



Change History Log:

October 28, 2002

In Response Reply to: 02EDU0910

Department of Education
Student Financial Assistance

Subject: Contract # ED-99-DO-0002
Task Order # 69 Integrated Technical Architecture (ITA) Release 3.0
Deliverable 69.1.5 ITA Release 3.0 Build and Test Report

Deliverable 69.1.5 ITA Release 3.0 Build and Test Report- Significant Concerns					
Suggested Changes/Comments	Page	Author	Date	Change Made Y/N	Comment
<p>1. 16 times within this document, it is indicated that more detailed information is presented in an Appendix. Neither the Table of Contents references nor the actual document contains any appendices; furthermore, it is unclear how many appendices are being referenced.</p> <p><i>The many difference references to an Appendix are for important test details.</i></p>	Throughout document	IV&V		N	<p>Provide appendices for all Appendix references and/or provide referenced test details.</p> <p>ITA response: There is an appendix document entitled: 69.1.5 ITA Release 3.0 Build & Test Report Appendix v.1.0.doc</p> <p>This document was sent along with the Build & Test report. This is the appendix being referenced.</p> <p>The appendix references in the Build & Test report were changed to Build & Test Report Appendix Document.</p>
<p>2. The document 69.1.3 ITA Technical Specification describes 9 rather than 8 frameworks. In particular, the Object Pooling Framework is discussed in the Technical Specification, but not in the newly reviewed document.</p>	Throughout document	IV&V		N	<p>Include build and test details about Object Pooling Framework as described in the ITA Technical Specification.</p> <p>ITA response: The ITA Object Pooling Framework was not built. Though the ITA planned to build and test this</p>



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					framework when the Technical Specification (69.13) was written, subsequent research revealed there was no immediate need for this framework. Research also indicated that similar functionality and capability could be derived from Java Messaging Service.
3. There are sections, labeled "Results", that indicate tests were performed successfully (i.e., pass status), but actual test results data are not provided. By not providing any actual test results data, it is not possible to review or verify the conclusion that tests passed nor is there any way of comparing these test results data with any future test results data.	Throughout document	IV&V		N	In sections labeled "Results" actual test results should be documented rather than just providing a statement that the test passed. There is also a sections labeled "Test Conclusion" which provides a similar "pass status" statement. ITA response: The test data results are located in the Build & Test Appendix document, so that the main Build & Test report would be more manageable.
4. The title and stated purpose of this document indicate that build procedures are provided. Section 2.5 indicates that the Java - based build tool, ANT, was used to build specific distribution packages for each RCS framework. There are no detailed build procedures presented in this document.	Page 4, section 1 Page 6, section 2.5	IV&V		N	Define comprehensive build procedures for each framework for ITA Release 3.0 RCS. ITA response: The detailed build procedures for each RCS are included in the Build & Test Report Appendix document.
5. Statement: <ul style="list-style-type: none"> • "Test conditions are documented in a tabular format with the following column headings:" • <i>Then a table is presented identifying and describing 8 columns.</i> 	Page 4, section 2.1	IV&V		N	Provide test conditions for each test that include the following: <ul style="list-style-type: none"> • Condition number • Detailed condition



