

NAVLP Handbook 150-22, 2005 Technical Supplement:

Review VSTL procedures/standards for the following elements of the VSS 2002 (and VVSG 2005).

Color coding

Blue changes checklist

Green notes

Magenta notes on interpretation of standard.

Handbook 150-22, § 1.5.1. Core voting system tests:

- ___ 1 Technical Data Package review,
 - Entry to check in documents
 - Identify scope : FCA Test Document Reviews
- ___ a Verify that TDP contains required document content and identify vendor's document meeting requirements.
 - Vendor's trace (use NASED Document trace for 2002, updated for 2005?)
 - Check against QA and Configuration (vendor's)
 - Track through PCA Document Review Template
- ___ b Identification of deliverables: Documents or manuals to be delivered to client for operation, maintenance, and training.
 - C Needs clarification
- ___ c Terms and references.
 - OK Template for Test Plan/Report
 - Insert Terms and Definitions.
- ___ d Review of documents for completeness and consistency
 - PCA Document Review
- ___ e Quality Assurance plan
 - Tab 2 of PCA Document Review
 - Deliverables----
- ___ f TDP Document Trace matrix directory. Matching the document requirements to the vendor's document names or titles.
 - PCA Document Review
 - Vendor provided and checked for correctness
 - Reports to summary page
- ___ g Review of System release change log
 - Tab 13 for change log
- ___ h Review of vendor tests.
 - During interview of Todd Prebynski, FCA TDP Review, Lead, for first year, iBeta will use iBeta tests but will perform Review and validation of vendor tests*
 - Lead reviewer loads to the test*
 - Includes but not limited to:*
 - i Readiness Check*
 - Manuals Tests. FCA System Test Case Template. Test Step Item 5*
 - ii Operational Status Check*
 - FCA Environmental Test case. Operational Status Check. Setup and specify as direction to environmental subcontractor.*
- ___ i Review of prior test lab tests
 - Hardware: Request professional opinion from subcontractor on whether test is required (Subcontracting to include engineering opinion on need of the test)
 - FCA Test Document Review, Functional testing Tab (Category)
 - (instruction f)

- ___ j Production of formal Test Plan
VSTCA Certification Test Plan uses the Reviews.

- ___ 2 Source code review,
Kevin and Sean
C++ application, App A, v1.2.8 (versioning is imposed but simulating0 Audit, Inc Mock
Voting System
Voting Project/Code and Equipment Receipt
Checked in
Identify code review scope of effort
VSS: 2005
Full/Partial/Regression: Full
6.1.2, Identify review source code reviewers
See Source Code Review 6.2.2.
- ___ a Catalog of source code
Software Language: C++
(during checkin confirms the language for all files and updates scope)
Assemble compiler/manufacturer
Open source: location in escrow, and any modification
Populate Review Sheets
Files and function/class
(color coded keying: reject results in read highlighting)

- ___ b Catalog of compilation environment including COTS components of build.
COTS: identify source, version, how its marked
Make sure they can procure the software.
(check EAC Testing and Certification Program Manual)
If generated, look at version of application generating
Modified template to remove non-applicable standard
- ___ c Determination of changes from prior review
Use differencing tool or tool in development environment
(WinDiff, CompareIt!, ExamDiff, WinMerge, DELTA or development environment)
C The check is based on absolute difference and not the vendor's description of change
The standard requires review of change log but does not specify how it is used.

- ___ d Review for coding conventions and integrity requirements

Identify vendors' source code conventions.
 - i *Demonstrate*
Could not obtain coding standard VVSG 5.2.6.1
120 character line
*Not have a default to case statement (**reject**)*
All comments to start with developer initials
(Review criteria documents variation used, rejected items not reported,
Shows up in anomalies if not adjusted)
 SCR 6.1.5: Create language specific review template
(generic is C++)
Generic Review Criteria provides for modification of template if no prior version
exists
Update Source Code Review Template
(see catalog code)

Store as C++AMVS v1.2.8 12042006

Language+AppName+version+datecreated defined in SCR. 6.1.6

*----Second phase of demo----code review of block of classes but finishing final classes
(recorded under security demo)*

___ d+ Assess manpower requirement

Each reviewer has a sheet

Kickoff meeting 6.1.8

Location

Review of criteria

Tools

C-DOC, Aivosto, Parasoft's CodeWizard

Used for partitioning

Review for convention,

___ e Review for security

\ Malicious software Vol 1 7.4.2

Generic Review Criteria includes

Macro viruses

Worms

TROJAN HOURSE

LOGIC BOMBS

BOTS

HARD CODED PASSWORDS (Fails/explanation)

TAKEOVERS

MALWARE;

Review for security is manual (tools gives too many false positivities.

