

Department of Ecology - Applications and Data Services  
**IT Contractor / Developer Guidelines**  
Version 2.8 Last Update: 2/4/2015

## **Purpose**

The purpose of this guideline is to protect Ecology's existing IT infrastructure, applications, and staff resources from unintended consequences caused by the development, modification and/or installation of software or hardware on the Agency's IT infrastructure.

## **Background**

The mission of the Department of Ecology is to protect, preserve and enhance Washington's environment, and promote the wise management of our air, land and water. In support of this mission the collection and use of data in automated systems has become routine. It has become critical to Ecology's business processes that the Agency's IT infrastructure and applications are functional and accessible during normal business hours.

Over time the Ecology's IT infrastructure and applications have grown increasingly complex. This is due in part to the growth in the number of servers and applications but current trends of new technologies are also major contributors. Unintended consequences to existing applications and/or hardware have occurred when new applications and/or hardware have been implemented or existing applications and/or hardware modified.

## **Audience**

These guidelines apply to all developers that are, or may be, developing and/or implementing applications, hardware, or off-the-shelf software where any component of the solution is owned or administered by Ecology's employees. This includes but is not limited to all Ecology owned or administered applications, web, databases, or GIS software, regardless of their physical location or which domain they belong.

The Agency's [IT Technical Architecture Review Process](#) will assist developers to implement solutions that conform to Ecology's IT standards and guidelines.

## **Goals**

The primary goals of these guidelines are to:

- Assist IT project lead and developers to conform to Ecology's IT standards, guidelines, infrastructure goals and organization.
- Establish early and frequent communication between IT project leads, developers and Strategic Architecture Team (SAT) responsible for reviewing and approving the technical architecture for the application or off-the-shelf software.

## Architecture Review Process Guidelines

- Prior to the design and development of the solutions, the IT project lead sends an email to SAT liaison (SATliaison@ecy.wa.gov) to request a project briefing meeting. A SAT member will get back to the requestor within 48 hours to make the arrangement.
- Review [IT Technical Architecture Review Process](#) to get familiar with the review and approval process for all IT projects.
- Review [current standard image for Ecology's desktop and development tools and servers](#) to ensure project will conform to Ecology's infrastructure.
- Review the [sample architecture plan](#). Every IT project is required to submit an architecture plan to the SAT for approval before coding or purchasing the solution. The SAT and IT project lead will jointly determine the timeline to submit this plan during their initial meetings.

## Development Guidelines

- [Application Security Standards](#).
- \*[Solution to Common Security Threat to Application](#)
- [Folder structure guidelines](#) for [Team Foundation Server](#).
- [C# naming convention](#)
- [Data Naming Standards](#).
- [Web Application – User Experience Standards \(GUI\)](#).
  
- [Guideline for Processing Data Online](#).
- [Application Guidelines for Accessing Databases](#).
- [Ajax guidelines](#)
- [Web Services Guidelines](#)
- [Mobile Application Development Guidelines](#)
- [Common DLL guidelines](#), a shared DLL such as .NET server control.
- \*[Application Document Storage Guidelines](#), if the solution has a need to store documents into the database
- Visit \*<http://EcologyNet/SoftCenter> to leverage existing training and common modules such as Chart, Reports Services.
  
- [Helpful Tool](#): Download \* [Web Application Project Templates](#). This tool generates the basic structure for 3 tiers web application together with many common modules and enterprise services.

## Application Testing Guidelines

- All applications are required to pass the unit test and User Acceptance testing before deploying to the production environment.
- For the web based applications, they must be tested with the approved browsers from this \* [BrowsersTesting Guidelines](#).

## Security Guidelines

- Review instructions to set up security for \*[Intranet](#) or \*[Internet](#) to conform to agency security standard.
- Review the [Application Security Standards](#).
- Applications must be designed in a manner to prevent unauthorized alteration of code or content.
- The in-house use of contractor supplied equipment must be approved prior to connection to the Agency's network.

## Deployment Guidelines

- All applications must be deployed to the Agency's Dev/Test platform prior to being deployed to the Production platform.
- A\* [WEB Application Installation/Deployment Form must](#) be completed for all new applications and must be updated as needed for existing applications.
- A\* [Database Deployment Form](#) must be completed for all new database and must be updated as needed for existing database.
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## Common Practices Guidelines

- Use of Beta software for development is prohibited however exceptions may be made to meet critical business requirements.
- Installation of new software/hardware or upgrades to existing software/hardware required by an application must be approved.
- Configuration changes to Ecology hardware and software must be approved.
- Applications should not be written in a manner to require Administrator privileges on the server.
- Use of Stored Procedures is recommended.
- Avoid mass add/update/delete records online (such as more than 500 records at once). Developers should consider the batch approach when processing large amount of data.
- Consult with SAT before developing analytical data online module. This process tends to consume a lot of computer resources that may impact other applications performance.
- Build Web Services in a separate solution from main application so it can be hosted in any server for scalability.
- When building solution for both intranet and internet, unless both environments share majority of the screens and services, developer should consider separating the solution into two applications. Keeping Intranet and internet together can introduce mistakes in security and permission. In case they have to be built together, developers should consider organizing the codes into the folder categories such as: Common, intranet, Internet folders.
- Avoid the following bad practices:
  - Use of Embedded SQL
  - ODBC/DSN type of connections
  - Hard coded of folder paths

**Please note:** The links denoted with asterisk are only available to the Ecology intranet.

## Document History

Date	Version	Editor	Change
03-03-2006	1		Adopted by BITAC
08-11-2008	2.Draft	Son Tran	Change to reflect the new role of Strategic Architecture Team as well as new guidelines and standards.
09-29-2008	2	SAT approved	Approved this version. SAT suggested including Network and Desktop portion when they are ready.
05-18-2009	2.1	SAT approved	Approved this version to become for both IT Contractor and Ecology Developer
8-10-2009	2.2	SAT approved	SAT approved the new guidelines for Managing the Common DLL. Son Tran links this document to the new guidelines.
9-23-2009	2.3	Son Tran	Changes to reflect the new SharePoint link and the new database form requires by ADS operation.
2-25-2010	2.5	Son Tran	Link to Silverlight guidelines
6-02-2010	2.6	Son Tran	Link to Guideline for Processing Data Online
9-02-2010	2.7	Son Tran	Link to Application Security Standards.
12-15-2011	2.7.4	Son Tran	Include the Application document storage guidelines and Browsers testing guidelines.
2-5-2015	2.8	Son Tran	Removed outdated guidelines