

---

customer's need to locate existing Commonwealth/ agency (excluding higher education) solutions that implement specific business processes.

## **Configuration Management**

Configuration Management is applicable to all aspects of software development from design to delivery. It focuses on the control of all work products and artifacts generated during the development process. Version Management (a subset of Configuration Management) refers to the tracking and controlling of file versions. It includes capabilities such as labeling, branching, merging, version content comparisons, and security and permission management. An initial step on the path to Configuration and Version Management is to implement a source code repository with supporting processes.

Code management is crucial to maintain application integrity through the development and maintenance lifecycle. Ideally, code management tools would integrate with defect tracking and application-build tools. The Commonwealth will be researching code management systems that can scale across the enterprise to foster an environment that supports reuse of shared components.

**APP-R-18 Source Code Repository** – All application source code shall be maintained in a repository using a formal process.

## ***Web Site Development***

The Web site requirements presented below encourage greater efficiencies and effectiveness in the use of technology, and provide guidance and direction to assist agencies in developing a common look and feel to agency public Web sites. The templates and requirements related to implementing those templates provide basic rules of proper Web site design and address accessibility, template, portal, and implementation requirements and agency plans for implementing those requirements. This includes items to be addressed on every agency Web page; site and application content to be included on every agency Web site; design considerations for every agency Web site; external content to be included on every agency Web site; and the implementation and Web 2.0 considerations for every agency.

All Executive Branch agencies' public Web sites and public Web applications (except as noted in WEB-R-05) must comply with the WEB-R requirements below. Extranets and Intranets are not required to follow the WEB-R requirements, but still must comply with the current version of the COV ITRM Accessibility Standard (GOV103).

## **Virginia Common Template – Page Elements**

Provides a common Web template and corresponding guidance and direction related to all the components an agency must put on every page of its Web site. For additional guidance, a Web Accessibility and Template Guide (WATG) were created by the Department of Rehabilitative Services to assist agency developers in implementing the requirements identified in this report. That Guide can be accessed at: <http://www.vadsa.org/watg/>.

An important objective of the Common Template Requirement is to create a user-focused, or “user-centric,” Web presence for the Commonwealth, including a common look and feel to all

agency Web sites. This objective is addressed by creating a template and set of Web site requirements for all Agencies to implement that assist in making the agency Web pages accessible and usable. An essential objective of this requirement is to assist in making the Web site user's experience as pleasant and trouble-free as possible. It also includes putting government services and content where citizens can easily find them, and in a format that is easy to use.

All approved requirements are built into the template, but each agency is responsible for its content and ensuring that the content it adds remains compliant with the Common Template requirements identified below:

### Commonwealth Banner

The Commonwealth Banner is the black bar that appears at the top of Virginia government Web pages. It contains links relevant to all agencies. It also contains the state-wide Virginia.Gov search box.

- WEB-R-01**      **Code for Commonwealth Banner** – The code containing the “Commonwealth Banner” *shall be used on all agency Web sites and is available on the WATG site (<http://www.vadsa.org/watg/>)*.
- WEB-R-02**      **Commonwealth Banner Location** – The “Commonwealth Banner” shall be posted above the “Agency Banner” area of each site. This banner shall be completely identical to the image received if Webmasters choose to replicate it themselves and contain only these textual links in the following order:
- “Virginia.gov” logo – left align
  - “Online Services” – left align
  - “Commonwealth sites” – left align
  - Enterprise “Help” – left align
  - “Governor” – left align
  - “Skip to Content” (skip-nav) shall be hidden within the code of the “Commonwealth Banner” to allow screen reader access at the beginning of each page
  - “Search Virginia.gov” – right align *search box*
- WEB-R-03**      **Commonwealth Banner Height** – The “Commonwealth Banner” shall be 40 pixels in height in its default mode. It should be noted that this area shall be permitted to grow to accommodate changes in font sizes through user specification or scripting such as CSS and/or JavaScript that allow font sizes to change. This section shall be scalable, but always default to no more than 40 pixels in height with standard font sizes.
- WEB-R-04**      **Commonwealth Banner Statewide Search** – The “Commonwealth Banner” shall contain the enterprise search feature which shall allow users

---

to access this functionality across all state sites. The statewide search box shall contain the text “Search Virginia.gov” to clearly identify its function.

### Virginia Common Template

The Virginia Common Template is a visual arrangement of Web page elements. It specifies where common items shall appear so users know where to look for them and to have a unified look-and-feel across Virginia government Web sites.

- WEB-R-05**      **Virginia Common Template** – All Executive Branch Agencies shall use the Virginia Common Template for public Web sites and Web applications, except the following exempt organizations:
- The Virginia Tourism Corporation
  - The Library of Virginia
  - All museums
  - All institutions of higher education

Extranets and Intranets are not required to follow any Web Site requirements, but still must comply with the current version of the COV ITRM Accessibility Standard (GOV103).

### Text Only Site

A “text only site” is a version of the main site that uses only text. Every Web page has an alternate Web page with the same content and text descriptions for visual information (graphics, charts, etc.).

- WEB-R-06**      **Text Only Site** – If an agency uses a text-only site, that link shall be in the Commonwealth Banner of the template and the text-only site shall be updated at the same time as the standard site.

### Agency Banner

The Agency Banner is the area below the top black Commonwealth Banner bar and above the Navigation Trail. It contains the agency name and often contains graphics related to the agency.

- WEB-R-07**      **Agency Banner Height & Resolution** – Each agency shall create its own "Agency Banner" for use in the template; it shall be 100 pixels high and able to accommodate screen resolutions *1024 and wider* gracefully.

- WEB-R-08**      **Agency Banner Search & Agency Name** –The "Agency Banner" shall contain the full agency name and be created in one of the specified standard fonts.

---

## Navigation Trail

The Navigation Trail or “breadcrumb trail” appears below the Agency Banner. It shows the route from the homepage to the page the visitor is on. Using the Navigation Trail links, visitors can return to previous or parent pages. The links can help orient a user. In the Common Template, the Navigation Trail also contains a link to the agency Contact Us page and the site-wide search box.

The following are requirements related to Navigation Trails:

- WEB-R-09**      **Navigation Trail Bar Location** - A “bread-crum” navigation *trail* bar shall be located below and contiguous to the "Agency Banner" in the template.
- WEB-R-10**      **Navigation Trail Bread Crumb Text Location** – *The bread-crum text shall be located on the left side of the navigation bar.*
- WEB-R-11**      **Navigation Trail Height & Resolution** – The Navigation Trail shall not exceed 25 pixels in height in its default mode. This area shall be permitted to grow to accommodate changes in font sizes through user specification or scripting such as CSS and/or JavaScript that allow font sizes to change. This section shall be scalable, but always default to no more than 25 pixels in height with standard font sizes.
- WEB-R-12**      **Navigation Trail “Contact Us” link** – The "Contact Us" link shall be located to the right side of the bread crumb bar in front of the agency search box area and contain the text "Search [name or official acronym of agency] site" to differentiate between statewide and agency search.
- WEB-R-13**      **Navigation Trail Agency Search** - The agency search box shall be located on the far right side of the bread crumb bar underneath the "Search Virginia.gov" search box.

## Navigation Links

Navigation Links refer to the main links on the left side of agency Web pages. They generally link to major areas or categories on a site.