Currently conservative interpretation of the standards.

i Demonstrate

-----2nd phase ----- final classes walkthrough

End of day reporing

Kevin: reported 12 with 60 exception

Comments in line

Variable

Variables initialization

Headers

Single exit point (return in an if statement)

Naming readability (one letter variation)

Explicit return values

(void)

Kevin's method

Start with one class going through single requirement at first until familiar with Coding practices

Line length

As learned, found could go look at multiple classs and more aware of relations between class

Sean: checked in checklist

Header comments

Single exist

Multiple expectables

Variable comments

(vendor) Initials

Line number, problem

Notes picked up a call to an item not delivered

But if standard verifiable resource or something that may need to be reviewed

May also effect build issues

(Sean) Reviewed(code in Visual Studio

Cycles through by requirement item, repeating passes until requirements are all reviewed

Naïve approach to self-modifying code looking only for file opens.

Multiple exist (return in middle of code)

Multiple executables on line (class all in if condition resulting in a return)

Results not accepted until all rejects are cleared unless vendor asks for it.

Quality check on code review performance

Peer review (code reviewers between themselves)

And review lead (samples based experience of reviewers)

-----Deliverables-----

___ f Report of results

___ g Witnessed build from verified source code and COTS

(appears to recognize new procedure)

Issue:

Submit test report.

Accepted

Initial decision

Final build

But build must be completed before test completed.

Walkthrough; TrustedBuild Procedure

- a. Review vendor's build procedure
- b. Identify build witnessed
- c. Check for readiness of code for build
- d. Get any escrowed code for original source if changes
- e. Directory of code, verify complete
- f. Digital signature for each module of source
- g. Capture on unalterable media that has not left iBeta control
- h. Construct environment
 - i. Use iBeta application to clear machine.
 - ii. Install on clean system
 - iii. Record data on process
 - iv. Build with vendor consultation but by iBeta technicians
 - v. Verify control of environment
- i. Document 3rd party source code configuration, libraries
 - i. Need to validate source
- j. Produce digital signature combined source
- k. Capture disk image

- l. Record what the final build version will be when complete (unique identifier)
- m. Complete and document build on template (legal record)
 - i. Record if discrepancy and report
- n. Document the digital signature of entire build
- o. Explain any significant differences
- P Provide to vendor for creation of installable disk

Need specification of the digital signature used
System Identification Tool

- ___ 3 Physical configuration audit,
- ___ a Configuration verification against Configuration Management plan
Ok Recording the baseline delivery of system configuration within the plan
And checking in against their documents.
OK PCA Configuration Template,
On each test case, iBeta reference the PCA configuration document
And verifies the actual of the test against the reference
If any change, iBeta updates the configuration and creates a new copy under sharepoint versioning.
- ___ b Accessibility standards
FCA Characteristic Test Case (includes Physical, Design, Construction, Maintenance, Accessibility & Usability)
Separate Tabs for VVSG and VSS
(Using VVSG) 3.1.4a-I, 3.2.1c (Biometrics), 3.2.2.1.b-3.2.2.g (Blindness), 3.2.3.b-e (Dexterity) 3.2.4a-3.4.2c (Mobility), 3.2.5a-b (Hearing), 3.2.6 (Speech), Language,
X-Specification of test election to use for this test case provides criteria for the election definition but allows the test manager to “go out and pick a test election available from the system level test cases”.
- ___ c Construction, including safety **and maintenance**
Physical Characteristics 4.2.1-4.2.2, Transportation 4.2.3a-b, Materials 4.3.1a-b, Durability 4.3.2, Maintainability-4.3.4.1 -4.3.4.2, Availability 4.3.5 a-c
- ___ d Validity of operations provided in deliverable manuals
FCA Test Doc Review Form B, Test Plan and Procedure 6.2.2.2.a
Legality of interpretation to report deliverables.
- ___ e Hardware transportation and storage tests. If not performed directly under VSTL’s scope of accreditation or subcontractors of VSTL:
Environmental Test Case Template Form B.4.6
Provides Operational Status Test (Tab *ibid*)
- i Verify test lab is accredited by MRP body.*
 - ii Verify equipment under test is for same configuration as being certified*
 - iii Verify that operational status check was appropriate.*
- ___ f Hardware operational environmental test.
Environmental B.4.7
Note: The system integration tests for accuracy and reliability (e.1. and 2. below) are conducted in conjunction with this test and the final criteria include all components used to consolidate polling place and jurisdiction results from individual voting machines.

