC's Web Development and Information Services department must be involved at the beginning of all projects, not only to clear all potential issues or misunderstandings about these technologies and their usage, but also to provide counsel, options and suggestions regarding which path to follow.

The following languages are compatible with the technologies used by the CEC:

**1. PHP.** PHP is a widely-used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML. It is part of the ubiquitous LAMP stack. Our server uses PHP 5.4.45 and is usually kept up to date. The CEC strongly recommends using PHP for the development of new applications and websites, as it requires very little maintenance afterwards.

**2. ColdFusion.** ColdFusion is a web application server with comparable functionalities to PHP or classic ASP. As an Adobe product, it generates PDF from HTML easily and provides simplified code to do a wide variety of actions, such as database access, client and server cache management, reporting and graphing, task scheduling and many more.<sup>1</sup> To learn more about this technology, please visit <u>Adobe's</u> website <<u>http://www.adobe.com/ca/products/coldfusion-family.html</u>>.

**3. .NET**. The .NET Framework is a development platform for building apps for Windows, Windows Phone, Windows Server, and Microsoft Azure. It consists of the common language runtime (CLR) and the .NET Framework class library, which includes classes, interfaces, and value types that support an extensive range of technologies. The .NET Framework provides a managed execution environment, simplified development and deployment, and integration with a variety of programming languages, including Visual Basic and Visual C#.<sup>2</sup> For more information, please visit <a href="https://msdn.microsoft.com/en-us/library/w0x726c2(v=vs.110">https://msdn.microsoft.com/en-us/library/w0x726c2(v=vs.110)</a>.

**4. HTML.** HTML is the standard for publishing hypertext on the World Wide Web. It is a non-proprietary format based upon SGML (Standard Generalized Markup Language). HTML should only define the structure and outline of a document and offer a structured content. It is not intended to define the look and feel of the content on the page beyond rudimentary concepts (headers, paragraphs, and lists). The presentation attributes of HTML have all been deprecated and style should be contained in style sheets.

**5. CSS** (Cascading Style Sheets). The second component of a Web page is the presentation information contained in the Cascading Style Sheet (CSS.) Web browsers' successful implementation of CSS has given a whole generation of Web authors site-wide control over the look and feel of their websites.

Just as the information on a Web page is semantically described in the HTML Markup, CSS describes all presentation aspects of the page via a description of its visual properties. CSS is powerful in that these properties are mixed and matched via identifiers to control the page's layout and visual characteristics through the layering of style rules (the "cascade"). You can use the CSS Validation Service from the World Wide Web Consortium (W3C) organization (<<u>http://jigsaw.w3.org/css-validator/</u>>).

The consultant can request the CEC's Web Development and Information Services department to get the CSS standard template used throughout our Web applications.

CEC websites are usually made with the new technologies in mind and are coded to be responsive or adaptive. Responsive design is an approach to web page creation that makes use of flexible layouts,

<sup>&</sup>lt;sup>1</sup> Note: The CEC is using ColdFusion 11 technology in a Windows environment. The CEC will accept CFC and CustomTags, according to their complete full description in the Application Delivery Document (see chapter 3).

<sup>&</sup>lt;sup>2</sup> Note: The CEC is not using the .NET as the primary Web technology to operate its applications. The CEC operates the .NET Framework version 4.6 (4.6.1 and above are not supported on this particular server) on its Web servers and owns a license of Visual Studio 2013 to compile code. The CEC also uses Visual Studio Community version to compile as well.

flexible images and cascading style sheet media queries. The goal of responsive design is to build web pages that detect the visitor's screen size and orientation and change the layout accordingly.

**6. JavaScript / JQuery**. JavaScript is the third major component of most Web pages. JavaScript code, when properly applied to a Web page, enhances the overall user experience through events and controlling the behaviour layers.

JavaScript has seen an increase in popularity recently as new browser versions now permit the creation of browser-based Web applications. We can now make Web pages act more and more like any other application by manipulating the visual elements in real time, without full Web page reloads. And by using the AJAX techniques, the data themselves can be loaded as needed.

The CEC recommends integrating JavaScript or JQuery for developing rich Internet application.

**7. XML**. Extensible Markup Language (XML) is a simple, very flexible text format derived from SGML (ISO 8879). Originally designed to meet the challenges of large-scale electronic publishing, XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere.

**8. XSL**. The Extensible Stylesheet Language (XSL) is a family of recommendations for defining XML document transformation and presentation. It consists of three parts:

- XSL Transformation (XSLT)—a language for transforming XML.
- The XML Path Language (XPath)—an expression language used by XSLT to access or refer to parts of an XML document. (XPath is also used by the XML Linking specification.)
- XSL formatting Object (XSL-FO)—an XML vocabulary for specifying formatting semantics.