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<ul style="list-style-type: none"> Such tabular details are not present for any of the indicated tests 					<ul style="list-style-type: none"> Test class name Test class method Class name Method name (Expected) results Data file name <p>ITA response: These tables are located in the Build & Test Report Appendix document.</p>
<p>6. Statement: <i>"The performance analysis for each service is documented in this report. The topics included in the performance analysis are:</i></p> <ul style="list-style-type: none"> Background information Test harness design <ul style="list-style-type: none"> Test environment Test configuration Test scenario Memory (Heap) analysis Performance analysis General Performance Metrics" <p>Some but not all of the topics listed above are documented for each performance test identified in this document.</p>	Page 5, section 2.2, 4 th paragraph	IV&V		N	<p>Provide all indicated topics/details (e.g., General Performance Metrics) for each performance test presented in this document.</p> <p>ITA response: The details of the performance test are included in the Build & Test Report Appendix.</p>
<p>7. It is indicated that a "formal unit test was not conducted on" the following frameworks:</p> <ul style="list-style-type: none"> Web Conversation Web Services (SOAP) <p>Then it is indicated that the framework "is leveraged from an established framework created by the Jakarta Group's as part of the Apache project".</p> <p>This does not explain why unit testing was not performed.</p>	Page 7, section 3.1.1 Page 18, section 3.8.1	IV&V	Oct. 25, 2002	Y	<p>Provide a clear reason unit testing is not needed, rather than just implying that framework was tested by others elsewhere.</p> <p>ITA response: The following statement has been added to the Build & Test report "Apache frameworks are open source frameworks. They have been already unit tested by Apache. It is not necessary to re-perform the unit test on an established open source framework."</p>
<p>8. Statement: <i>"Developers will need to keep in mind.... Developers will also have to be cautious about ..."</i></p>	Page 7, section 3.1.1, 3 rd paragraph	IV&V	Oct. 25, 2002	Y	<p>Test results should focus on testing rather than providing developer</p>



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It is unclear why developer reminders are discussed under test results".					guidance except for tests that developers may perform. ITA response: The first statement was changed to remove the developer reference part. The second statement was removed entirely.
9. Statement: <i>"The level change of the troughs is unexpected since the test was conducted with the assumption that all temporary objects will be removed from the heap."</i> Unexpected results usually mean that a test failed. An analysis should be performed to explain the cause of and actions to be taken for "unexpected results"	Page 9, section 3.1.3.2.1, 3 rd sentence	IV&V		N	Explain the nature of and actions taken for resolving the "unexpected results". ITA response: The next sentence states: <i>"The next section will examine the instance summary to determine if these are loitering objects."</i> The next section, 3.1.3.2.2 Instance Summary, explains how this situation was examined.
10. Statement: <i>"Although this is not a memory leak, it is necessary to keep in mind that overall system performance could be impacted if a tremendous number of Actions are defined per Application Server."</i> Simply "to keep this in mind" does not seem to be an adequate action. This does not appear to be a test issue, but may be a build issue.	Page 9, section 3.1.3.2.2, last sentence	IV&V	Oct. 25, 2002	Y	Define recommended steps to prevent this from being a problem. ITA response: Added the following statement: <i>"Although the Action objects will remain in the heap memory when not in use, they will be available without the additional overhead of being re-instantiated the next time the Action is invoked. This paradigm follows the theory that an object invoked will most likely be used again."</i>
11. Statement: <i>"Two test scenarios were used for both automated and manual testing."</i> Step by step details about the nature of these two scenarios are not	Page 10, section 3.2.2.1	IV&V		N	Defined the steps for the unit test scenarios that were executed. ITA response: These



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provided. See page 8, section 3.1.3.1.2 as an example of such step by step details.					detailed steps are included in the Build & Test Report Appendix in Section 2.5.
<p>12. Statement: <i>“Unit testing was done in both automated and manual fashions during the test session. Both automated and manual tests went through with pass status.”</i></p> <p>The conditions and criteria for the “pass status” are not explained.</p>	Page 10, section 3.2.2.2	IV&V		N	<p>Identify the actual data results that were used to determine that tests passed.</p> <p>ITA response: The conditions and criteria are included in the Build & Test Report Appendix in Section 2.5.</p>
<p>13. Statement: <i>“By running the same process multiple times, better statistics could be collected.”</i></p> <p>The specific statistics that were collected should be described as well as the their values for each performance test.</p>	Page 10, section 3.2.3.1, last sentence	IV&V		N	<p>Describe the specific statistics that were collected and provide the actual values collected for each statistic.</p> <p>ITA response: These performance test statistics are included in the Build & Test Report Appendix in Section 2.6.</p>
<p>14. Statement: <i>“Code changes were applied and the problem was fixed”.</i></p> <p>15. The regression testing performed to verify that problems were corrected and that new problems were not introduced by the code changes should be described.</p>	Page 10, section 3.2.3.2, 2 nd paragraph	IV&V		N	<p>Explain the nature of testing performed as a result of “code changes”.</p> <p>ITA response: This is explained in the Build & Test Report Appendix in Section 2.6.3.1.</p>
<p>16. Statement: <i>“A table of the top ten method time is provided for the developer to reference when including the framework in his/her application”.</i></p> <p>No such table was found in this document.</p>	Page 10, section 3.2.3.2, 2 nd paragraph, last sentence	IV&V	Oct. 25, 2002	Y	<p>Provide indicated table.</p> <p>ITA response: The table is included in the Build & Test Report Appendix in Section 2.6.4.1.</p> <p>The sentence was changed to <i>“Section 2.6.4.1 of the appendix includes a table of the top ten method times for the developer to reference when including the</i></p>



