DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
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CENTERS FOR MEDICARE & MEDICAID SERVICES (CMS)

Office of Information Services (OIS)
Enterprise Architecture Strategy Group (EASG)

Procedure:
CMS Accessibility Validation

Version 1.0
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1. Background

In 1986, Congress added Section 508 to the Rehabilitation Act of 1973. Section 508 established non-binding guidelines for information technology (IT) accessibility. On August 7, 1998, the President signed into law the Workforce Investment Act of 1998, which included amendments to the Rehabilitation Act. These amendments significantly expanded and strengthened the IT accessibility requirements in Section 508 and made them binding on Federal agencies.

Section 508, as amended, specifically requires that, when Federal agencies develop, procure, maintain, or use electronic and information technology (EIT), (1) individuals with disabilities who are Federal employees have access to and use of information and data that is comparable to the access to and use of the information and data by Federal employees who are not individuals with disabilities; and (2) individuals with disabilities who are members of the public seeking information or services from a Federal department or agency have access to and use of information and data that is comparable to the access to and use of the information and data by such members of the public who are not individuals with disabilities (FAR 39.201 and 36 CFR 1194.1).

Inaccessible technology interferes with an individual's ability to obtain and use information quickly and easily. Section 508 was enacted to eliminate barriers in IT, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals. Under Section 508, Federal agencies must give Federal employees and members of the public with disabilities access to EIT and information that is comparable to the access available to individuals without disabilities.

The first regulation implementing Section 508 was issued by the Architectural and Transportation Barriers Compliance Board (the "Access Board"), an independent Federal agency, whose primary mission is to promote accessibility for individuals with disabilities. This regulation is referred to as the Access Board’s “EIT Accessibility Standards,” which became enforceable on June 21, 2001. The Access Board’s standards set forth a definition of EIT and the technical and functional provisions and performance criteria necessary for compliance with Section 508.

The second rule issued to implement Section 508 amended the Federal Acquisition Regulations (FAR) to ensure that agency acquisitions of EIT comply with the Access Board’s standards. This regulation became enforceable on June 25, 2001.

2. Purpose of the CMS Accessibility Validation

Unless if exempt from the Section 508 Law, all electronic and information technologies (EITs) purchased or developed are to go through the procedure for accessibility validation at the Centers for Medicare & Medicaid Services (CMS.) The accessibility aspect of an EIT is a requirement noted in every contract to procure, deliver or develop it at CMS. As accessibility is a requirement of an EIT, it is subject to a procedure for user acceptance. At CMS, this procedure for such user acceptance is called accessibility validation, designed to verify the accessibility of an EIT. The purpose of this document is twofold.

First, this document is designed to inform anyone interested in learning the steps involved with validating an EIT at CMS for accessibility. When these steps are followed and an EIT is determined to be accessible in the earlier stages, an appointment to validate an EIT is sent out to the appropriate CMS stakeholders. On the accessibility validation date, an EIT is assessed and results of the validation may impact the delivery of an EIT.

Secondly, the outcomes of an EIT's accessibility validation can result in its placement or its disapproval to be placed in the infrastructure. The latter decision can create obstacles for the release of an EIT to its designated users. Therefore, for better chances of:

(a) Determining the accessibility of an EIT, and
(b) Placing an EIT in the infrastructure for actual use;

It is recommended that the developer or vendor work in the earlier stages to address all known issues related to the accessibility of an EIT.

The CMS Accessibility Validation is conducted at the CMS Assistive Technology Lab. The CMS Accessibility Validation involves:

(a) A methodical way of inspecting an EIT, and
(b) Subsequent human interaction, specifically with volunteers tasked with providing feedback on the accessibility of a technology. The goal of validating an EIT involving human interaction for accessibility is to determine if it can be used independently with scenarios for its given feature(s) (For example, form completion for submission.)

3. CMS Accessibility Validation Procedure

It is necessary to engage the CMS Tester, CMS Application Owner, Test Manager (a CMS contractor), and the CMS Section 508 Clearance Officer. All these active stakeholders must be properly prepared for the CMS Accessibility Validation. An EIT's conformance with the U.S. Access Board's EIT Accessibility Standards is documented in a **PAT** (CMS Section 508 Product Assessment Template) or a **VPAT** (Voluntary Product Accessibility Template) by the Information Technology Industry Council.

