
APPLICATION DEVELOPMENT ENVIRONMENT STANDARDS



Information Systems
Branch

Economy Sector

Version 1 - <draft or final>

August 21, 2017

TABLE OF CONTENTS

1. Revision History	3
2. Overview	4
2.1. Outline	4
2.2. Detailed Description	4
2.3. Purpose	4
2.4. In Scope	4
2.5. Out of Scope	4
3. Standard Toolset	5
3.1. Platform	5
3.2. CMS	5
3.3. Development Languages	5
3.4. Framework / Library	5
3.5. Database	5
3.6. Logging	6
3.7. Testing	6
3.8. Source Control	6
3.9. Issue Tracking	6
3.10. Security	6
3.11. Document Search	6
3.12. Document Generation	6
4. Browser Compatibility	7
5. Server Environment	7
6. Government and Ministry IM/IT Standards	7
7. Contravening these standards	8

1. REVISION HISTORY

Date	Version	Author	Description
August 18, 2017	1.0	Irfan Charania	Initial Draft

2. OVERVIEW

2.1. OUTLINE

This document will outline the Application Development Environment for use by the Ministry of Jobs, Trade & Technology (JTT), Ministry of Labour, Ministry of Municipal Affairs & Housing (MAH), and the Ministry of Tourism, Arts & Culture (TAC), collectively referred to as “the Ministry”.

2.2. DETAILED DESCRIPTION

The Application Development Environment will describe the acceptable tools, environments and methodologies for use by developers working for the Ministry.

These standards apply to both internal and external developers working on new applications, as well as enhancements to existing applications.

2.3. PURPOSE

This document is part of the Ministry’s standards documentation project to clearly document all of the Ministry’s development standards.

The standards documentation will provide developers with information regarding the Ministry’s environments and processes, to ensure that deliverables are compatible with the Ministry’s support infrastructure, and to ensure consistency within the Ministry’s application ecosystem.

2.4. IN SCOPE

The following items are in scope for this document:

- Supported Platforms
- Development languages and tools
- Database environments
- Browser Compatibility
- Server environments

2.5. OUT OF SCOPE

The following items are out of scope for this document:

- Coding practices
- Application architecture standards

3. STANDARD TOOLSET

The following tools are standard for Ministry web application development. The versions specified are the **minimum** versions supported. More recent versions are preferred and require approval from the Ministry software architecture team.

3.1. PLATFORM

- Visual Studio 2013, 2015
- .NET Framework v3.5, v4.6.2

3.2. CMS

- Kentico Enterprise Marketing Solution (EMS) v7, v8.1, v9

3.3. DEVELOPMENT LANGUAGES

- C#
- VB .NET
- SASS
- TypeScript v2.4
- PowerShell v3

3.4. FRAMEWORK / LIBRARY

- ASP.NET MVC v5
- ASP.NET WebForms
- Bootstrap v3
- jQuery v3
- Kendo UI
- Entity Framework v6

3.5. DATABASE

- Microsoft SQL Server Standard Edition 2014 (**preferred and default**)
 - Visual Studio Database Project using SQL Server Data Tools (SSDT)
 - SQL Server Integration Services (SSIS) – used for:
 - large volume data loads
 - importing data into existing data sets
 - SQL Server Reporting Services for reports
- MySQL 5.1, 5.5 and 5.7
- Oracle 11g R2 (version 11.2.0.4) Enterprise Edition
 - Oracle Standard Edition available if required
 - Oracle 11g R2 PL/SQL procedures/packages should be used for database server components
 - ODP.NET Managed Driver

3.6. LOGGING

- NLog – used for application logging
- ELMAH – used for unhandled exception logging

Both logging solutions must be used within an application

3.7. TESTING

- Unit tests must be built using Visual Studio Unit Test Project
 - xUnit.net
 - Fluent Assertions
- Load tests must be built using Visual Studio's Web Performance Tests
- CodedUI for automated UI testing

3.8. SOURCE CONTROL

- Team Foundation Server (TFS) 2015+ serves as the standard source code, and automated build & release management software. Refer to the *Team Foundation Server Standards* guide for more information.

3.9. ISSUE TRACKING

- Ministry JIRA environment

3.10. SECURITY

- SonarQube v6.2
 - Static Code Analysis tool that produces a SQALE grade for the issues present. A SonarQube grading of B or higher is required for all application. If, for any reason, the minimum SQALE grade cannot be achieved the Contractor must provide a written request to the ISB for an exemption for the code in question.
- IBM AppScan

3.11. DOCUMENT SEARCH

- Elasticsearch v5.4

3.12. DOCUMENT GENERATION

- Aspose
- Generated output documents must be in an Office 2010 compatible format

NOTE: If you wish to use any additional tools or 3rd party controls, Ministry approval is required.

4. BROWSER COMPATIBILITY

External-facing web applications should be built with a mobile-first design using progressive enhancement (responsive design with responsive images) unless explicitly stated otherwise.

Web applications will be developed using **HTML5** and must at a minimum support the following browsers/versions unless explicitly stated otherwise:

- Desktop
 - Internet Explorer 11,
 - Chrome 43,
 - Firefox 39, and
 - Safari 7
- Mobile - Android
 - Chrome 43
 - FireFox (version?)
- Mobile – iOS
 - Safari (version?)
 - Chrome 43
 - FireFox (verison?)

Note: Program areas may specify an older version for supporting business clientele.

5. SERVER ENVIRONMENT

Ministry web servers are running:

- Operating Systems:
 - Windows 2008 R2
 - Windows 2012 R2
 - RedHat Enterprise Linux 6.5
 - RedHat Enterprise Linux 7
 - Solaris (version?)
- Internet Information Services (IIS) 7.5
- .NET Framework 4.7

6. GOVERNMENT AND MINISTRY IM/IT STANDARDS

The Contractor will be required to adhere to the Province's applicable Information Management and Information Technology standards in carrying out the services under the Contract. A standard is a specific statement of the rules and constraints governing the naming, contents, and operations of software and hardware.

There are two types of standards, Government and Ministry, applicable to the services under the Contract. The Contractor will be responsible for adhering to the policies and procedures outlined in Government and Ministry Standards. This includes the Ministry SCM Methodology Guide, Source Material Management Policies and Procedures, Web Standards, as well as Oracle Designer standards. This includes development and/or transfer of all code in the Ministry's Oracle

Repository and the Ministry's source code repository. The Ministry will conduct Quality Assurance (QA) and design reviews of the deliverables, in accordance with the SDLC standards of the Ministry.

Government and Ministry IM/IT standards may be updated at any time. The Contractor is required to keep up-to-date with the applicable standards in effect during delivery of the services under the Contract to ensure adherence to the most current one(s).

Under certain and appropriate circumstances exemption from individual policies or standards may be granted by the OCIO or MCIO. Any requests for policy or standards exemption should be raised with the Ministry Information Systems Branch and will require approval in writing.

- Government IM/IT Standards: <http://www.cio.gov.bc.ca/>
- Government information security policy:
http://www.cio.gov.bc.ca/local/cio/standards/documents/standards/standards_manual.pdf
- Ministry IM/IT Standards: <http://www.cscd.gov.bc.ca/isbstandards>

7. CONTRAVENING THESE STANDARDS

If a developer wishes to contravene these standards, a written proposal must be submitted to the Ministry Information System Branch. **Managerial sign-off must be attained prior to developing** using non-standard technologies.