SFA Modernization Partner

United States Department of Education

Student Financial Assistance

Technical Architecture Services Report
2Q01

Task Order #46

Deliverable # 46.1.7

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1 Introduction

1.1 Summary

The *Technical Architecture Services Report: Second Quarter of 2001* summarizes the Integrated Technical Architecture (ITA) team's tasks related to implementing Task Order 46 during the second quarter of 2001. Task Order 46 provides support and enhancements for the SFA's ITA. The ITA architecture provides a standardized, reusable infrastructure for enabling business capabilities within the SFA application community. The long-term vision of the ITA is to provide an integrated, enterprise-wide technical architecture that will enable SFA to reduce the number of custom-built, siloed applications that are difficult to update and maintain.

The ITA team's tasks fall into the following categories:

- Core ITA Support
- Technical Architecture Support
- Roll Out Support
- Product Specialist Support

Section two of the report provides a description of the ITA tasks performed within these categories during the second quarter of 2001.

2 Support Areas

During the second quarter of 2001, the ITA team provided technical support to SFA in the following areas:

- Core ITA Support
- Technical Architecture Support
- Roll Out Support
- Product Specialist Support

The following sections describe the specific tasks the ITA team performed in these support areas.

2.1 Core ITA Support

2.1.1 Service Level Agreement

ITA successfully created the Service Level Agreement (SLA) for providing ITA support to its applications. In addition, the ITA team also created the SLA database for tracking application issue requests and resolutions. This is being used for the Free Application for Federal Student Aid (FAFSA), Campus Based Systems (CBS), and the Enterprise Application Integration (EAI) teams.

2.1.2 Deliverables

The ITA team wrote the following deliverables:

- The ITA R1.0 Strategic Assessment (Deliverable 46.1.1)
- The ITA R2.0 Requirements Traceability Matrix (Deliverable 46.1.2)
- The ITA Quarterly Report (Deliverable 46.1.7)

2.1.3 Rational

The SFA Modernization Partner is looking to utilize tools for use in configuration management and bug and issue tracking. Two projects, EAI and CBS, have been designated as the pilots for Rational ClearCase and ClearQuest. The ITA team built the environment to support the EAI efforts for configuration management using ClearCase. ClearQuest repositories have been built to track issues and requests for the SFA Modernization Partner and the EAI team.

2.2 Technical Architecture Support

2.2.1 Technical Architecture Review

The ITA team performed a technical architecture review of the Common Origination and Disbursement (COD) / Common Record. In addition, the ITA team performed a Technical Architecture review of the bTrade MQSeries API design.

2.2.2 Review FAFSA 5.0 Architecture

ITA built a FAFSA 5.0 development environment at the VDC for the purpose of evaluating the effort required to port the FAFSA 5.0 application to the ITA architecture. The ITA team assisted the NCS team in identifying changes needed to fit the ITA standard environment. In addition, ITA assisted in determining the changes needed to successfully port the application to WebSphere and to take advantage of the performance and scalability aspects of WebSphere. ITA and NCS identified the needed changes as implementing session management, minimizing session object size, use of connection pooling, and use of Java Server Pages (JSPs) in the FAFSA 5.0 code.

2.2.3 Technical Support

The ITA team provided technical support and change requests for the FAFSA, CBS, and EAI software applications. Examples of this type of support include restarting servers, updating configurations, adding new configurations, and debugging problematic application code.

2.2.4 COD/ XML

The ITA team is currently assisting the COD with design and development of the XML Common Record project. COD is expected to go live in the first quarter of 2002. The goal of COD is to standardize and unify the way application and disbursement submissions and responses are handled across the various loan and grant programs that SFA administers. The process is centered around the Common Record. The record is 'common' in that it is the same record layout for each program. The common record is in XML and, therefore, flexible. Although the record is the same across programs, not all data elements are required for each transmission. There are no longer separate origination and disbursement records, but one record. Schools have the option of sending, within one record, information for multiple programs. Schools also have the option to send separate records for each program.

2.2.5 bTrade

A secure transport mechanism for COD files between institutions and SFA is provided by bTrade. Part of the COD effort involved interfacing the bTrade Mailbox infrastructure with MQ Series and the EAI Bus. ITA team members worked with bTrade and IBM to review the design and API for the interface.