**9. DRUPAL**. Drupal is an open-source content management platform powering millions of websites and applications. It's built, used, and supported by an active and diverse community. It can be used to build everything, from personal blogs to enterprise applications. Thousands of add-on modules and designs let you build any site you can imagine. Distributions are a collection of pre-configured themes and modules for feature-rich websites, giving you a head start. The CEC currently support Drupal 7. This technology is only recommended for websites that will be regularly updated by users and not for websites with static content, as it requires a lot of maintenance.

**10. WordPress**. Wordpress is a free publishing software and content management system (CMS) that is popular in America. The software is open-source, allowing developers to create a wide array of plug-ins, themes and widgets. Wordpress is widely considered easy to use and is the CMS of choice for almost 75 million websites. The CEC supports the latest version. This technology is also only recommended for websites that will be regularly updated by users and not for websites with static content, as it requires a lot of maintenance.

For all code languages, we require indentation to be done by using the space/tab character. Hitting Tab in your editor shall be equivalent to four spaces. The CEC prefers readability over file-size savings, for easier maintenance. Plenty of white space and comments are encouraged.

It is mandatory for all web development to be tested on all the popular browsers and to be fully crossplatform. These include Firefox, Chrome, Internet Explorer (11+), Edge and Safari on both Windows and Mac, where applicable.

All applications must be documented in sufficient detail that any other programmer can understand what has been developed at a technical level. The consultant will have to technically describe all functions and procedures involved in the developed application. These details should be retrieved from the Application Delivery Document, as well as in commented form in the code itself. Ideally, you should use the commented code to build your documentation, using tools like Natural Docs <<u>www.naturaldocs.org/documenting.html</u>>.

#### 2.2 Software Applications

When the consultant needs to develop an application shipped as software, every specification will be mentioned in the contracts under "Terms of Reference."

#### 2.3 Graphics and Design

The consultant needs to respect, at all times, the possibility that the CEC may need to modify the appearance of the information on the screen. This should be done by simple methods, such as:

- The use of a centralized CSS file.
- The use of simple graphics/images, keeping in mind that they may need to be modified at any time.
- Keeping the appearance simple, so it can be integrated easily into one of the standard CEC templates.

The consultant can receive some support from the CEC's Web Design team in order to help with the appearance of the application. The CEC's Web Development and Information Services department can provide the consultant with a copy of the CEC CSS file and of the standard website header and footer, if needed.

#### 2.4 Manage Human Language

The CEC operates in three official languages, English, French, and Spanish, for communicating or delivering information of any kind to the public and any application designated for the CEC that will be accessible to the public must consider the necessity of accommodating this.

If the consultant is developing the application using the dynamic method, the following should help to provide full compatibility with the CEC's methods:

• Use a parameter within the URL to indicate the language (see examples below). This allows the page to be loaded with a specific language directly, overriding any session or application variables. It is very useful and important to be able to point to pages directly in the desired language and to move easily from one language to another within a given page. Keep in mind that this method is open to SQL injection to a certain point, and some measures should be taken in the code to avoid database intrusions.

Here is an example from one of the CEC's websites, in English, French and Spanish, respectively:

http://www.cec.org/sites/default/idd/index.php?lang=en

http://www.cec.org/sites/default/idd/index.php?lang=fr

http://www.cec.org/sites/default/idd/index.php?lang=es

- Use a session variable to indicate in which language the user sees the page. Keep in mind the possibility to switch the language on the fly while staying on the same page.
- Use a single language per page. This method is often used when dealing with static pages. For example, a page describing an event will exist in the system as three pages, each in one of the three official languages.

If the consultant needs to use another method to dynamically operate the navigation between the three languages, he/she should describe the method in the Application Delivery Document (see section 2.6 below).

For hand-coded dynamic websites that don't have a multilingual platform, different techniques are available to the developer:

• Use database tables or xml to contain the strings associated with a language ID and a label title or identifier that you can then call when needed in the code.

• Use "include files" containing arrays of strings per languages with title or identifier which you can call when needed in the code.

In .NET sites, "resource files" are available to the programmer that allow language equivalents for strings.

#### 2.5 Character Encoding

Character encoding specifies mappings from a character set to the integer numbers that represent the characters on a computer. The CEC requires that you encode all pages as ISO-8859-1 to accommodate special characters and accents in French and Spanish.

#### 2.6 Application Delivery Document Outline

Along with the contract, the consultant must fill out the "Application Delivery Document," described in chapter 3. This will act as a bridge of information between the consultant and the Web Development and Information Services department and will enable us to understand all technical details of the developed application. This document includes specific questions to be answered by the consultant and pages for describing the functions of the application and how the CEC can modify the application's appearance, should this prove necessary. This will ensure compatibility with the graphics and design corporate standards of the organization.

