CIRCULAR No : 2015-08
Date : November 23, 2015

SUBJECT : POLICY ON THE DEVELOPMENT OF APPLICATION SYSTEMS AND DATA ADMINISTRATION

In adherence to Joint Memorandum Circular No. 2015-01 “Guidelines for the Implementation of the Open Government Data General Provision in the 2015 General Appropriations Act”, issued by the Open Government Data Philippines Task Force and Memorandum Circular 2015-003 “Approval of the Philippine Electronic Government Interoperability Framework (PeGIF) Part 2, Otherwise known as the Information Interoperability Framework (IIF) for Implementation by Government Agencies” issued by Information and Communication Technology Office, Department of Science and Technology (ICTO-DOST), the department is adopting the Open Data Policy and Interoperability for its data.

Openness means that datasets published by the Department, its operating units, bureaus and offices shall be made publicly available and accessible, published in open and machine-readable formats and with open licenses. Interoperability means the ability to exchange and reuse government data and information in a uniform and efficient manner across multiple ICT systems and across agencies. The department, being the authoritative source of data on Local Government, has to implement standard coding scheme and platform with regards to its data collection, organization, release and management.

Moreover, in order to achieve the principle of openness and interoperability of data, all bureaus, operating units and offices are hereby directed to abide the following guidelines, procedures and policies:

1. Adoption of the DILG Standard Coding System (Attachment A) on all databases/datasets related to Local Government Units.
   a. The DILG Standard Coding System, composed of Philippine Standard Geographic Codes (PSGC) and extension codes, must be part of all databases/datasets pertaining to Local Government Units (LGUs) and Barangays.
   b. The naming convention described on the DILG Standard Coding System (e.g. table name, field/column name, data type, etc.) must be strictly followed.
c. The Information Systems and Technology Management Service (ISTMS) shall be responsible for maintaining the DILG Standard Coding System following the updates on PSGC by the National Statistics and Coordination Board and other national policies.

2. Adoption of DILG Application System Development Standard (Attachment B) whether outsource or in-house development.
   
a. For purposes of branding, uniformity and compliance to other national policies (e.g. Administrative Order 39, etc.), a standard web design template must be applied to all LGU-related application systems.

b. The use of Open Source application development program and Database Management System (DBMS) must be strictly observed.

c. All application system must have a RESTful web Application Program Interface (API) that returns publicly viewable/available information.

d. For application systems that will be outsourced, the concerned bureau or OPR should consult the ISTMS during systems and database design and acceptance/deployment.

3. Data Storage, Backup and Recovery

a. All bureaus/operating units, maintaining DILG databases/datasets, shall keep and provide an updated backup copy for the DILG Data Center and provide a direct connectivity to its databases, if applicable.

b. The ISTMS shall make sure that all back-up copies are secured and capable of data recovery.

4. Sharing, Distribution and Publication of Data

a. The DILG official website (www.dilg.gov.ph) shall be the primary source of all data related to LGUs and Barangays.

b. All LGU and Barangay data for sharing, distribution and publication online should be machine-readable, in open formats and released with open licenses.

c. The concerned bureaus or the OPR shall be responsible on the following:
   i. integrity of data collected, published and posted on the DILG website
   ii. management of data
   iii. mobilization of resources relative to the database build-up and monitoring

d. The ISTMS shall provide technical assistance to OPR on the development of tools for data collection, organization, monitoring and management.
5. Domain Name Hosting

a. All web application systems related to LGU and Barangays must be on a sub-domain of the DILG domain (dilg.gov.ph) for authenticity purposes and additional security against phishing scams and website frauds.

For strict compliance.

ATTY EDWIN R. ENRILE
Undersecretary
ATTACHMENT A

DILG Standard Coding System

1. The Philippine Standard Geographic Code was already in place and already been used by other agencies to systematically classify and represent coding of the geographic areas of the Philippines. This shall likewise be adopted by the department to come up with a database design that will standardize and harmonize data on Local Government Units and barangays. The LGU and barangays which are the core data of the department will be integrated and organized using the DILG Standard Coding System, as described below.

