

FSA Integration Partner

United States Department of Education

Federal Student Aid



EAI Core Operations Services Performance Report IV

Task Order #117

Deliverable # 117.1.1d

Version 1.0

September 30, 2003



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1 Introduction

1.1 Summary

The purpose of this report is to document the EAI Core Operations services performed in support of Task Order 117, EAI Release 4.0 during the period of July 1, 2003 through September 30, 2003.

Task Order 117 provides for operational support and maintenance of the EAI architecture and infrastructure. Additionally, EAI Core services enable business application teams to implement application interfaces built upon the existing EAI architecture.

The efforts of the Core Operations services are summarized in the following sections:

- **Section 2: Major Accomplishments** - Provides an overview of the major accomplishments of the EAI Team over the course of the reporting period.
- **Section 3: EAI Architecture Overview** - Provides an up-to-date view of the EAI Architecture as it evolves over the duration of the task order.
- **Section 4: Infrastructure Change Requests, Upgrades, and Enhancements** - Provides a summary of the change requests, significant updates and enhancements to the EAI infrastructure.
- **Section 5: Environments** - Provides an overview of the environment infrastructure supporting the EAI Release 4.0 development and testing efforts.
- **Section 6: Test Summary** - Provides a summary of application EAI interface testing activities for the reporting period.
- **Section 7: Integrated Planning Summary** - Provides a high level summary of infrastructure planning and support for new initiatives and applications coming onto EAI.
- **Appendix A: EAI Software Installation Report**- Documents the current status of all installed software for all EAI environments.
- **Appendix B: EAI Core Release 4.0 Organization Chart** - Documents the organizational structure and the resources assigned to the release for this reporting period.
- **Appendix C: EAI Core Release 4.0 Contact List** - Provides contact information for the EAI team.
- **Appendix D: EAI Environment Diagrams** - Documents the detailed EAI Development, Test, and Production environments.
- **Appendix E: EAI Change Request Summary, July -September 2003** - Provides the summary and detailed information for all EAI submitted Change Requests for the reporting period.



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- **Appendix F:** *EAI Operations Support Schedule, July – September 2003* – The support instructions and schedules provided to the Virtual Data Center (VDC) for EAI Operations.
 - **Appendix G:** *COD 2.2 Development and Test Documentation*- A compact disc containing the technical design and testing documentation to implement the EAI related changes for COD 2.2.



2 Major Accomplishments

The following list of accomplishments represents the major efforts and initiatives for this reporting period:

- Tested transformation code to replace four MQSI message flows for messages sent from COD to FMS and from FMS to COD and deployed it to the Production environment with COD R2.1B.
- Developed COD R2.2 interfaces and deployed them to the Product Test and IST environments.
- Provided 24 hours-a-day operations support for EAI Architecture. Performed issue tracking and resolution and responded to daily adhoc support requests. Compiled detailed operations support metrics. Detailed production operations information is contained in the *EAI Production Architecture Performance Report* deliverables (117.1.2a *EAI Production Architecture Performance Report I* – delivered January 27, 2003, 117.1.2b *EAI Production Architecture Performance Report II* delivered – May 9, 2003)
- EAI Capacity Planning. Provided input to and presented section for EAI Capacity Planning meeting on September 3rd.
- EAI Evergreening – Refer to **Appendix A- EAI Software Installation Report** for additional detailed information.
 - MQSeries v5.3 upgrade of SU35E17 on 8/31 with plans to upgrade additional EAI test servers.
 - MQSeries v5.3 upgrade of FAFSA development and test environments in preparation for WebSphere Application Server (WAS) 5.0 upgrade.
 - Attended weekly planning meetings for CPS CICS, DB2, and z/OS 1.4 upgrade performed 9/21. Developed test plan and conducted EAI related testing to support upgrade. Performed upgrade validation testing for Production upgrade.
- Developed and implemented a generic architecture program to make efficient use of allocated disk space through a configurable and automated purging and archiving.
- Created and distributed EAI Operations support schedule to VDC. Refer to **Appendix F – EAI Operations Support Schedule July - September 2003** for detailed information.
- Enhanced System Monitoring – EAI initiated an effort to identify the key EAI processes and coordinated with the VDC TNG group to have additional monitoring implemented. 123 additional TNG alerts have been implemented out of a total of 144 identified.