- WEB-R-14**      **Number of Primary Navigation Links** - No more than twelve main navigation links shall be on the left navigation bar and links shall remain the same throughout the site. The Virginia Information Technologies Agency must approve exceptions prior to site redesign implementation. *Graphic and other separate links in the left-hand navigation area count towards the 12 link limit.*
- WEB-R-15**      **Number of Sub-navigation Links** – *There shall be no more than twelve sub-navigation links for a primary navigation link. Sub-navigation shall appear*

*in the left-hand navigation area as long as they are visually distinct from the main navigation links (e.g. indented, fly-out, different-color, etc). Sub-navigation links shall not count towards the twelve primary navigation link limit.*

## Content Sections

Content Sections are the one or more areas in the content portion of an agency Web page. This is where the page content goes.

**WEB-R-16**      **Content Sections** – All of the columns in the content area shall fit into a resolution 1024x768 without left to right scrolling; however, the number of columns in the content area is at the discretion of the agency.

## Page Footer

The Page Footer is the area at the bottom of an agency Web page. It contains specific standard information about the site.

**WEB-R-17**      **Page Footer** - Each page shall have a footer containing, at a minimum, the following information:

- Agency name
- Copyright information
- Text or an approved icon link stating WAI compliance

## Central Repository of Forms

A Central Repository of Forms is a page that allows visitors to access all forms on a given site. This is often a list of links to available forms.

**WEB-R-18**      **Central Repository of Forms** - A central repository of agency electronic forms for public use shall be made available through a link on the home page.

## Contact Instructions

Contact Instructions provide information to visitors that enable them to contact the agency for help, for example by phone or e-mail.

**WEB-R-19**      **Contact Instructions** – The Contact Us page accessible from the home page shall include, at a minimum, the agency's:

- Mailing address;
- FAX number;
- Phone number, toll-free number, TTY number; and an
- E-mail link to the agency.

## Custom 404 Error Message

A Custom 404 Error Message is a customized message returned to Web site visitors when a requested Web page is not found.

**WEB-R-20**      **Custom 404 Error Message** - Agencies shall implement a custom 404 error message *page*. Whenever possible, have the server redirect the user to the new page.

## Search Engine

A search engine allows visitors to search online content. Public agency sites will have a site-specific search (to search the current Web site) and a Commonwealth search (to search all state agency sites).

**WEB-R-21**      **Sitemap XML File** – Each agency shall include an XML sitemap at the root level of the site to facilitate statewide search.

**WEB-R-22**      **Search Engine XML Schema** – *The sitemap XML shall follow the XML schema standard as defined on the [WATG site \(http://www.vadsa.org/watg/\)](http://www.vadsa.org/watg/).*

**WEB-R-23**      **Search Engine Updating Agency Search Sitemaps** – *Agency Webmasters shall update their agency search sitemap on a regular basis as substantial updates are made to the site and particularly if a large number of new URLs representing significant new content are added. New sitemap files are not needed to reach content changes on existing URLs.*

**WEB-R-24**      **Search Engine Public Search Engine Compatibility** – *All public content posted on a Virginia government Web site shall be searchable and discoverable through public search engines.*

**WEB-R-25**      **Search Engine META Tags** – *Every page on an Agency Web site shall contain an accurate Meta description in order to ensure any search engine (agency, statewide search, or public search engine such as Yahoo or Google) can display meaningful search results.*

**WEB-R-26**      **Search Engine Periodic Search Testing** – *All Webmasters shall test search results relevant to their agency name and content on a regular basis.*

## Internet Privacy Policy Statement

The Internet Privacy Policy Statement tells visitors how any collected personal information is handled on the site. It also contains other information about the site.

**WEB-R-27**      **Internet Privacy Policy and Statement** – *To comply with Code of Virginia, § 2.2-3803 (B) at a minimum each agency shall:*

- *Develop an Internet privacy policy and an Internet privacy policy statement that explains the policy to the public; and,*
- *Tailor the policy and the statement to reflect the information practices of the individual agency.*

- WEB-R-28** **Internet Privacy Policy and Statement - Collection of Information**  
– To comply with Code of Virginia, § 2.2-3803 (B) at a minimum, the Internet Privacy Policy and Internet Privacy Policy Statement shall address:
- What information, including personally identifiable information, will be collected, if any;
  - Whether any information will be automatically collected simply by accessing the website and, if so, what information;
  - Whether the Web site automatically places a computer file, commonly referred to as a "cookie," on the Internet user's computer and, if so, for what purpose; and,
  - How the collected information is being used or will be used.
- Except for those systems listed in the Code of Virginia, § 2.2-3802, as exempt, the following also shall be included:
- A prescribed procedure for an individual to learn the purpose for which information has been recorded and particulars about its use and dissemination; and
  - A clearly prescribed and uncomplicated procedure for an individual to correct, erase or amend inaccurate, obsolete or irrelevant information.
- WEB-R-29** **Internet Privacy Policy Statement, - Link Location** - A link to the Internet Privacy Policy Statement shall be featured in a conspicuous manner on the Web site home page, in the page footer.
- WEB-R-30** **Internet Privacy Policy Statement – Data Retention** – The statement shall state that any personal information that is collected and retained is maintained in compliance with the Code of Virginia, §§ 2.2-3800 and 2.2-3803.
- WEB-R-31** **Internet Privacy Policy Statement – Freedom of Information Act (FOIA)** – The statement shall remind users that information collected on this site may be provided to anyone that requests it under the “Virginia Freedom of Information Act.”
- WEB-R-32** **Internet Privacy Policy Related Requirements** – All agency Web sites shall have a Web Policy. The Web Policy shall include the following:
- Disclaimer – a statement that indemnifies the Commonwealth from responsibility for third party or externally linked content
  - Link policy – a policy stating the criteria that allows a link to be placed on the site.

- FOIA – a statement that explains the agency’s Freedom of Information Act policies and contacts.
- Plug-ins – a list of links visitors can use to download any plug-ins used by the site. (e.g. Macromedia Flash, Adobe Acrobat Reader, etc.) Note that pages that use plug-ins also must link to required plug-ins.

## Virginia Common Template – Site Design Considerations

This section addresses various considerations related to the design of an agency Web site, including site scalability and the use of fonts, frames, and style sheets.

### Site Scalability

Site Scalability refers to the ability of the site to become narrower or wider depending on the visitor’s browser’s window width.

**WEB-R-33**      **Site Scalability** - Web Sites using the template shall be made in a scalable format. No absolute width specifications shall be placed in the Commonwealth Banner, Agency Banner and Navigation Trail, Content or Footer sections.

**WEB-R-34**      **Browser** – All template sites shall display and operate within most common browsers in a consistent manner. The most common browsers include, but are not limited to, Explorer, Mozilla/Netscape and Firefox.

### Font Families

Font Families refers to the font types used to display text (Arial, Times Roman, etc.).

**WEB-R-35**      **Fonts** – Fonts shall be selected only from the following choices:

- San-Serif font families: Arial, Helvetica, Tahoma, Verdana, and Geneva (include the generic sans-serif type for users that do not have the previous specified fonts); and
- Serif font families: Times New Roman, Times, Georgia, and Courier (include the generic serif type for users that do not have the previous specified fonts).

### Frames

Frames refer to dividing the screen into areas each of which draws content from a separate file and has independent scrollbars.

**WEB-R-36**      **Frames** – The use of HTML frames is prohibited; however, the use of Inline Frames (IFRAMES) is permitted if the W3C recommendations (see: <http://www.w3.org/TR/html4/present/frames.html#h-16.5>) are fully compliant, which allows authors to insert a frame within a block of text.