#### 2.7 Support During the Development

The consultant may request support from and confer with the CEC Web Development and Information Services department throughout the whole process. In the event that department personnel are not able to respond adequately to the request, they will refer the consultant to another source of support.

# **3 Application Delivery Document**

The Application Delivery Document specifies the activities necessary for integrating the application or module and its components into the CEC system(s) and/or server(s). The Application Delivery Document contains an overview of the developed application, a brief description of the major tasks involved in the integration, and the overall resources needed to support the integration effort. These topics are discussed in more detail in the subsections below. The decision and action tree for designing, building, and delivering the application is shown in the following figure. The application is developed during the Requirements and Design phases; updated during the Implementation and Verification phases; and provided in final version in the final step.

#### Figure 1: Decision and Action Tree for Application Design and Delivery



It is the responsibility of the consultant to fill in this document, based on discussion with the CEC program manager, and to submit it to the Web Development and Information Services manager of the CEC.

The sections of the Application Delivery Document template are described below.

#### **3.1 Introduction**

Provide an overview of the application or module in the following sections.

#### 3.1.1 Purpose and Scope

Describe the purpose and scope of the application or module. What problem or issue is this application or module addressing and what is it to accomplish?

#### 3.1.2 System Overview

#### **Application Technical Description**

Provide an overview of the processes that the application will support and the architecture that will enable the application to run these processes. If the application is a database or an information system, provide a general description of the type of data to be maintained and the operational sources for and uses of those data. If the application is intended to interface with other applications, specify this.

#### Module Technical Description

Provide an overview of the processes the module is intended to support. If more than one module is being developed for integration into the system, provide descriptions of each module (or unit) in this section.

Descriptions should at least contain the following:

- Database architecture, tables, triggers, stored procedures
- ColdFusion CFC and CustomTags full descriptions
- Technical description
- Use of any special method to dynamically operate the navigation between the three languages

#### 3.1.3 Project References

This section should specify key project references and deliverables that have been produced before this point in the project development.

#### 3.1.4 Glossary

Provide a glossary of all terms and abbreviations used in the document. If the glossary runs to several pages in length, it will be better to place it at the end of the document.

#### 3.2 Management Overview

The next sections are intended to provide a brief description of how the application will be integrated into the system and major tasks involved in this phase of the work.

#### 3.2.1 Description of Integration

Briefly describe the application modules and how the integration will be approached.

#### 3.2.2 Responsibilities

In this section, provide the name of the person responsible for the project or the issuing organization, and the titles and telephone numbers of the staff who serve as points of contact for the application integration. Also include the name of the person who has approval authority for each module of the application. If this activity is contracted out, list the names and phone numbers of the contractor responsible for the development and integration.

#### 3.2.3 Activities and Tasks

Provide a brief description of each major task required for the integration of the application. Include a schedule for the expected completion of these tasks. Add as many subsections as necessary to this section to adequately describe all the major tasks. Include the following information in the description of each major task, as appropriate:

- What the task will accomplish
- Resources required to accomplish the task
- Key person(s) responsible for the task
- Criteria for successful completion of the task

Examples of major tasks include the following:

- Providing overall planning and coordination for the integration
- Providing appropriate training for personnel
- Providing appropriate documentation on each module for integration
- Providing audit or review reports
- Documenting software unit and database
- Establishing software requirements
- Establishing test procedures
- Conducting unit testing
- Conducting qualification testing

• Integrating modules or application into system(s)/application(s)

#### 3.3 Integration Support

This section should describe the support software, materials, equipment, and facilities required for integrating the new software/modules, as well as any personnel requirements and training necessary for the integration.

#### 3.3.1 Resources and Their Allocation

In this section, list all support software, materials, equipment, and facilities required for the integration. Describe the test environment and any resources needed. Also, list the number of personnel needed and give an estimate of the costs for them, if applicable.

#### 3.3.2 Training

This section should address any training necessary to prepare for the integration and maintenance of the system; it does not address user training. If contractors are performing the integration functions and activities, this may not be necessary. If, however, CEC staff members are performing these activities, some training might be needed. List the course(s) needed, by title, instructor and cost, where applicable.

#### 3.3.3 Testing

List all test requirements for each module. If more than one module is being tested, include a description for each one. Include the descriptions of the data included, procedures for testing, who is responsible for the testing, and a schedule. This could be accomplished in one plan or several, depending on the complexity of the module being tested.

#### **Change Procedures and History**

Include all changes made during unit testing.