Standard ID:	**AP-PROG-001**
Title:	**Application Programming Languages**
Domain:	**Application**
Discipline:	**Development Management**
Effective Date: Revision no.: Original date:	**5/26/2015** **8** **4/29/2005**

I.   Authority, Applicability and Purpose

   A.   **Authority:** Title 29 Chapter 90C Delaware Code, §9004C – General Powers, duties and functions of DTI "2) Create, implement and enforce statewide and agency technology solutions, policies, standards and guidelines, including as recommended by the Technology Investment Council on an ongoing basis and the CIO"

   B.   **Applicability:** Applies to all State of Delaware communications and computing resources. DTI is an Executive Branch Agency and has no authority over the customers in Legislative and Judicial Branches, as well as School Districts, and other Federal and Local Government entities that use these resources. However, all users, including these entities, must agree to abide by all policies, standards promulgated by DTI as a condition of funding and continued use of these resources.

   C.   **Purpose:** Currently, the State uses many application programming languages in production. This standard will identify those languages and versions that are considered appropriate for the State to use.

II.   Scope

   A.   **Audience**: This document is intended for Application Developers, their managers and application development contractors for the State, Systems Administrators, Network Administrators, and Computer Auditors. This document is not intended for use by non-IT personnel.

   B.   **Applicability:** This standard addresses all application development languages approved for use by the State of Delaware, including applications owned by the State but developed by third-party contractors. This standard does not apply to those instances where the Federal Government dictates the Application Development Environment to be used. This standard addresses programming languages used in multi-user or moderate (or higher) critical applications.

C. **Environments:** Integrated Development Environments (IDEs), used in the creation of Client/Server, web based and Mainframe applications are referenced by this standard. Often IDEs are defacto standards resulting from the choice of programming language made. A fully integrated IDE is an important tool in the development process.

III.   Process

A. **Adoption:** These standards have been adopted by the Department of Technology and Information (DTI) through the Technology and Architecture Standards Committee (TASC) and are applicable to all Information Technology use throughout the State of Delaware.

B. **Revision:** Technology is constantly evolving; therefore, the standards will need to be regularly reviewed. It is the intent of TASC to review each standard annually. TASC is open to suggestions and comments from knowledgeable individuals within the State, although we ask that they be channeled through your Information Resource Manager (IRM).

C. **Contractors:** Contractors or other third parties are required to comply with these standards when proposing technology solutions to DTI or other State entities. Failure to do so could result in rejection by the Delaware Technology Investment Council. For further guidance, or to seek review of a component that is not rated below, contact the TASC at dti_tasc@delaware.gov.

D. **Implementation responsibility:** DTI and/or the organization's technical staff will implement this standard during the course of normal business activities, including business case review, architectural review, project execution and the design, development, or support of systems.

E. **Enforcement:** DTI will enforce this standard during the course of normal business activities, including business case and architectural review of proposed projects and during the design, development, or support of systems. This standard may also be enforced by others during the course of their normal business activities, including audits and design reviews.

F. **Contact us:** Any questions or comments should be directed to dti_tasc@delaware.gov.

IV.   Definitions/Declarations

A. Definitions

1. **Application** – For the purpose of this standard, an application is defined as a multi user application and/or back end process that supports *Moderate or higher* critical business processing as defined in the DR/BCP classifications found in the Delaware Information Security Policy.

2. **Integrated Development Environment (IDE) -** A set of integrated or semi-integrated tools for software development often run from within a single user interface.

   a) Tool integration can either take the form of features built directly into the IDE software or plug-ins (either by the same vendor or third party).

   b) Common tools in IDEs: code editor, debugger, compiler, object browser (for OO languages), database connectivity, visual designers (both for user forms and/or documentation aspects), source code and version control management utilities, code generation, language/framework context sensitive documentation (i.e., on-line help), work list tracking, deployment utilities, and project management features.

      c)

B. Declarations

An Application Programming Language must:

1. Be used to create code written based on best security practices.

2. Work within the State's IT Infrastructure.

3. Utilize the English language.

4. Be in General Support phase by the vendor or community who publishes the language, including free and open source software.