- ___ g EMC and electrical test suit. If not performed directly under VSTL's scope of accreditation or subcontractors of VSTL:
 - i *Verify test lab is accredited by MRP body*
 - ii *Verify equipment under test is for same configuration as being certified*
 - iii *Verify that operational status check was appropriate*
- ___ h Safety inspection. If not performed directly under VSTL's scope of accreditation or subcontractors of VSTL:
 - i *Verify test lab is accredited by MRP body*
 - ii *Verify equipment under test is for same configuration as being certified*
 - iii *Verify that operational status check was appropriate*
 ---Deliverables---
- ___ i Reports for the hardware, EMC and electrical, and Safety tests and inspections.
 - i If necessary, provide a statement reporting the results of the verification on the applicability of the reports.
- ___ j Directory of deliverables, including hardware and software setup and both application and COTS installed files. (Part of witnessed build documentation)
- ___ 4 Classal configuration audit,
 - ___ a Classal Requirement matrix against technical specification and manuals
 - ___ b Test Specifications for classal requirements
 - ___ c Verify classal operation against requirements of Vol I, §2 thru §6 (See Requirements Checklist)
 - ___ d Verify classal operation against requirements of vendors technical specification and manuals
 - ___ e Verify HAVA classal requirements.
 - Deliverables ----
 - ___ f Provide a Requirement matrix showing which tests performed and requirement satisfied.
 - ___ g Report deficiencies encountered and resolutions of deficiencies.
 - Note: not all deficiencies will result in a recommendation to not certify.*
- ___ 5 System integration tests,
 - ___ a Accuracy. For non-COTS systems, includes 48 environmental operating test.
 - ___ b Reliability. For non-COTS systems, includes 48 environmental operating test.
 - ___ c Volume tests, and
 - ___ d Security tests.
 - ___ e (VVSG 2005) Cryptographic
 - ___ f Telecommunication, as applicable to system design.
 - ___ g System end-to-end of EMS, vote recording, vote tabulation, consolidation, and canvass reporting.
 - Deliverables-----
 - ___ h Report on tests performed and their results.

§ 5.

- ___ 6 Qualification Test Report
 - ___ a Introduction.
 - ___ b Qualification Test Background (B2)
 - i General Information about the qualification test process. (For outside readers not familiar with the ITA testing).
 - ii A list and definition of all terms and nomenclature peculiar to the hardware, the software, or the test report
 - ___ c System Identification (B3). This is the test hardware and software used in this test.
 - i System name and major subcomponents.

- ii System Version.
 - iii Test support hardware and
 - iv Specific documents (deliverables) from the TDP used to support testing
 - ___ d System Overview (B4). Describes the voting system in terms of
 - i its overall design structure,
 - ii technologies used,
 - iii processing capacity claimed by the vendor and
 - iv modes of operation.
 - v (May) include other products that interface with the voting system. *Note: Shall include components necessary to consolidate and produce final results including telecommunications.*
 - ___ e Qualification Test Results (B5). “This section provides a summary of the results of the testing process, and indicates any special considerations that affect the conclusions derived from the test results. This summary includes:
 - i Acceptability of the system design and construction based on the performance and software source code review.
 - ii The degree to which the hardware and software meet the vendor's specifications and the standards, and the acceptability of the vendor's technical and user documentation
 - iii General findings on maintainability
 - (1) Includes notation of specific procedures or activities that are difficult to perform.
 - iv d. Identification and description of any deficiencies that remain uncorrected after completion of the qualification test
 - (1) that has caused or is judged to be capable of causing the loss or corruption of voting data, providing sufficient detail to support a recommendation to reject the system being tested.
 - (2) deficiency in compliance with the security requirements,
 - (3) deficiency in compliance with the accuracy requirements,
 - (4) deficiency in data retention, and
 - (5) deficiency audit requirements are fully described); and
 - v Recommendations to NASED ITA committee for approval or rejection
 - vi Note: Deficiencies that do not result in a loss or corruption of voting data shall not necessarily be a cause for rejection.
 - ___ f Appendix Test Operations and Findings (B6)
 - i Additional details of test results needed to enable understanding of the conclusions. B. b. Organized to reflect the Qualification Test Plan.
 - ii Summaries of the results of
 - (1) hardware examinations,
 - (2) operating and non-operating hardware tests,
 - (3) software module tests,
 - (4) software class tests, and
 - (5) system-level tests (including
 - (6) security and
 - (7) telecommunications tests, and
 - (8) the results of the Physical and
 - (9) Classal Configuration Audits)
 - ___ g Appendix Test Data Analysis (B7)
 - i summary records of the test data and
 - ii the details of the analysis. The analysis includes

- (1) a comparison of the vendor's hardware and software specifications to the test data, together with
- (2) any mathematical or statistical procedure used for data reduction and processing.