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- Delivered, updated, and received approval for the following deliverables:
 - 117.1.1c EAI Operations Services Performance Report III - 7/1
 - 117.1.5 EAI Message Status Inquiry Guide - 7/11
 - 117.3.1 EAI Enhancement Report - 8/22



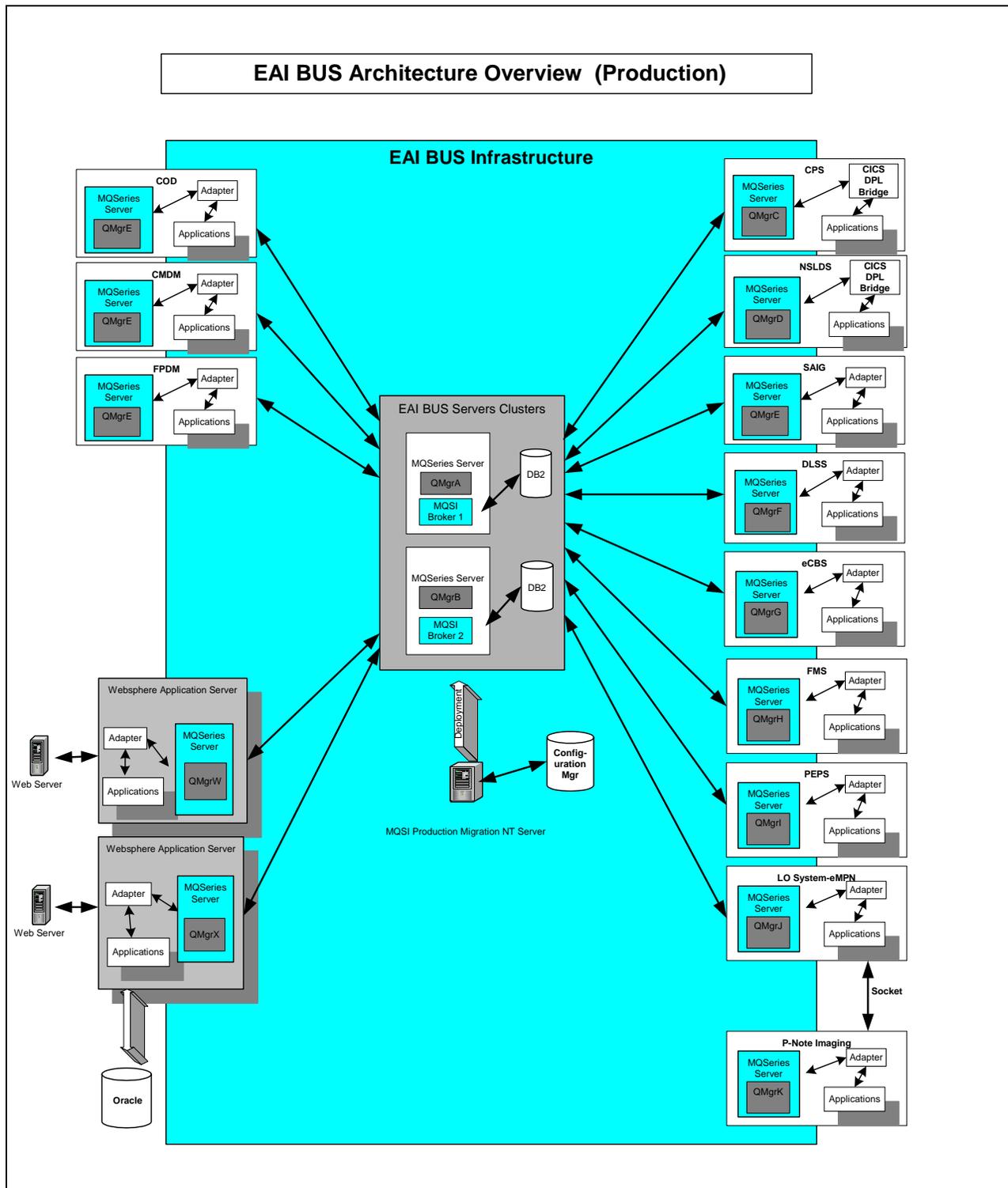
3 EAI Architecture Overview

The EAI Architecture is comprised of legacy systems, interfaces to the legacy systems, interfaces to modernization systems, and interfaces to FSA's Integrated Technical Architecture (ITA).