## Style Sheets

Style Sheets are Cascading Style Sheets (CSS files) used to control the appearance of Web pages.

- WEB-R-37**      **Style Sheets** – Agencies shall use style sheets to control the layout whenever possible. Tables shall not be used for layout unless they make sense when linearized. [WAI WCAG checkpoint 3.3](#)

## Link Modification

Link Modification refers to the process of alerting the Virginia.gov portal of new, updated or outdated links to agency Web sites.

Each Agency’s Webmaster is required to notify Virginia.gov of link changes. Due to the complexity of the Virginia.gov portal, it is critical that each Agency be held accountable for the content found on its individual Web sites. This Agency accountability is the only way the Commonwealth of Virginia can provide the public with the most current and accurate information.

- WEB-R-38**      **Link Modification Standard: Virginia Interactive (VI) Webmaster Database** - Each agency's Webmaster *shall be registered in* the VI Webmaster database.
- Once a member, each Webmaster shall be assigned a user ID and password that shall allow access and permission to add, modify or delete links on the Virginia.gov portal.
  - Webmasters shall submit a request to be added to the database along with their contact information (full name, title, phone, e-mail, fax number, mailing address) on official agency letterhead. This request *must be e-mailed to the Virginia.gov Webmaster at:* [webmaster@virginia.gov](mailto:webmaster@virginia.gov).

- WEB-R-39**      **Link Modification Requirements: Change Request Form: Agency’s link added, modified or deleted** - Each time an agency’s link on the portal needs to be added, modified or deleted, an agency’s Webmaster shall use the form at [http://www.virginia.gov/cmsportal3/government\\_4096/adding\\_a\\_link.html](http://www.virginia.gov/cmsportal3/government_4096/adding_a_link.html) to make a link change request. If the link is in the “virginia.gov Community Database” at: ([http://www.vipnet.org/community/hub\\_page.htm](http://www.vipnet.org/community/hub_page.htm)) then the Webmaster is to use the submission form at: <http://www.vipnet.org/community/localsubmission.htm>

When an Agency, locality or other government entity creates a Web site that it wishes to include in the Virginia.gov portal, that Agency, locality or other government entity shall follow the process identified in this requirement.

## ***Implementation***

### **Agency Implementation Plan**

An Agency Implementation Plan refers to how an agency plans to bring the current information on its Web site into compliance with adopted Web site standards and how the agency will ensure that future content is compliant with those standards.

- |                 |   |
|-----------------|---|
| <b>WEB-R-40</b> | <b>Agency Implementation Plan</b> – Each agency shall develop a plan describing how and when it intends to meet the requirements identified in this topic report and included as requirements in the EA Standard <u>and update the plan when there is a subsequent material change to the plan.</u> |
| <b>WEB-R-41</b> | <b>Implementation Plan Information</b> – <u>Agency implementation plans shall include, but are not limited to, the information identified in Appendix A of the current Web Site Topic Report.</u>   |

---

## Section 2. ETA Applications Domain

The Commonwealth relies heavily on computer applications to support agency business operations. The agencies' business processes often must change in response to both legislation and new demands from citizens. Unfortunately, the Commonwealth's computer applications can not always respond to these changes in an effective and efficient manner because many current applications are either monolithic or two-tier client/server applications.

Many of the Commonwealth's current applications/solutions were developed independently using different languages and tools. The ability to communicate with other applications or systems or to adapt to changes in the business processes generally was not a design requirement. This architectural approach has adversely impacted the Commonwealth's business in three ways:

1. Additional cost and time needed to modify existing applications to support changing business requirements
2. Difficulty in integrating applications to share common services and data
3. Extra expense to develop, use, and maintain new applications because there is little reuse of code between applications

Application development tools, methodologies and technology are now available that can help address these problems. Examples include:

- **Reuse of Code:** Units of code previously duplicated in many applications can be packaged into components or services for reuse in different applications.
- **Integration tools/Middleware:** Shared software allows applications to communicate with each other, access data residing on different platforms, and access shared services.
- **New User Interface Options:** There is an expanding array of user interface options - including Web browsers, personal digital assistants (PDAs), and interactive voice response units (IVRs).
- **N-tier Service-Oriented Architecture (SOA):** In the n-tier SOA, applications are partitioned into discrete functional units called "services." Each service implements a small set of related business rules or function points. If a business rule must be modified to support changing business requirements, only the service that implements that business rule is impacted. The remainder of the application remains intact. The SOA comprises loosely coupled (joined), highly interoperable application services that interoperate over different development technologies. The services are very reusable because the interface definition is defined in a standards compliant manner.

The ETA Application Domain provides agencies with a foundation of development and support platforms, tools, processes, practices and requirements that can implement business processes and meet the Commonwealth's ever changing business needs.

---

## ***Domain-wide Requirements***

The following domain-wide requirements pertain to all topics and components in the Application Domain:

- APP-R-01 Security, Confidentiality, Privacy and Statutes** – Agencies shall implement applications/solutions in adherence with all security, confidentiality and privacy policies and applicable statutes.
- APP-R-02 Software Tools Version/Release Support** – The version/release levels of all software tools used for development and support of Commonwealth and/or agency “*mission critical applications*” shall have vendor or equivalent quality level support available.
- APP-R-03 Disaster Recovery and Business Continuity Planning** – An assessment of business recovery requirements is mandatory when acquiring, developing, outsourcing, or making major enhancements to “*mission critical applications*”. Based on that assessment, appropriate disaster recovery and business continuity planning, design and testing shall take place.
- APP-R-04 Maintain Software Tools Inventory** – VITA shall collect data on agency (excluding higher education) use of software tools, maintain an up-to-date inventory, and perform research in order to create a more effective and efficient environment in support of the Application Domain.

## ***Enterprise System Design***

Enterprise System Design refers to a collection of technologies, practices, requirements and standards that can assist the agencies in the design of solutions that can meet the Commonwealth’s ever changing business needs.

## **Service Oriented Architecture (SOA): Implementation and Governance**

In a Service-Oriented Architecture (SOA) environment, nodes on a network make resources available to other participants in the network as independent services that the participants access in a standardized way. Unlike traditional object-oriented architectures, a SOA comprises loosely coupled (joined), highly interoperable application services. Because these services interoperate over different development technologies (such as Java and .NET), the software components become very reusable due to the virtue of the interface definition being defined in a standards compliant manner (Web Service Definition Language [WSDL]). This also encapsulates and hides the vendor/language specific implementation from the calling client/service. SOA provides a methodology and framework for documenting enterprise capabilities and supports both integration and consolidation activities.

SOA-based composite applications will enable the Commonwealth to integrate business-critical processes with existing applications and systems. To gain the agility, flexibility and efficiency that SOA enables, these services and composite applications must be accessible and controlled across the enterprise.

---

The Commonwealth needs to implement a SOA as a foundation for Enterprise Applications and agency developed solutions for in-scope agencies. A key to successful implementation is SOA Governance.