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					<i>framework in his/her application.</i>
<p>17. Statement: <i>"As shown in RCS Web Conversation Performance Profiling report, "</i> No such report was found in this document.</p>	Page 10, section 3.2.3.2.1, 2 nd sentence	IV&V	Oct. 25, 2002	Y	Provide indicated report, so it can be examined. ITA response: The statement was changed to <i>"As shown in the RCS Web Conversation performance results."</i>
<p>18. Statements: <i>"However, FtpControlSocket was not expected to remain in the heap after the last garbage collection. This situation could potentially cause memory leak ".</i> Unexpected results usually mean that a test failed. <i>An analysis should be performed to explain the cause of the "not expected" results.</i> Recommendations should be made and/or corrective actions should be taken to prevent the potential memory leak.</p>	Page 10, section 3.2.3.2.1, last sentence	IV&V	Oct. 25, 2002	Y	Explain indicated statements. ITA response: The complete analysis of this result is in the Build & Test Report Appendix in Section 2.6. The following phrase was also added to the statement to make it clearer. <i>"The following section goes into more detail on this. A complete analysis of this issue is in the Build and Test Report Appendix document."</i>
<p>19. Statement: <i>"Code changes were made to resolve this issue".</i> Regression testing should be performed to verify that the issue was resolved and that new problems were not introduced by the code changes.</p>	Page 11, section 3.2.3.2.2, last sentence	IV&V		N	Explain the nature of testing performed as a result of "code changes". ITA response: The results of the testing can be found in the Build & Test Report Appendix in Section 2.6.3.1.
<p>20. Statement: <i>"All JUnit test scenarios passed."</i> The conditions and criteria for the "passed" test should be explained.</p>	Page 12, section 3.3.2.2 Page 15, section 3.4.2.2	IV&V		N	Describe the test scenarios, test results, and pass criteria. Identify the actual data results that were used to determine that unit test(s) passed. ITA response: The test scenarios, results, and pass criteria are included in the Build & Test