5. If being utilized for a critical and/or public facing application, be a language in which 2 or more team members are knowledgeable in its use and are capable of supporting for maintenance and production support purposes.

6. A language will be marked as **DECLINING** if ther are no language updates for 3 consective years and/or lack of support by the vendor or community is evident.

V.   Definitions of Ratings

Individual components within a Standard will be rated in one of the following categories.

COMPONENT RATING	USAGE NOTES
STANDARD – DTI offers internal support and/or has arranged for external vendor support as well (where applicable). DTI believes the component is robust and solidly positioned in its product life cycle.	These components can be used without explicit DTI approval for both **new projects** and **enhancement** of existing systems.
DECLINING – Deprecated - DTI considers the component to be a likely candidate to have support discontinued in the near future. A deprecated element is one becoming invalid or obsolete.	Via the State's waiver process, these components must be explicitly approved by DTI for **all projects**. They must not be used for **minor enhancement** and **system maintenance** without explicit DTI approval via the State's waiver process.
DISALLOWED – DTI declares the component to be unacceptable for use and will actively intervene to disallow its use when discovered.	No waiver requests for new solutions with this component rating will be considered.

A.   **Missing Components** – No conclusions should be inferred if a specific component is not listed. Instead, contact TASC to obtain further information.

VI.   Component Assessments

Scope: All application programming languages must be licensed in a manner appropriate to the way that they are actually used and they must be up-to-date with all appropriate published service patches. All application programming languages versions must be currently supported.

#	Programming Language	Rating	Comments
1	Java (Standard Edition and Enterprise Edition)	Standard	8 or higher
		Declining	JRE v 7
		Declining	JRE v 6 or lower
2	COBOL	Standard	Enterprise Cobol Version 4.2
		Disallowed	OS/390 & VM Version 2
		Disallowed	VS COBOL II Version 1
		Disallowed	OS/VS COBOL Version 1 Release 2
3	Natural	Standard	V8.2 Natural objects that were created with Natural versions 2.3, 3.1, 4.1, or 4.2 can be executed in a Natural 8.2 environment.
4	PHP (not to be used for applications, only scripting)	Standard	v 5.4
		Disallowed	Less than v 5.4
5	Perl	Standard	v 5
		Disallowed	Less than v 5
6	Python	Standard	v2.7 and higher
		Disallowed	Less than v 2
7	C	Standard	C11

8	C++	Standard	C++11, C++14
9	C# < 4.0	Disallowed	
	C# 4.0	Declining	
	C# 5.0	Standard	
	C# 6.0	Standard	
	C# 7,0	Standard	
10	.Net Framework < 4.0	Disallowed	
	.Net Framework < 4.5.2	Declining	
	.Net Framework 4.7.x	Standard	
11	VB .Net	Standard	
12	Visual Basic	Disallowed	No new development*
13	Ruby	Standard	V 1.8x and higher
14	Javascript	Standard	
15	PowerBuilder	Disallowed	No new development*
16	Adobe/Apache Flex	Disallowed	No new development*
17	Classic ASP/VB Script	Disallowed	
18	Lotus Script	Disallowed	No new development*
19	Silverlight	Disallowed	No new development*
21	Clipper	Disallowed	No new development*

22	Delphi	Disallowed	No new development*
23	HTML4 HTML5	Declining Standard	HTML 5 is strongly encouraged for all new development
24	WPS	Standard	v3.02
25	MXG	Standard	V33.33
26	Angular <4 Angular < 6 Angular 6 or >	Disallowed Declining Standard	
27	.NET Core 1.0 .NET Core 2.1.8 .NET Core 2.2.x or >	Disallowed Declining Standard	
28	PowerBuilder2 _____ Appeon PowerBuilder	Disallowed _____ Standard	No new development* _____ 2017 R2 Build 1769 or higher
29	Kotlin	Standard	1.0.2.71 or higher Official language for Android mobile development
30	Swift	Standard	4.2 or higher Official language for iOS mobile development

* = Bug fixes only. Runtime support must be monitored. No forced migration date unless specified.