SOA Governance is the ability to *ensure* that all of the independent efforts (whether in the design, development, deployment, or operations of a Service) come together to meet the enterprise SOA requirements

- APP-R-05    Implement SOA** – Agencies excluding higher education shall create and implement the centralized architectural review processes that are needed to support and control SOA implementation ensuring that all services built conform to standards, are interoperable, non-duplicative, and reusable where possible.
- APP-R-06    SOA Support of .NET and J2EE (Java Platform Enterprise Edition)** – The Commonwealth’s SOA for in-scope agencies shall support both .NET and J2EE Enterprise Framework Platforms.
- APP-R-07    SOA Center of Excellence Review of Developed Applications** – VITA, together with other executive branch agencies, shall create recommended practices and requirements to implement the SOA Center of Excellence enterprise level (state-wide excluding higher education) architectural design review and architectural governance of agency developed new applications that are large-scale, complex, use/create web services, or can potentially share business processes with other agencies.
- APP-R-08    SOA Center of Excellence Review of COTS (Commercial off-the-shelf)** – VITA, together with other executive branch agencies, shall create Enterprise level (state-wide excluding higher education) architectural review recommended practices and requirements to support agency’s review/selection and implementation of COTS based solutions that implement Enterprise-wide Applications or cross-cutting functions (such as accounting, facilities management or procurement).

## Enterprise Artifact Repository

Agencies should consider the reuse of existing applications and system components/artifacts first, as part of their systems acquire/develop decisions. To be successful, a state-wide library (repository) of reusable components and artifacts must be implemented and maintained.

Designers can build flexible, scalable, and extensible applications by using components as application building blocks, similar to building cars on an assembly line. Using previously built and tested components in different ways or with new components can accelerate the design, development, and delivery of new applications. Sharing of components across applications can also eliminate significant duplicate design and test efforts.

There are two strategies for reuse:

1. Opportunistic reuse: using assets that were not designed to be reused or are reused in a manner for which they were not designed

2. Systematic reuse: using assets which were purposefully designed, built, and managed to be reused

Systematic reuse has several advantages:

- Responsiveness: accelerates and streamlines project delivery
- Return on Investment (ROI): reduces solution delivery costs and provides only those assets that produce the best business advantage
- Quality: ensures that only quality assets will be reused

Both reuse strategies require an implemented Enterprise Artifact Repository with supporting practices and processes to be successful.

**APP-R-09 Implement Enterprise-wide Artifact Repository** – The Commonwealth shall select, deploy and maintain an Enterprise-wide Artifact Repository to support implementation of a SOA and create recommended practices and processes that support and encourage agency use of the Repository.

### ***Application Acquisition***

The choice of a systems acquisition method (buy/build decisions) should take into account the functional characteristics of the proposed systems. The agencies should first consider the reuse of existing applications and system components. If no components exist, purchased solutions (COTS) should be explored. Applications or systems that can provide automation of agency core business functions that have unique processes, yield competitive advantages, or have demonstrable cost savings and/or enhanced value should be the only candidates for in-house development by the Commonwealth.

### **Commercial off-the-shelf (COTS)**

Commercial off-the-shelf (COTS) is a term for software or hardware products that are ready-made and available for sale to the general public. They are often used as alternatives to in-house developments or one-off government-funded developments (government off-the-shelf [GOTS]). The use of COTS is being mandated across many government and business programs because they may offer significant savings in procurement and maintenance.

**APP-R-10 Evaluate COTS as Alternative** – Commercial off-the-shelf (COTS) solutions shall be evaluated and documented as part of an Alternatives Analysis of systems acquisition methods for all Enterprise-wide Applications and cross-cutting functions (such as accounting, facilities management or procurement).

**APP-R-11 COTS Documentation** – All “*mission critical*” COTS solutions shall have their application components and configurations fully documented.

## ***Development and Support Platforms***

The complexity, size, lifespan, and performance requirements of agency developed applications/solutions vary greatly. Development and Support Platforms provide the agencies with distinct approaches to address different application needs/ requirements.

These approaches can be implemented by the following development platforms:

- Enterprise Framework Platform – supports n-tier development of service-oriented architecture for large-scale or complex applications that need to support high-volume usage and/or long life spans.
- N-tier Visual-based Tool Development Platform – supports applications that are not large-scale, complex and do not require high-volume usage and/or long life spans. Generally developed by Business Analysts by using visual-based tools that provide automated code generation.
- Collaborative Platform – many business’ needs do not require scalable or highly available solutions. These needs often can be met by Workflow and Forms Automation tools.

## **Development Languages**

There have been thousands of different programming languages and new ones are created every year. Every language has its strengths and weaknesses. For example, FORTRAN was (and still is) a particularly good language for processing numerical data, but it does not lend itself very well to organizing large programs. Pascal was very good for writing well-structured and readable programs, but it is not as flexible as the C programming language. C++ embodies powerful object-oriented features, but it is complex and difficult to learn.

The Commonwealth will continue to use specialized development languages as required to meet special needs (example: FORTRAN for engineering applications). With the exception of these special needs applications, in-house development should use languages that are consistent with the creation of SOA n-tier solutions on Enterprise Framework Platforms such as .NET and J2EE.

<b>Table APP-S-01: Languages used in developing new large, complex applications anticipated to have high usage volumes and/or long life spans</b>	
<b>Technology Component Standard</b>	
<b>Strategic:</b>	Java, Visual Basic, C++, VB.NET Fortran (for engineering applications only)
<b>Emerging:</b>	
<b>Transitional/Contained:</b>	Cobol, Power Builder, PL/SQL, Delphi, MAPPER (BIS, Cool Ice)
<b>Obsolescent/Rejected:</b>	Assembler, C, Clipper, Basic, PL/1
<b>Exception History:</b>	

---

## Coding Guidelines and Standards

Coding Guidelines and Standards (also called programming style or code convention) describe conventions for writing source code in a given programming language.

- APP-R-12 J2EE and .NET Guidelines** – The Commonwealth shall research and publish recommended practices supporting agency development of applications/solutions using J2EE and .NET Enterprise Frameworks.

## *Software Engineering*

Software Engineering is the application of best-practice processes and methods of design to the development and maintenance of software applications/solutions. Software engineering covers not only the technical aspects of building software systems, but also development management issues, such as testing, modeling and versioning.

- APP-R-13 Commonwealth Web and Accessibility Standards** – Public-facing and Web applications (Intranet and Internet) shall comply with Commonwealth Web and Accessibility Standards as applicable.
- APP-R-14 Public Web Applications Browser Independent** – Agency public-facing web-based solutions shall be browser independent (the functionality of the application can not be restricted to a single browser)
- APP-R-15 Maintain Application Code Documentation** – All newly developed applications shall have their code documented. This documentation shall be maintained throughout the product life cycle.
- APP-R-16 Accessible and Transferable Repositories** – All electronic repositories of source code, metadata, development artifacts, models, documentation, etc. shall have their contents accessible either by an export facility or direct access method. This ability is required to allow the repository contents to be transferred from one methodology or tool to another as needed.

## Reusable Components/Artifacts

A component is a loosely defined term for a software technology for encapsulating software functionality. Components must meet the following five criteria:

1. Multiple-use
2. Non-context-specific
3. Combinable with other components
4. Encapsulated i.e., non-investigable through its interfaces
5. A unit of independent deployment and versioning

An artifact is a valuable, high quality software work product such as: documentation, analysis and design models, source code, interfaces, executable binaries, tools, processes, and test plans. To be successful, agencies must be able to search for existing applications, components and artifacts that have already implemented specific business processes.