Step 1. The CMS Application Owner gathers information of an EIT's ability to meet the U.S. Access Board EIT Accessibility standards in a **VPAT**. Where a **VPAT** cannot be made available, the CMS Application Owner may collect a CMS **PAT** to be documented by the EIT vendor or developer. The CMS Application Owner must then deliver the **PAT** or **VPAT** to the Section 508 Clearance Officer for acceptance.

The CMS Application Owner also gathers the **Test Summary Report** from an accessibility test from an EIT vendor or EIT developer. The completed **Test Summary Report** is to be collected as an independent finding from an EIT vendor, or completed along the CMS Integrated IT Investment & System Life Cycle Framework by an EIT developer.

Tip: For an application undergoing a custom development effort, a **PAT** should be completed as indicated in the CMS System Lifecycle Framework. The other artifact in the CMS System Lifecycle Framework is the **Test Summary Report**, required for all custom development efforts for CMS.

The **Test Summary Report** from an EIT's accessibility test has a section for accessibility. In the **Test Summary Report**, an EIT developer should document at the very least:
(a) Methodology(ies) used for accessibility testing;
(b) All issues of an EIT not complying with the U.S. Access Board's EIT Accessibility Standards;
(c) The degree or extent in which an EIT meets conformance with the U.S. Access Board's EIT Accessibility Standards, and;
(d) Where the issues are found related to non-compliance with the U.S. Access Board's EIT Accessibility Standards.

Step 2. The Section 508 Clearance Officer learns about the accessibility of an EIT from reviewing the **PAT** or the **VPAT** and the **Test Summary Report**.

Tip: The CMS Section 508 Clearance Officer reviews the **PAT** or **VPAT** for compliance with the U.S. Access Board's EIT Accessibility Standards. All applicable EIT must comply with the U.S. Access Board's EIT Accessibility Standards or must provide alternate means of accessibility.

The CMS Section 508 Clearance Officer learns from reviewing all issues concerning accessibility found in the **PAT** or **VPAT** and the **Test Summary Report**, and any corrective action plans currently in place. When questions arise concerning the accessibility of an EIT, a meeting may be scheduled for clarification.

After review, the CMS Section 508 Clearance Officer communicates the shortcomings of the **PAT** or **VPAT** advising any need to bring an EIT to fuller

compliance with U.S. Access Board's EIT Accessibility Standards.

If an EIT is a Web-based application or a Website, the Section 508 Clearance Officer conducts an automated test using a tool called "Accenture Digital Diagnostics Engine." The Section 508 Clearance Officer generates a **Web Compliance Findings Report**, and sends it to the CMS Application Owner for resolution and repair.

Depending on the outcomes of this evaluation, the procedure may end here if an EIT is deemed not accessible in this preliminary stage.

Step 3. The Test Manager schedules the CMS Accessibility Validation if the EIT needs to be tested within a short period of time. A test plan is always needed (Step 4) for the test, but the test can be scheduled in advance. The Test Manager arranges and coordinates the dates and availabilities of all active stakeholders to be present in the CMS Accessibility Validation date.

Tip: An invitation can also be extended to the developer(s) of the system to be present on the Accessibility Validation date.

Step 4. Upon collecting the shortcomings of the **VPAT** or **PAT**, the **Test Summary Report**, and/or **Web Compliance Findings Report,** the CMS Application Owner drafts the test plan for validation outlining test cases to be followed during the Accessibility Validation date.

If there are any minor issues impacting features of an EIT as communicated in the shortcomings of a VPAT or PAT, their scenarios are to be documented as test cases. This is done to determine the impact that an existing issue has to a potential user. Guidance to develop test cases can be obtained from the Test Manager.

Tip: Test cases outline scenarios to use an EIT from a user's perspective. For example, test cases outline which steps the user need to take to log into an application, and conduct all other functions using an application's specific keyboard shortcuts without using any assistance from a mouse. Certain commands can be obtained in advance from a vendor of an assistive technology utilized at the CMS Assistive Technology Lab.

Step 5. The Test Manager finalizes the test plan for validation. The final test plan for validation is incorporated into a template with additional sections (including roles & responsibilities, configuration and hardware requirements). The final test plan for validation will be used in the Accessibility Validation.