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					Report Appendix. For page 12, Section 3. For page 15, Section 4.
<p>21. The following statements are repeated for different Memory (Heap) Analysis: <i>“When the Application Server is initialized, a great deal of memory is consumed. Once the App Server has finished initializing, the memory usage levels off to a flat line. Jprobe will call the Garbage Collector to remove objects that are no longer being referenced from the heap.”</i></p> <p>The expression “a great deal of memory” should be defined with an actual value.</p>	<p>Page 13, section 3.3.3.2.1</p> <p>Page 16, section 3.4.3.2.1</p> <p>Page 20, section 3.7.3.2.1</p> <p>Page 21, section 3.8.3.2.2</p>	IV&V	Oct. 25, 2002	Y	<p>Clarify implications of statements for performance testing and memory (heap) analysis.</p> <p>ITA response: The amount of memory consumed (4000 KB) has been substituted for “great deal”.</p>
<p>22. Statement: <i>“The SAX parser has the lightest footprint in terms of object count and memory.”</i></p> <p>“Lightest footprint” should be quantified? Note Values for memory use and number of objects is given for the two other parsers.</p>	Page 13, section 3.3.3.2.2, 2 nd paragraph	IV&V	Oct. 25, 2002	Y	<p>Provide values to support indicated statement.</p> <p>ITA response: The following statement has been added to the specified paragraph: <i>“The total memory used for the SAX API test is 208 bytes with the number of objects at 21.”</i></p>
<p>23. Statements: <i>“The results gathered from the application that are external to the” ...</i> <i>“Framework APIs will not be included in the performance profiling results. These results will be excluded since the purpose of profiling is to determine the performance of the application under normal conditions. The performance of the methods used to test the APIs has to be excluded to test just the behavior of the framework.”</i></p> <p>It is unclear from the above statements what the actual performance test results were. The above statements appear to be focused on identifying only what was excluded.</p>	<p>Page 13, section 3.3.3.2</p> <p>Page 15, section 3.4.3.2</p> <p>Page 17, section 3.5.3.1</p> <p>Page 21, section 3.8.3.1</p>	IV&V	Oct. 25, 2002	Y	<p>Describe actual results rather than only identifying what was excluded.</p> <p>ITA response: The following statement has been added to each instance of this issue: <i>“The following sections <appropriate sections> describe the results of the performance test.”</i></p>
<p>24. Statement: <i>“... overall memory usage for the ... framework is very low and will not result in huge increase to the overhead of calling applications.”</i></p> <p>Values should be provided to define</p>	<p>Page 13, section 3.3.3.2.1</p> <p>Page 16, section 3.4.3.2.1</p> <p>Page 17, section</p>	IV&V		N	<p>Define overall memory usage in measured values rather than subjectively.</p> <p>ITA response: The</p>



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“very low” and “huge”.	3.5.3.2.1 Page 20, section 3.7.3.2.1 Page 21, section 3.8.3.2.2				exact values for this data can be found in the Build & Test Report Appendix document.
25. There is no text under the heading “Results” for Performance Testing for the User Session Framework or the JSP Custom Tag Library Framework.	Page 17, section 3.5.3.2 Page 21, section 3.8.3.2	IV&V	Oct. 25, 2002	Y	Add details on test results for Performance Testing for the User Session Framework and the JSP Custom Tag Library. Clarify if these tests passed and the basis for each pass/fail decision. ITA response: Results have been added.
26. Statement: “ <i>The count change for the String class is very high.</i> ” “Very high” should be defined.	Page 20, section 3.7.3.2.2, 2 nd paragraph	IV&V	Oct. 25, 2002	Y	Provide a value for “very high.” ITA response: The statement was changed to “ <i>The count change for the String class is very high at 5,503.</i> ”
27. Statements: “Overall, the JSP Custom Tag Library framework performed well. ... A few of the attributes failed to work as expected ...” Also see page 21, section 3.8.2.2, Statement: “ <i>While the majority of the tags and attributes worked as expected, a few did not.</i> ” Framework can not perform well and have failures.	Page 20, section 3.8.1	IV&V		N	Clarify statements “performed well” versus “failed to work”. Explain the pass versus fail criteria and which tests passed. ITA response: The explanation for these statements can be found in the Build & Test Report Appendix document.



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28. Many statements are made using the verb “will”. It is unclear with such statements if test action has actually been performed or is only planned and “will” be performed in the future.	Throughout document	IV&V	Oct. 25, 2002	Y	All testing activities that have actually been completed should be stated in the past tense rather than the future tense. In particular, all “will” statement should be changed if actions have been performed successfully. ITA response: All tests were performed.
29. Wording: “ <i>This is the package of all of the source files.</i> ”	Page 7, section 2.5, table, Source Description	IV&V	Oct. 25, 2002	Y	Change to “This is the package of all source files.” ITA response: Deleted unnecessary words.
30. Wording: “ ... reaches the same hight as ...” “Hight” is misspelled.	Page 18, section 3.6.3.2.1, 3 rd sentence	IV&V	Oct. 25, 2002	Y	Change “hight” to “height”. ITA response: Spelling has been corrected.