- APP-R-17 Search for Existing Business Process** – The Commonwealth Enterprise Architecture shall evolve to incorporate a search feature that addresses the

---

## Section 2. ETA Applications Domain

The Commonwealth relies heavily on computer applications to support agency business operations. The agencies' business processes often must change in response to both legislation and new demands from citizens. Unfortunately, the Commonwealth's computer applications can not always respond to these changes in an effective and efficient manner because many current applications are either monolithic or two-tier client/server applications.

Many of the Commonwealth's current applications/solutions were developed independently using different languages and tools. The ability to communicate with other applications or systems or to adapt to changes in the business processes generally was not a design requirement. This architectural approach has adversely impacted the Commonwealth's business in three ways:

1. Additional cost and time needed to modify existing applications to support changing business requirements
2. Difficulty in integrating applications to share common services and data
3. Extra expense to develop, use, and maintain new applications because there is little reuse of code between applications

Application development tools, methodologies and technology are now available that can help address these problems. Examples include:

- Reuse of Code: Units of code previously duplicated in many applications can be packaged into components or services for reuse in different applications.
- Integration tools/Middleware: Shared software allows applications to communicate with each other, access data residing on different platforms, and access shared services.
- New User Interface Options: There is an expanding array of user interface options - including Web browsers, personal digital assistants (PDAs), and interactive voice response units (IVRs).
- N-tier Service-Oriented Architecture (SOA): In the n-tier SOA, applications are partitioned into discrete functional units called "services." Each service implements a small set of related business rules or function points. If a business rule must be modified to support changing business requirements, only the service that implements that business rule is impacted. The remainder of the application remains intact. The SOA comprises loosely coupled (joined), highly interoperable application services that interoperate over different development technologies. The services are very reusable because the interface definition is defined in a standards compliant manner.

The ETA Application Domain provides agencies with a foundation of development and support platforms, tools, processes, practices and requirements that can implement business processes and meet the Commonwealth's ever changing business needs.

---

## ***Domain-wide Requirements***

The following domain-wide requirements pertain to all topics and components in the Application Domain:

- APP-R-01 Security, Confidentiality, Privacy and Statutes** – Agencies shall implement applications/solutions in adherence with all security, confidentiality and privacy policies and applicable statutes.
- APP-R-02 Software Tools Version/Release Support** – The version/release levels of all software tools used for development and support of Commonwealth and/or agency “*mission critical applications*” shall have vendor or equivalent quality level support available.
- APP-R-03 Disaster Recovery and Business Continuity Planning** – An assessment of business recovery requirements is mandatory when acquiring, developing, outsourcing, or making major enhancements to “*mission critical applications*”. Based on that assessment, appropriate disaster recovery and business continuity planning, design and testing shall take place.
- APP-R-04 Maintain Software Tools Inventory** – VITA shall collect data on agency (excluding higher education) use of software tools, maintain an up-to-date inventory, and perform research in order to create a more effective and efficient environment in support of the Application Domain.

## ***Enterprise System Design***

Enterprise System Design refers to a collection of technologies, practices, requirements and standards that can assist the agencies in the design of solutions that can meet the Commonwealth’s ever changing business needs.

## **Service Oriented Architecture (SOA): Implementation and Governance**

In a Service-Oriented Architecture (SOA) environment, nodes on a network make resources available to other participants in the network as independent services that the participants access in a standardized way. Unlike traditional object-oriented architectures, a SOA comprises loosely coupled (joined), highly interoperable application services. Because these services interoperate over different development technologies (such as Java and .NET), the software components become very reusable due to the virtue of the interface definition being defined in a standards compliant manner (Web Service Definition Language [WSDL]). This also encapsulates and hides the vendor/language specific implementation from the calling client/service. SOA provides a methodology and framework for documenting enterprise capabilities and supports both integration and consolidation activities.

SOA-based composite applications will enable the Commonwealth to integrate business-critical processes with existing applications and systems. To gain the agility, flexibility and efficiency that SOA enables, these services and composite applications must be accessible and controlled across the enterprise.

---

The Commonwealth needs to implement a SOA as a foundation for Enterprise Applications and agency developed solutions for in-scope agencies. A key to successful implementation is SOA Governance.

SOA Governance is the ability to *ensure* that all of the independent efforts (whether in the design, development, deployment, or operations of a Service) come together to meet the enterprise SOA requirements

- APP-R-05**    **Implement SOA** – Agencies excluding higher education shall create and implement the centralized architectural review processes that are needed to support and control SOA implementation ensuring that all services built conform to standards, are interoperable, non-duplicative, and reusable where possible.
- APP-R-06**    **SOA Support of .NET and J2EE (Java Platform Enterprise Edition)** – The Commonwealth’s SOA for in-scope agencies shall support both .NET and J2EE Enterprise Framework Platforms.
- APP-R-07**    **SOA Center of Excellence Review of Developed Applications** – VITA, together with other executive branch agencies, shall create recommended practices and requirements to implement the SOA Center of Excellence enterprise level (state-wide excluding higher education) architectural design review and architectural governance of agency developed new applications that are large-scale, complex, use/create web services, or can potentially share business processes with other agencies.
- APP-R-08**    **SOA Center of Excellence Review of COTS (Commercial off-the-shelf)** – VITA, together with other executive branch agencies, shall create Enterprise level (state-wide excluding higher education) architectural review recommended practices and requirements to support agency’s review/selection and implementation of COTS based solutions that implement Enterprise-wide Applications or cross-cutting functions (such as accounting, facilities management or procurement).

## Enterprise Artifact Repository

Agencies should consider the reuse of existing applications and system components/artifacts first, as part of their systems acquire/develop decisions. To be successful, a state-wide library (repository) of reusable components and artifacts must be implemented and maintained.

Designers can build flexible, scalable, and extensible applications by using components as application building blocks, similar to building cars on an assembly line. Using previously built and tested components in different ways or with new components can accelerate the design, development, and delivery of new applications. Sharing of components across applications can also eliminate significant duplicate design and test efforts.

There are two strategies for reuse:

1. Opportunistic reuse: using assets that were not designed to be reused or are reused in a manner for which they were not designed

2. Systematic reuse: using assets which were purposefully designed, built, and managed to be reused

Systematic reuse has several advantages:

- Responsiveness: accelerates and streamlines project delivery
- Return on Investment (ROI): reduces solution delivery costs and provides only those assets that produce the best business advantage
- Quality: ensures that only quality assets will be reused

Both reuse strategies require an implemented Enterprise Artifact Repository with supporting practices and processes to be successful.

**APP-R-09 Implement Enterprise-wide Artifact Repository** – The Commonwealth shall select, deploy and maintain an Enterprise-wide Artifact Repository to support implementation of a SOA and create recommended practices and processes that support and encourage agency use of the Repository.

### ***Application Acquisition***

The choice of a systems acquisition method (buy/build decisions) should take into account the functional characteristics of the proposed systems. The agencies should first consider the reuse of existing applications and system components. If no components exist, purchased solutions (COTS) should be explored. Applications or systems that can provide automation of agency core business functions that have unique processes, yield competitive advantages, or have demonstrable cost savings and/or enhanced value should be the only candidates for in-house development by the Commonwealth.

### **Commercial off-the-shelf (COTS)**

Commercial off-the-shelf (COTS) is a term for software or hardware products that are ready-made and available for sale to the general public. They are often used as alternatives to in-house developments or one-off government-funded developments (government off-the-shelf [GOTS]). The use of COTS is being mandated across many government and business programs because they may offer significant savings in procurement and maintenance.