Tip: While the test plan for validation is being drafted, the CMS Application Owner can arrange to deliver the EIT to be installed or configured in the CMS Assistive Technology Lab as long as it is compatible with the

current infrastructure. The CMS Application Owner should also visit the CMS Assistive Technology Lab to ensure that the technology is under proper configuration prior to the Accessibility Validation date.

Step 6. On its scheduled date of inspection and tester's evaluation, the time window to conduct the CMS Accessibility Validation is approximately of one to two hours, and is staged as follows:

The first stage is to evaluate an EIT using an individualized Acceptance Guidance from Buyaccessible.gov, a service administered by the General Services Administration.

The second stage is to evaluate an EIT with a CMS tester. The CMS tester follows test cases outlined in the test plan for validation. The CMS Application Owner or EIT vendor or contractor guides the CMS tester through test cases. The operating assistive technology currently JAWS Version 11 responds to the CMS tester's input. The CMS tester then provides feedback of the EIT being validated.

Tip: The CMS Tester is a CMS employee in a volunteer assignment tasked with giving true and unbiased feedback of an EIT under assessment. The CMS Tester verbalizes outcomes and system behaviors to the Section 508 Clearance Officer, who makes a note of all issues found during the Accessibility Validation.

Accessibility Validation also applies for the testing of hardware. For the validation of hardware, there is no need to use an assistive technology, but test cases for validation are to be documented.

If an EIT brought to the CMS Assistive Technology Lab renders poor results as reflected in the final score, an EIT cannot pass the CMS Accessibility Validation.

Step 7. If issues are found, whether an EIT passes or fails the CMS Accessibility Validation, they must be resolved. These issues must be addressed through a **Remediation Plan**. The CMS system developer, vendor or contractor is liable for these issues, and for correcting them. Please refer to the Section 508 language stated in contracts awarded. A **Remediation Plan** is to be delivered to the Section 508 Clearance Officer.

Tip: The CMS Application Owner should work in conjunction with an EIT vendor or EIT developer to draft a plan for remediation, reconcile and correct issues found in the Accessibility Validation within one year.

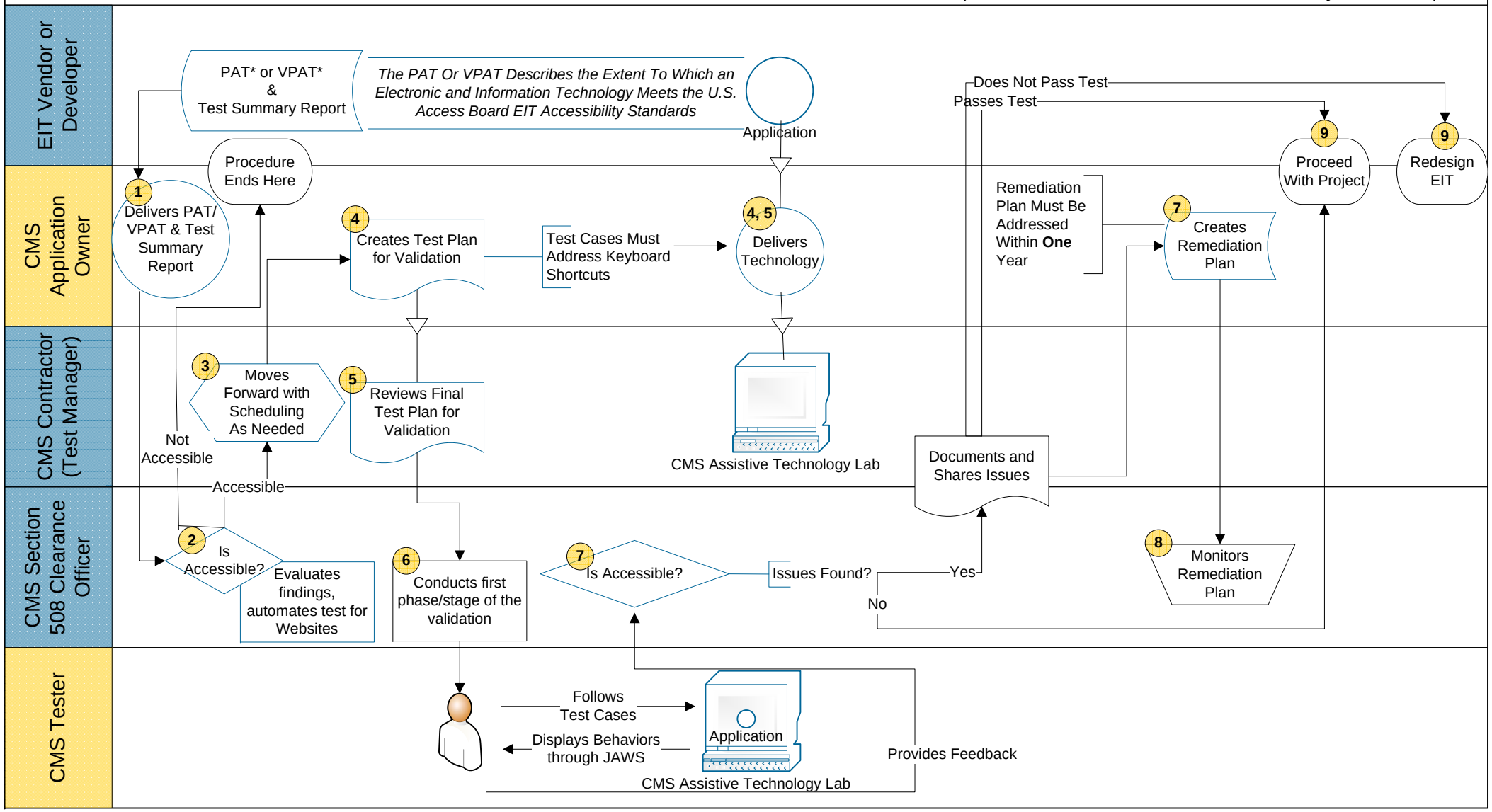
Step 8. The Section 508 Clearance Officer is then charged with monitoring the **Remediation Plan** to ensure that suggested planned dates are achieved as