<table>
<thead>
<tr>
<th>Table Name:</th>
<th>region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column Name</td>
<td>Description</td>
</tr>
<tr>
<td>region_c</td>
<td>2 digit code representing the region</td>
</tr>
<tr>
<td>region_m</td>
<td>region name</td>
</tr>
<tr>
<td>abbreviation</td>
<td>short name identifier for the region</td>
</tr>
<tr>
<td>region_sort</td>
<td>assigned number for sorting purposes in the report generation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table Name:</th>
<th>province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column Name</td>
<td>Description</td>
</tr>
<tr>
<td>region_c</td>
<td>2 digit code representing the region</td>
</tr>
<tr>
<td>province_c</td>
<td>2 digit code representing the province</td>
</tr>
<tr>
<td>province_m</td>
<td>province name</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table Name:</th>
<th>citymun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column Name</td>
<td>Description</td>
</tr>
<tr>
<td>region_c</td>
<td>2 digit code representing the region</td>
</tr>
<tr>
<td>province_c</td>
<td>2 digit code representing the province</td>
</tr>
<tr>
<td>citymun_c</td>
<td>2 digit code representing the city or municipality</td>
</tr>
<tr>
<td>district_c</td>
<td>1 digit code representing the legislative district of the city / municipality</td>
</tr>
<tr>
<td></td>
<td>For HUC / ICC</td>
</tr>
<tr>
<td></td>
<td>0 means Lone District</td>
</tr>
<tr>
<td></td>
<td>Null or blank represents more than 1 district</td>
</tr>
<tr>
<td>citymun_m</td>
<td>City / Municipality Name</td>
</tr>
<tr>
<td>lgu_type</td>
<td>City / Municipality type:</td>
</tr>
<tr>
<td></td>
<td>HUC - Highly Urbanized City</td>
</tr>
<tr>
<td></td>
<td>CC - Component City</td>
</tr>
<tr>
<td></td>
<td>ICC - Independent Component City</td>
</tr>
<tr>
<td></td>
<td>M - Municipality</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table Name:</th>
<th>barangay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column Name</td>
<td>Description</td>
</tr>
<tr>
<td>region_c</td>
<td>2 digit code representing the region</td>
</tr>
<tr>
<td>province_c</td>
<td>2 digit code representing the province</td>
</tr>
</tbody>
</table>
2. The DILG SCS adopts the NSCB coding for LGU, except for the coding of the Barangays in the City of Manila. The City of Manila barangays use a “00” code in its citymun_c and not the Code of NCR Districting to represent relation of its barangays to the entire City of Manila.

3. This DILG SCS contains the LGUs and Barangays as of June 2015 data of National Statistics Coordinating Board (NSCB).

<table>
<thead>
<tr>
<th>Region</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18 Regions including ARMM and the newly created Negros Island</td>
</tr>
<tr>
<td>Province</td>
<td>Province group according to Region</td>
</tr>
<tr>
<td>City and</td>
<td>144 Cities and 1,490 Municipalities grouped according to Province</td>
</tr>
<tr>
<td>Municipality</td>
<td>and Region</td>
</tr>
<tr>
<td>Barangay</td>
<td>42,029 barangays grouped according to City/Municipality, Province</td>
</tr>
</tbody>
</table>
DILG Application System Development Standard

A. General Standards

1. All applications to be developed must:
   a. Use Open Source Language/Framework and Open Source DBMS
   b. Use/adapt the design template provided, for branding and security purposes. The
template can be downloaded from this url: http://www.dilg.gov.ph/reports-and-
resources/resources-and-downloads/3/. A soft copy in CD may also be provided by the
Information Systems and Technology Management Service (ISTMS) of this
Department.

c. Have the following standard features:
   i. Easy and intuitive to use for the target audience.
   ii. Function in a logical manner for the target audience
   iii. Use styles that are consistent throughout the application such as:
         • The use of capitalization (e.g., title case vs. sentence case).
         • The use of punctuation (e.g., use of colons on labels).
         • Error messages must appear in a consistent location and style.
         • The use of Web document notations (e.g., PDF, DOC, etc.).
         • Layout/spacing (e.g., the space between a field label and input control).
         • Descriptive metadata titles.
   iv. Form controls that are not available must be hidden.