**APP-R-10 Evaluate COTS as Alternative** – Commercial off-the-shelf (COTS) solutions shall be evaluated and documented as part of an Alternatives Analysis of systems acquisition methods for all Enterprise-wide Applications and cross-cutting functions (such as accounting, facilities management or procurement).

**APP-R-11 COTS Documentation** – All “*mission critical*” COTS solutions shall have their application components and configurations fully documented.

## ***Development and Support Platforms***

The complexity, size, lifespan, and performance requirements of agency developed applications/solutions vary greatly. Development and Support Platforms provide the agencies with distinct approaches to address different application needs/ requirements.

These approaches can be implemented by the following development platforms:

- Enterprise Framework Platform – supports n-tier development of service-oriented architecture for large-scale or complex applications that need to support high-volume usage and/or long life spans.
- N-tier Visual-based Tool Development Platform – supports applications that are not large-scale, complex and do not require high-volume usage and/or long life spans. Generally developed by Business Analysts by using visual-based tools that provide automated code generation.
- Collaborative Platform – many business’ needs do not require scalable or highly available solutions. These needs often can be met by Workflow and Forms Automation tools.

## **Development Languages**

There have been thousands of different programming languages and new ones are created every year. Every language has its strengths and weaknesses. For example, FORTRAN was (and still is) a particularly good language for processing numerical data, but it does not lend itself very well to organizing large programs. Pascal was very good for writing well-structured and readable programs, but it is not as flexible as the C programming language. C++ embodies powerful object-oriented features, but it is complex and difficult to learn.

The Commonwealth will continue to use specialized development languages as required to meet special needs (example: FORTRAN for engineering applications). With the exception of these special needs applications, in-house development should use languages that are consistent with the creation of SOA n-tier solutions on Enterprise Framework Platforms such as .NET and J2EE.

<b>Table APP-S-01: Languages used in developing new large, complex applications anticipated to have high usage volumes and/or long life spans</b>	
<b>Technology Component Standard</b>	
<b>Strategic:</b>	Java, Visual Basic, C++, VB.NET Fortran (for engineering applications only)
<b>Emerging:</b>	
<b>Transitional/Contained:</b>	Cobol, Power Builder, PL/SQL, Delphi, MAPPER (BIS, Cool Ice)
<b>Obsolescent/Rejected:</b>	Assembler, C, Clipper, Basic, PL/1
<b>Exception History:</b>	

---

## Coding Guidelines and Standards

Coding Guidelines and Standards (also called programming style or code convention) describe conventions for writing source code in a given programming language.

- APP-R-12 J2EE and .NET Guidelines** – The Commonwealth shall research and publish recommended practices supporting agency development of applications/solutions using J2EE and .NET Enterprise Frameworks.

## *Software Engineering*

Software Engineering is the application of best-practice processes and methods of design to the development and maintenance of software applications/solutions. Software engineering covers not only the technical aspects of building software systems, but also development management issues, such as testing, modeling and versioning.

- APP-R-13 Commonwealth Web and Accessibility Standards** – Public-facing and Web applications (Intranet and Internet) shall comply with Commonwealth Web and Accessibility Standards as applicable.
- APP-R-14 Public Web Applications Browser Independent** – Agency public-facing web-based solutions shall be browser independent (the functionality of the application can not be restricted to a single browser)
- APP-R-15 Maintain Application Code Documentation** – All newly developed applications shall have their code documented. This documentation shall be maintained throughout the product life cycle.
- APP-R-16 Accessible and Transferable Repositories** – All electronic repositories of source code, metadata, development artifacts, models, documentation, etc. shall have their contents accessible either by an export facility or direct access method. This ability is required to allow the repository contents to be transferred from one methodology or tool to another as needed.

## Reusable Components/Artifacts

A component is a loosely defined term for a software technology for encapsulating software functionality. Components must meet the following five criteria:

1. Multiple-use
2. Non-context-specific
3. Combinable with other components
4. Encapsulated i.e., non-investigable through its interfaces
5. A unit of independent deployment and versioning

An artifact is a valuable, high quality software work product such as: documentation, analysis and design models, source code, interfaces, executable binaries, tools, processes, and test plans. To be successful, agencies must be able to search for existing applications, components and artifacts that have already implemented specific business processes.

- APP-R-17 Search for Existing Business Process** – The Commonwealth Enterprise Architecture shall evolve to incorporate a search feature that addresses the

---

customer's need to locate existing Commonwealth/ agency (excluding higher education) solutions that implement specific business processes.

## **Configuration Management**

Configuration Management is applicable to all aspects of software development from design to delivery. It focuses on the control of all work products and artifacts generated during the development process. Version Management (a subset of Configuration Management) refers to the tracking and controlling of file versions. It includes capabilities such as labeling, branching, merging, version content comparisons, and security and permission management. An initial step on the path to Configuration and Version Management is to implement a source code repository with supporting processes.

Code management is crucial to maintain application integrity through the development and maintenance lifecycle. Ideally, code management tools would integrate with defect tracking and application-build tools. The Commonwealth will be researching code management systems that can scale across the enterprise to foster an environment that supports reuse of shared components.

**APP-R-18 Source Code Repository** – All application source code shall be maintained in a repository using a formal process.

## ***Web Site Development***

The Web site requirements presented below encourage greater efficiencies and effectiveness in the use of technology, and provide guidance and direction to assist agencies in developing a common look and feel to agency public Web sites. The templates and requirements related to implementing those templates provide basic rules of proper Web site design and address accessibility, template, portal, and implementation requirements and agency plans for implementing those requirements. This includes items to be addressed on every agency Web page; site and application content to be included on every agency Web site; design considerations for every agency Web site; external content to be included on every agency Web site; and the implementation and Web 2.0 considerations for every agency.

All Executive Branch agencies' public Web sites and public Web applications (except as noted in WEB-R-05) must comply with the WEB-R requirements below. Extranets and Intranets are not required to follow the WEB-R requirements, but still must comply with the current version of the COV ITRM Accessibility Standard (GOV103).

## **Virginia Common Template – Page Elements**

Provides a common Web template and corresponding guidance and direction related to all the components an agency must put on every page of its Web site. For additional guidance, a Web Accessibility and Template Guide (WATG) were created by the Department of Rehabilitative Services to assist agency developers in implementing the requirements identified in this report. That Guide can be accessed at: <http://www.vadsa.org/watg/>.

An important objective of the Common Template Requirement is to create a user-focused, or “user-centric,” Web presence for the Commonwealth, including a common look and feel to all

agency Web sites. This objective is addressed by creating a template and set of Web site requirements for all Agencies to implement that assist in making the agency Web pages accessible and usable. An essential objective of this requirement is to assist in making the Web site user's experience as pleasant and trouble-free as possible. It also includes putting government services and content where citizens can easily find them, and in a format that is easy to use.

All approved requirements are built into the template, but each agency is responsible for its content and ensuring that the content it adds remains compliant with the Common Template requirements identified below:

### Commonwealth Banner

The Commonwealth Banner is the black bar that appears at the top of Virginia government Web pages. It contains links relevant to all agencies. It also contains the state-wide Virginia.Gov search box.