documented in a **Remediation Plan**. When no actions are taken to address and correct issues found during the Accessibility Validation, the Section 508 Clearance Officer may escalate the necessity to correct them.

Step 9. Depending on the outcomes of the CMS Accessibility Validation, an EIT may proceed with the project to achieve its objectives or it may not. If an EIT does not pass the CMS Accessibility Validation, it most likely needs to be redesigned.

OVERVIEW OF CMS SECTION 508 VALIDATION FOR SOFTWARE APPLICATIONS

Self-Contained Closed Products, Web, Telecommunications, Video/Multimedia, Self-Contained and Personal Computers Also to be Validated. Installation May Not be Required.



CMS Assistive Technology Lab – Hardware and Software Used for 508 Testing: * Dell Latitude E6400 Laptop Computer * Microsoft Windows XP Professional * Version 2002 Service Pack * Build e6400 Instel Core 2 Duo CPU * 2.26 GHZ, 2.95 GB of RAM * Video Graphics Processor / Vendor NVIDIA Quadro NVS 160M * Video Memory 256.0 MB * Screen resolution: 1200 x 800w * Programs: Jaws version 11, Jaws version 10, Zoomtext version 9.1, Magic version 11, Commonlook, Freedom Scientific FEDSHOW, FSI Freedom Scientific FS Reader 2.0, Freedom Scientific Synthesizer Eloquence, Freedom Scientific Talking Installer 10.0

8 Numbers Relay the Sequencing of Activities

*PAT is CMS Section 508 Product Assessment Template. It can be found here.
*VPAT is Voluntary Product Accessibility Template
*Test Summary Report can be found here.

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4. Evaluation Criteria Used for the CMS Accessibility Validation

During validation, there are two stages held to inspect and see how an EIT responds to a tester as outlined in Step 6 above under the section "CMS Accessibility Validation Procedure." The first stage is to conduct an inspection of an EIT using the BuyAccessible Acceptance Guidance and a checklist. The checklist is used to determine if an EIT meets or not all the applicable criteria for each standard of the U.S. Access Board. Under "Evaluation Results," all issues identified against a U.S. Access Board standard are documented.