2.3 Roll Out Support

2.3.1 ITA Environments

The ITA team built the following environments for development and testing on WebSphere Application Server, IBM HTTP Server, and Oracle database:

- The staging environment for FAFSA 5.X on the Web
- The performance test environment for FAFSA 5.X on the Web
- The WebSphere 3.5 environment for IFAP to test upgrade of products
- The WebSphere 3.5 environment for Intranet 2.0 to test upgrade of products
- The testing environment for CBS

2.4 Product Specialist Support

2.4.1 WebSphere Application Server on HP Testing

The ITA team successfully built, configured, and tested WebSphere 3.5 on the HP Platform. Tests were completed for two environment configurations including IBM HTTP Sever on Sun to WebSphere Application Server on HP and IBM HTTP Server on HP to WebSphere Application Server on HP. Test scripts were executed on both environment configurations and the actual tests results matched the expected results in all cases, thereby validating WebSphere 3.5 on the HP platform. A summary of the tests performed is listed below:

- WebSphere Sample Applications
  Includes a servlet, JSP, and EJB sample applications that are bundled with WebSphere Application Server.

- ITA R1.0 WebSphere and IHS Build and Test Scripts
  These tests scripts were utilized to validate WebSphere in ITA R1.0. These scripts and test code were updated for WebSphere 3.5 and baselined in the current Sun environment. These test scripts include a static content, dynamic content with JSP, dynamic content with servlet, a servlet to Oracle database using JDBC, and a servlet to Autonomy Search engine tests.

- FAFSA 5.X on the HP Platform
  The FAFSA 5.X application was tested on the HP platform. Initial account creation, and save and restore functionality were tested. The ITA team first familiarized itself with the FAFSA Web application in the Sun environment. Second, the ITA team selected 57 test scripts that demonstrated that the

FAFSA 5.X application was functioning correctly. The selected scripts were then executed and validated on the FAFSA 5.X Web application in the HP environment. All of the selected test scripts ran smoothly and without error.

2.4.2 Interwoven

The ITA team is planning on upgrading the current version of Interwoven being utilized by the IFAP, Schools Portal, and Intranet 2.0 applications. ITA has written an upgrade plan, written a statement of work, and begun negotiations with Interwoven as a sub-contractor. The current version of Interwoven does not support the posting of rich text format documents however, the new version will support it. This upgrade will streamline the process of posting documents and be able to support the posting of all types of documents.

2.4.3 Autonomy

The IFAP and Schools Portal applications have been in production since March 2001. After several months of user feedback, a list has been compiled of the most significant requests regarding the search engine for each application. The ITA team compiled a list of these enhancements with short descriptions for each one. An estimate of effort and cost has been provided to the customer for their review to determine which enhancements will be incorporated in the third quarter of ITA Release 2.0.

2.4.4 Intranet 2.0 Server Consolidation

As a result of the need to reduce costs and utilize available resources, the ITA team was requested to analyze options to consolidate applications to free a server for EAI development. Since Intranet 2.0 and IFAP are operating on the same operating system and products, this presented the bst option for consolidation. The Intranet 2.0 application transitioned from a single server architecture to a failover infrastructure with separate web and application servers. The consolidation occurred over a three day period which includes changes to the following servers: SU35E9, SU35E10, SU35E12, SU35E13, SU22E3, and SU22E4. Once these applications were combined and successfully running, SU35E14 was freed to be migrated to the development environment for use by the EAI development team.

2.4.5 ITA Common Services – Go Live

The ITA team successfully wrote applications for the logging and exception handling of common services. The ITA 2.0 logging framework allows SFA application programmers who need to log in order to troubleshoot or trace their application. The ITA team created a Logging Framework design document and built ITA 2.0 Logging framework. The ITA 2.0 Logging framework has been rolled out to FAFSA team. The ITA 2.0 Exception handling framework allows SFA application programmers to catch and throw the exceptions in their application. The exception handling framework uses resource bundle (properties file) to store messages. The ITA team created an Exception Handling Framework design document and built the Exception Handling framework. The ITA 2.0 Exception Handling framework has been rolled out to FAFSA team.

2.4.6 ITA Common Services Design

The ITA team has completed the design of the common services. Currently the ITA team is going through the peer review process of the common services and is making updates to the code designs. The designs include:

- E-mail
- Persistence
- Component Factory
- Search