- WEB-R-01**      **Code for Commonwealth Banner** – The code containing the “Commonwealth Banner” *shall be used on all agency Web sites and is available on the WATG site (<http://www.vadsa.org/watg/>)*.
- WEB-R-02**      **Commonwealth Banner Location** – The “Commonwealth Banner” shall be posted above the “Agency Banner” area of each site. This banner shall be completely identical to the image received if Webmasters choose to replicate it themselves and contain only these textual links in the following order:
- “Virginia.gov” logo – left align
  - “Online Services” – left align
  - “Commonwealth sites” – left align
  - Enterprise “Help” – left align
  - “Governor” – left align
  - “Skip to Content” (skip-nav) shall be hidden within the code of the “Commonwealth Banner” to allow screen reader access at the beginning of each page
  - “Search Virginia.gov” – right align *search box*
- WEB-R-03**      **Commonwealth Banner Height** – The “Commonwealth Banner” shall be 40 pixels in height in its default mode. It should be noted that this area shall be permitted to grow to accommodate changes in font sizes through user specification or scripting such as CSS and/or JavaScript that allow font sizes to change. This section shall be scalable, but always default to no more than 40 pixels in height with standard font sizes.
- WEB-R-04**      **Commonwealth Banner Statewide Search** – The “Commonwealth Banner” shall contain the enterprise search feature which shall allow users

---

to access this functionality across all state sites. The statewide search box shall contain the text “Search Virginia.gov” to clearly identify its function.

### Virginia Common Template

The Virginia Common Template is a visual arrangement of Web page elements. It specifies where common items shall appear so users know where to look for them and to have a unified look-and-feel across Virginia government Web sites.

- WEB-R-05**      **Virginia Common Template** – All Executive Branch Agencies shall use the Virginia Common Template for public Web sites and Web applications, except the following exempt organizations:
- The Virginia Tourism Corporation
  - The Library of Virginia
  - All museums
  - All institutions of higher education

Extranets and Intranets are not required to follow any Web Site requirements, but still must comply with the current version of the COV ITRM Accessibility Standard (GOV103).

### Text Only Site

A “text only site” is a version of the main site that uses only text. Every Web page has an alternate Web page with the same content and text descriptions for visual information (graphics, charts, etc.).

- WEB-R-06**      **Text Only Site** – If an agency uses a text-only site, that link shall be in the Commonwealth Banner of the template and the text-only site shall be updated at the same time as the standard site.

### Agency Banner

The Agency Banner is the area below the top black Commonwealth Banner bar and above the Navigation Trail. It contains the agency name and often contains graphics related to the agency.

- WEB-R-07**      **Agency Banner Height & Resolution** – Each agency shall create its own "Agency Banner" for use in the template; it shall be 100 pixels high and able to accommodate screen resolutions *1024 and wider* gracefully.

- WEB-R-08**      **Agency Banner Search & Agency Name** –The "Agency Banner" shall contain the full agency name and be created in one of the specified standard fonts.

---

## Navigation Trail

The Navigation Trail or “breadcrumb trail” appears below the Agency Banner. It shows the route from the homepage to the page the visitor is on. Using the Navigation Trail links, visitors can return to previous or parent pages. The links can help orient a user. In the Common Template, the Navigation Trail also contains a link to the agency Contact Us page and the site-wide search box.

The following are requirements related to Navigation Trails:

- WEB-R-09**      **Navigation Trail Bar Location** - A “bread-crum” navigation *trail* bar shall be located below and contiguous to the "Agency Banner" in the template.
- WEB-R-10**      **Navigation Trail Bread Crumb Text Location** – The bread-crum text shall be located on the left side of the navigation bar.
- WEB-R-11**      **Navigation Trail Height & Resolution** – The Navigation Trail shall not exceed 25 pixels in height in its default mode. This area shall be permitted to grow to accommodate changes in font sizes through user specification or scripting such as CSS and/or JavaScript that allow font sizes to change. This section shall be scalable, but always default to no more than 25 pixels in height with standard font sizes.
- WEB-R-12**      **Navigation Trail “Contact Us” link** – The "Contact Us" link shall be located to the right side of the bread crumb bar in front of the agency search box area and contain the text "Search [name or official acronym of agency] site" to differentiate between statewide and agency search.
- WEB-R-13**      **Navigation Trail Agency Search** - The agency search box shall be located on the far right side of the bread crumb bar underneath the "Search Virginia.gov" search box.

## Navigation Links

Navigation Links refer to the main links on the left side of agency Web pages. They generally link to major areas or categories on a site.

- WEB-R-14**      **Number of Primary Navigation Links** - No more than twelve main navigation links shall be on the left navigation bar and links shall remain the same throughout the site. The Virginia Information Technologies Agency must approve exceptions prior to site redesign implementation. Graphic and other separate links in the left-hand navigation area count towards the 12 link limit.
- WEB-R-15**      **Number of Sub-navigation Links** – There shall be no more than twelve sub-navigation links for a primary navigation link. Sub-navigation shall appear

*in the left-hand navigation area as long as they are visually distinct from the main navigation links (e.g. indented, fly-out, different-color, etc). Sub-navigation links shall not count towards the twelve primary navigation link limit.*

## Content Sections

Content Sections are the one or more areas in the content portion of an agency Web page. This is where the page content goes.

**WEB-R-16**      **Content Sections** – All of the columns in the content area shall fit into a resolution *1024x768 without left to right scrolling*; however, the number of columns in the content area is at the discretion of the agency.

## Page Footer

The Page Footer is the area at the bottom of an agency Web page. It contains specific standard information about the site.

**WEB-R-17**      **Page Footer** - Each page shall have a footer containing, at a minimum, the following information:

- Agency name
- Copyright information
- Text or an approved icon link stating WAI compliance

## Central Repository of Forms

A Central Repository of Forms is a page that allows visitors to access all forms on a given site. This is often a list of links to available forms.

**WEB-R-18**      **Central Repository of Forms** - A central repository of agency electronic forms for public use shall be made available through a link on the home page.

## Contact Instructions

Contact Instructions provide information to visitors that enable them to contact the agency for help, for example by phone or e-mail.

**WEB-R-19**      **Contact Instructions** – The Contact Us page accessible from the home page shall include, at a minimum, the agency's:

- Mailing address;
- FAX number;
- Phone number, toll-free number, TTY number; and an
- E-mail link to the agency.

## Custom 404 Error Message

A Custom 404 Error Message is a customized message returned to Web site visitors when a requested Web page is not found.

**WEB-R-20**      **Custom 404 Error Message** - Agencies shall implement a custom 404 error message *page*. Whenever possible, have the server redirect the user to the new page.

## Search Engine

A search engine allows visitors to search online content. Public agency sites will have a site-specific search (to search the current Web site) and a Commonwealth search (to search all state agency sites).

**WEB-R-21**      **Sitemap XML File** – Each agency shall include an XML sitemap at the root level of the site to facilitate statewide search.

**WEB-R-22**      **Search Engine XML Schema** – *The sitemap XML shall follow the XML schema standard as defined on the [WATG site \(http://www.vadsa.org/watg/\)](http://www.vadsa.org/watg/).*

**WEB-R-23**      **Search Engine Updating Agency Search Sitemaps** – *Agency Webmasters shall update their agency search sitemap on a regular basis as substantial updates are made to the site and particularly if a large number of new URLs representing significant new content are added. New sitemap files are not needed to reach content changes on existing URLs.*

**WEB-R-24**      **Search Engine Public Search Engine Compatibility** – *All public content posted on a Virginia government Web site shall be searchable and discoverable through public search engines.*

**WEB-R-25**      **Search Engine META Tags** – *Every page on an Agency Web site shall contain an accurate Meta description in order to ensure any search engine (agency, statewide search, or public search engine such as Yahoo or Google) can display meaningful search results.*

**WEB-R-26**      **Search Engine Periodic Search Testing** – *All Webmasters shall test search results relevant to their agency name and content on a regular basis.*

## Internet Privacy Policy Statement

The Internet Privacy Policy Statement tells visitors how any collected personal information is handled on the site. It also contains other information about the site.