The second stage involves a user to grade the acceptance of an EIT with all the issues that have been identified and not previously repaired. The methodology designed to grade the accessibility of an EIT takes several factors into consideration:

Issues as they relate to the EIT Accessibility Standards by the U.S. Access Board;
Scenario Priority - Consideration of scenarios being of core (C), advanced (A) or expert (E) functionalities although they are not the decisive factors. Core is for an experience/scenario commonly exposed to a user. Advanced is less common to a user, and may require a greater depth of knowledge in the application. Expert is the least common to a user, and requires the greatest depth of knowledge in the application.
User Rating (User's input of scenarios reflected in the test cases; from being:

-Completely Unacceptable
-Marginally Unacceptable
-Marginally Acceptable
-Completely Acceptable

A matrix is generated from the user's feedback and scenario priority. There are twelve (12) possible outcomes.

(Priority X User Rating)	Cu (Completely Unacceptable)	Mu (Marginally Unacceptable)	Ma (Marginally Acceptable)	Ca (Completely Acceptable)
C (Core)	CuC	MuC	MaC	CaC
A (Advanced)	CuA	MuA	MaA	CaA
E (Expert)	CuE	MuE	MaE	CaE

The scenarios are then tallied with outcomes and pass/failure score next to them. Please see example below:

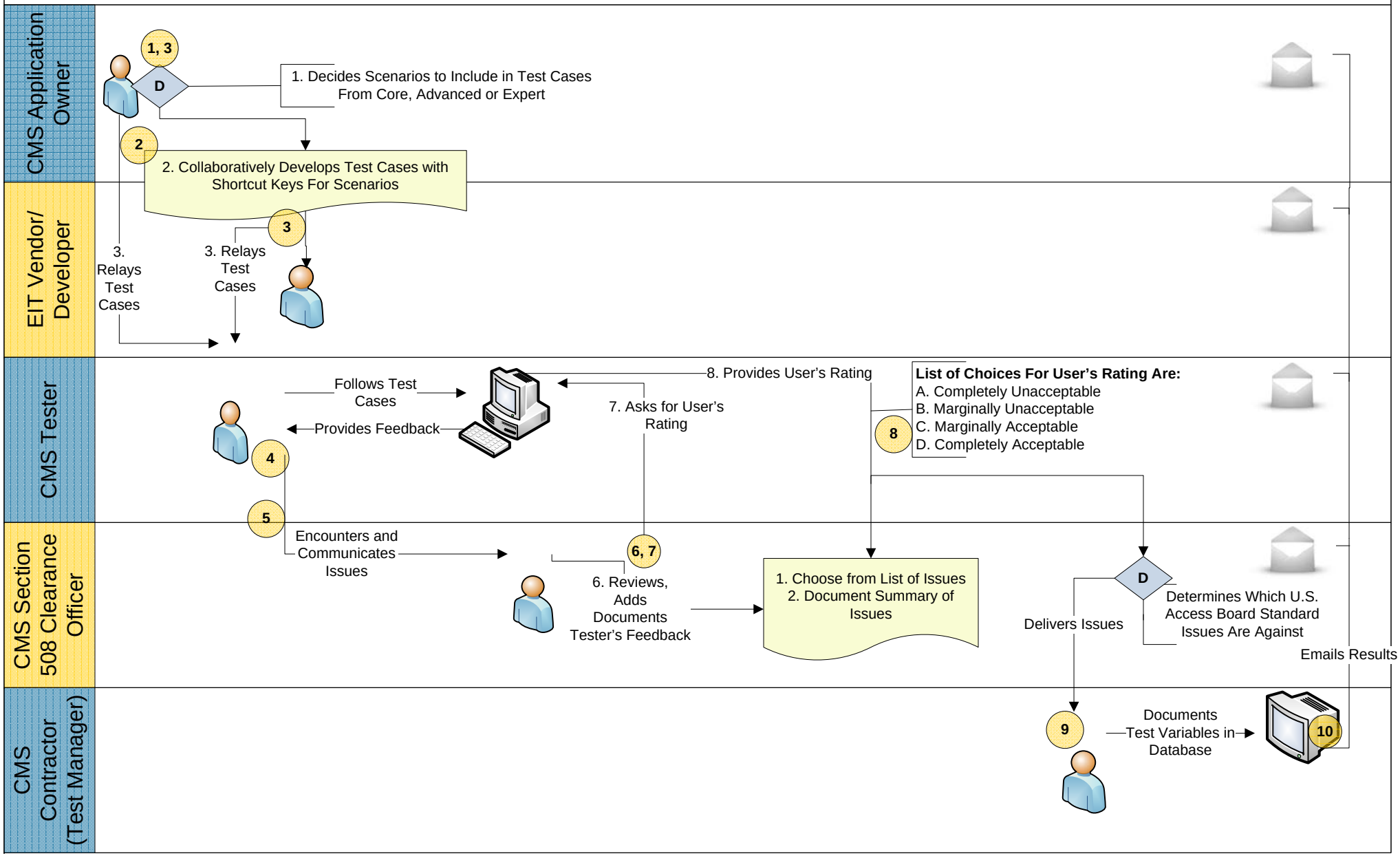
	Tallies	**P/F**		**Tallies**	**P/F**		**Tallies**	**P/F**
CuC	1	Fail	**MuA**		N/A	**MaE**		N/A
CuA		N/A	**MuE**	1	Fail	**CaC**		N/A
CuE		N/A	**MaC**		N/A	**CaA**	1	Pass
MuC		N/A	**MaA**		N/A	**CaE**		N/A