d. Adhere with the Open Data Policy

e. Have a RESTful web Application Program Interface (API) that returns publicly
   viewable/available information depending on the request

f. Be secured against the following security risks:
   i. SQL Injection;
   ii. Cross Site Scripting (XSS); and
   iii. Cross Site Request Foraging (CSRF)

g. Be thoroughly tested for data security and susceptibility to web vulnerabilities before
   deployment.
   i. A report stating that the application is safe from any vulnerability is required to
      prevent sensitive information being leaked, website defacement or any other
      kind of malicious attacks.

h. Have an Audit Trail to be able to log/record all actions performed by its users

i. Comply with the Accessible Website Design Guidelines of the Philippines issued by
   National Council on Disability Affairs.

j. Must have a Site Map for easy navigation.

2. System/Application Names should describe the purpose of the system. They should not include
   reference to previous applications or terms related to the development. The use of the terms
   in system titles, such as: Change; Update; Project; Redevelopment; Redesign; Replacement, is
discouraged.
3. The application developers must provide the Office of Primary Responsibility (OPR)/Bureaus and ISTMS a package that contains ALL the details of the application including:
   a. Source Code
   c. Developer's Manual
   d. Vulnerability Report
   e. Testing Report
   f. Compiled/Final Application
   g. Complete Project Documentation including but not limited to:
      i. System Requirements (Software and Hardware requirements)
      ii. Flow Chart
      iii. Entity Relationship Diagram
      iv. Data Flow Diagram
      v. Use Case Diagram
      vi. Development Methodology
      vii. Data Dictionary
      viii. Database Schema

4. Navigation
   • Every application must have one or more links or control buttons that allow a user to navigate back and forth within the application without having to use the back button or other browser navigation functionality.

5. Validation of Form Input Fields
   • Form fields must be validated to ensure required fields are completed, numeric fields have numeric data, and data input is properly formatted (e.g., e-mail address).
   • Appropriate and specific error message should be displayed.

B. Development Technology, Programming Language, and Web Server Software

1. Exception Handling in Server-side Code
   • Code exceptions must be handled in a user-friendly manner by displaying a custom error page that does not display information such as database object names or source code.

2. Interoperability and Integration
   • For interoperability and easier integration to the existing application systems of the department, the use of the following technologies is encouraged:
     i. PHP and MySQL
     ii. Yii2 PHP framework
     iii. Bootstrap Front-end Framework
     iv. JQUERY

   • Use of other technologies should be in coordination with ISTMS.

3. HTML Code Validation
   • The HTML code in all web applications must be valid via a reputable validation technique, such as W3C or by using the HTML Validator.
4. **JavaScript Usage**
   - The use of JavaScript is allowed for client-side data validation and manipulation as long as the script is invoked as a result of a user action (i.e., button selection, dropdown selection, movement to another form field, etc.)

5. **Data Validation**
   - Web applications must validate all data for expected values
   - All user input data must be validated and checked for any malicious intent before saving in the database.
   - Web Applications must use server-side validation.
   - Client-side validation using JavaScript is allowed as long as there is already a Server-side validation in place.

6. **AJAX**
   - AJAX elements can be included as long as there is an equivalent non-AJAX alternative that produces the same results or provides the same functionality.

**DEFINITION OF TERMS**

1. **API** is a web service that enables other applications to communicate to your application and get necessary information. Given this situation, Application 1 needs data from Application 2 to create a report, instead of accessing directly the database of Application 2, Application 1 needs only to use Application 2's API to get the data needed.

2. A user's manual, is a technical communication document intended to give assistance to people using the application.

3. A developer's manual is a guidebook for the developers who would want to extend or enhance the existing system.

4. **Asynchronous JavaScript and XML (AJAX)** – AJAX allows web pages to be updated asynchronously by exchanging small amounts of data with the server behind the scenes. This means that it is possible to update parts of a web page, without reloading the whole page.