**WEB-R-27**      **Internet Privacy Policy and Statement** – *To comply with Code of Virginia, § 2.2-3803 (B) at a minimum each agency shall:*

- *Develop an Internet privacy policy and an Internet privacy policy statement that explains the policy to the public; and,*
- *Tailor the policy and the statement to reflect the information practices of the individual agency.*

- WEB-R-28** **Internet Privacy Policy and Statement - Collection of Information**  
– To comply with Code of Virginia, § 2.2-3803 (B) at a minimum, the Internet Privacy Policy and Internet Privacy Policy Statement shall address:
- What information, including personally identifiable information, will be collected, if any;
  - Whether any information will be automatically collected simply by accessing the website and, if so, what information;
  - Whether the Web site automatically places a computer file, commonly referred to as a "cookie," on the Internet user's computer and, if so, for what purpose; and,
  - How the collected information is being used or will be used.
- Except for those systems listed in the Code of Virginia, § 2.2-3802, as exempt, the following also shall be included:
- A prescribed procedure for an individual to learn the purpose for which information has been recorded and particulars about its use and dissemination; and
  - A clearly prescribed and uncomplicated procedure for an individual to correct, erase or amend inaccurate, obsolete or irrelevant information.
- WEB-R-29** **Internet Privacy Policy Statement, - Link Location** - A link to the Internet Privacy Policy Statement shall be featured in a conspicuous manner on the Web site home page, in the page footer.
- WEB-R-30** **Internet Privacy Policy Statement – Data Retention** – The statement shall state that any personal information that is collected and retained is maintained in compliance with the Code of Virginia, §§ 2.2-3800 and 2.2-3803.
- WEB-R-31** **Internet Privacy Policy Statement – Freedom of Information Act (FOIA)** – The statement shall remind users that information collected on this site may be provided to anyone that requests it under the “Virginia Freedom of Information Act.”
- WEB-R-32** **Internet Privacy Policy Related Requirements** – All agency Web sites shall have a Web Policy. The Web Policy shall include the following:
- Disclaimer – a statement that indemnifies the Commonwealth from responsibility for third party or externally linked content
  - Link policy – a policy stating the criteria that allows a link to be placed on the site.

- FOIA – a statement that explains the agency’s Freedom of Information Act policies and contacts.
- Plug-ins – a list of links visitors can use to download any plug-ins used by the site. (e.g. Macromedia Flash, Adobe Acrobat Reader, etc.) Note that pages that use plug-ins also must link to required plug-ins.

## Virginia Common Template – Site Design Considerations

This section addresses various considerations related to the design of an agency Web site, including site scalability and the use of fonts, frames, and style sheets.

### Site Scalability

Site Scalability refers to the ability of the site to become narrower or wider depending on the visitor’s browser’s window width.

**WEB-R-33**      **Site Scalability** - Web Sites using the template shall be made in a scalable format. No absolute width specifications shall be placed in the Commonwealth Banner, Agency Banner and Navigation Trail, Content or Footer sections.

**WEB-R-34**      **Browser** – All template sites shall display and operate within most common browsers in a consistent manner. The most common browsers include, but are not limited to, Explorer, Mozilla/Netscape and Firefox.

### Font Families

Font Families refers to the font types used to display text (Arial, Times Roman, etc.).

**WEB-R-35**      **Fonts** – Fonts shall be selected only from the following choices:

- San-Serif font families: Arial, Helvetica, Tahoma, Verdana, and Geneva (include the generic sans-serif type for users that do not have the previous specified fonts); and
- Serif font families: Times New Roman, Times, Georgia, and Courier (include the generic serif type for users that do not have the previous specified fonts).

### Frames

Frames refer to dividing the screen into areas each of which draws content from a separate file and has independent scrollbars.

**WEB-R-36**      **Frames** – The use of HTML frames is prohibited; however, the use of Inline Frames (IFRAMES) is permitted if the W3C recommendations (see: <http://www.w3.org/TR/html4/present/frames.html#h-16.5>) are fully compliant, which allows authors to insert a frame within a block of text.

---

## Style Sheets

Style Sheets are Cascading Style Sheets (CSS files) used to control the appearance of Web pages.

- WEB-R-37**      **Style Sheets** – Agencies shall use style sheets to control the layout whenever possible. Tables shall not be used for layout unless they make sense when linearized. [WAI WCAG checkpoint 3.3](#)

## Link Modification

Link Modification refers to the process of alerting the Virginia.gov portal of new, updated or outdated links to agency Web sites.

Each Agency’s Webmaster is required to notify Virginia.gov of link changes. Due to the complexity of the Virginia.gov portal, it is critical that each Agency be held accountable for the content found on its individual Web sites. This Agency accountability is the only way the Commonwealth of Virginia can provide the public with the most current and accurate information.

- WEB-R-38**      **Link Modification Standard: Virginia Interactive (VI) Webmaster Database** - Each agency's Webmaster *shall be registered in* the VI Webmaster database.
- Once a member, each Webmaster shall be assigned a user ID and password that shall allow access and permission to add, modify or delete links on the Virginia.gov portal.
  - Webmasters shall submit a request to be added to the database along with their contact information (full name, title, phone, e-mail, fax number, mailing address) on official agency letterhead. This request *must be e-mailed to the Virginia.gov Webmaster at:* [webmaster@virginia.gov](mailto:webmaster@virginia.gov).

- WEB-R-39**      **Link Modification Requirements: Change Request Form: Agency’s link added, modified or deleted** - Each time an agency’s link on the portal needs to be added, modified or deleted, an agency’s Webmaster shall use the form at [http://www.virginia.gov/cmsportal3/government\\_4096/adding\\_a\\_link.html](http://www.virginia.gov/cmsportal3/government_4096/adding_a_link.html) to make a link change request. If the link is in the “virginia.gov Community Database” at: ([http://www.vipnet.org/community/hub\\_page.htm](http://www.vipnet.org/community/hub_page.htm)) then the Webmaster is to use the submission form at: <http://www.vipnet.org/community/localsubmission.htm>

When an Agency, locality or other government entity creates a Web site that it wishes to include in the Virginia.gov portal, that Agency, locality or other government entity shall follow the process identified in this requirement.

## ***Implementation***

### **Agency Implementation Plan**

An Agency Implementation Plan refers to how an agency plans to bring the current information on its Web site into compliance with adopted Web site standards and how the agency will ensure that future content is compliant with those standards.

- |                 |   |
|-----------------|---|
| <b>WEB-R-40</b> | <b>Agency Implementation Plan</b> – Each agency shall develop a plan describing how and when it intends to meet the requirements identified in this topic report and included as requirements in the EA Standard <u>and update the plan when there is a subsequent material change to the plan.</u> |
| <b>WEB-R-41</b> | <b>Implementation Plan Information</b> – <u>Agency implementation plans shall include, but are not limited to, the information identified in Appendix A of the current Web Site Topic Report.</u>   |