CMS Accessibility Validation

Given the number of tallies, a percentage can be attributed to the score; which can be acceptable or not acceptable to CMS. From the table below, the score of 33.33% has been derived from the number of tallies representing each of all the scenarios:

Total Fail	2
Total Pass	1
Total	3
Score	33.33%

A CLOSER VIEW OF THE SECOND STAGE OF THE CMS VALIDATION FOR ACCESSIBILITY AFTER FIRST STAGE OF INSPECTION OF AN EIT



8 Numbers Relay the Sequencing of Activities

*The EIT Vendor/Contractor Or the CMS Application Owner May Relay Test Cases

5. CMS Accessibility Validation Infrastructure

The information below may be beneficial to ensure a technology's compatibility with the existing Accessibility Validation infrastructure for installation. Proper installation of a technology is necessary so that active stakeholders can gain access to the technology on the CMS Accessibility Validation date.

The infrastructure in the CMS Assistive Technology Lab is comprised of the following:

Dell Latitude E6400 Laptop Computer
Microsoft Windows XP Professional Version 2002 Service Pack
Build e6400 Intel Core 2 Duo 2.26 GHZ CPU
2.95 GB of RAM
Video Graphics Processor / Vendor NVIDIA Quadro NVS 160M
Video Memory 256.0 MB
Screen resolution: 1200 x 800w
Programs: Jaws version 11, Jaws version 10
Other Assistive Technologies (ATs): Zoomtext version 9.1, Magic version 11, Commonlook, Freedom Scientific FEDSHOW, FSI Freedom, Scientific FS Reader 2.0, Freedom Scientific Synthesizer Eloquence, Freedom Scientific Talking Installer 10.0

6. References

1. 29 U.S.C. 794d (Rehabilitation Act of 1973 as amended), Public Law 93-112

2. 36 CFR 1194 (508 Standards)

3. BuyAccessible Wizard
   http://www.buyaccessible.gov

4. CMS Integrated IT Investment & System Lifecycle Framework Graphical Version
   http://www.cms.gov/SystemLifecycleFramework/downloads/ILC_Framework.pdf

5. CMS Integrated IT Investment & System Lifecycle Framework Accessible Version
   http://www.cms.gov/SystemLifecycleFramework/Downloads/ILCFrameworkTextual.pdf

6. CMS Section 508 Product Assessment Template
   http://www.cms.gov/InfoTechGenInfo/downloads/Section508ProductAssessment.zip

7. CMS Test Summary Report
   http://www.cms.gov/SystemLifecycleFramework/downloads/TestSummaryReport.zip

8. Federal Acquisition Regulation (FAR) 39.2 (Section 508)

9. Section 508 Education
   http://www.section508.gov

10. U.S. Access Board Section 508 Standards
    http://www.access-board.gov/sec508/standards.htm

11. W. Bradley Fain and Dennis Folds, “Accessibility Evaluation Methodology,” October 2001