The FSA Enterprise Application Integration Core Architecture includes the following five component areas:

- Legacy Systems – Mainframe and Mid-Tier
- Modernization Systems
- Internet – Websphere Application Server
- EAI Bus Servers
- EAI Development Workstations

The following diagram is a high level view of the EAI Architecture.





4 Infrastructure Change Requests, Upgrades, and Enhancements

One of the key objectives of EAI Core Operations Services is to provide infrastructure maintenance. This section provides a summary of the EAI submitted change requests and the significant updates and enhancements to the EAI infrastructure, including the reason for these enhancements.

4.1 Change Requests

The Change Request management process provides the structure to implement fixes, upgrades, or enhancements to the EAI environments. Change Requests are submitted, tracked, and implemented using a Rational ClearQuest tool called ECM Change Request Tracking Tool. During this reporting period of FY2003, the EAI Team logged and assisted in the implementation of 78 Change Requests affecting the Development, Test, and Production environments. Before a Change Request is submitted to Production, the EAI Team thoroughly tests the change, which is subsequently packaged with instructions and/or other supporting documentation for implementation. Additionally, the EAI Team provides the VDC with implementation and post-implementation support and validation for the majority of the Change Requests.

Refer to *Appendix E – EAI Change Request Summary, July - September 2003* for a detailed summary of all change requests.



4.2 Upgrades

Upgrades of the EAI infrastructure are being performed to continue vendor support and to obtain enhancements provided by new releases. For the purposes of this report, an upgrade is defined as a maintenance patch, release, or other fix that has been applied to the existing infrastructure (i.e., new software, new hardware). Detailed software upgrade information is contained in the 117.1.3 EAI Evergreening Schedule and Approach deliverable.

The following software upgrades were completed:

Date	Software	Environment	Server(s)	Old Version	New Version	Reason
	MQSI	MQSI Staging Environment EAI Bus	SFANT006 OMBUDSMAN OAS SU35E14i SU35E3	MQSI 2.0.1	N/A	MQSI is being phased out of servers. The software has not been changed, but all message traffic has been routed to new java based transformation engine.
	MQSI	Development/Test	SU35E17	MQSI 2.0.1	N/A	MQSI is being phased out of servers.
	JDK	Development/Test	SU35E5	JDK 1.2.2	JDK 1.3.1	
	JDK	Development/Test	SU35E18i	JDK 1.1	JDK 1.2.2	
	QPasa!	FMS/DataMart	HP-V2	N/A	QPasa! v3.0.1	QPasa! was installed
	HP Unix	FAFSA	HPN8 HPN2 HPN4	HP Unix 11.00	HP Unix 11i.00	
	JDK	FAFSA	HPN8 HPN2 HPN4	JDK 1.2.2	JDK 1.3.1	
	QPasa!	FAFSA	HPN2 HPN15 HPN16 HPN4	N/A	QPasa! v3.0.1	QPasa! was installed
6/29/2003	MQSeries	Development/Test	SU35E5	MQSeries v 5.2	MQSeries v 5.3, CSD04	MQSeries v 5.3 is required for the WAS 5.0 upgrade being completed by the ITA team



Date	Software	Environment	Server(s)	Old Version	New Version	Reason
7/10/2003	MQSeries	Development/Test	HPA2	MQSeries v 5.2	MQSeries v 5.3, CSD04	MQSeries v 5.3 is required for the WAS 5.0 upgrade being completed by the ITA team
7/13/2003	MQSeries	Performance Test	HPN8	MQSeries v 5.2	MQSeries v 5.3, CSD04	MQSeries v 5.3 is required for the WAS 5.0 upgrade being completed by the ITA team
8/10/2003	MQSeries	Production	SU35E9	MQSeries v 5.2	MQSeries v 5.3, CSD04	MQSeries v 5.3 is required for the WAS 5.0 upgrade being completed by the ITA team
8/10/2003	MQSeries	Production	SU35E13	MQSeries v 5.2	MQSeries v 5.3, CSD04	MQSeries v 5.3 is required for the WAS 5.0 upgrade being completed by the ITA team
8/26/2003	MQSeries, Data Integrator, JDK, Perl, Rational ClearCase	Development/Test	SU22E28	N/A	MQSeries v 5.3, CSD04 Data Integrator 4.2.4 JDK 1.3.1 Perl 5.6.1 Rational ClearCase QPasa!3.0.1	This machine will replace SU35E16 and the EAI development server, Rational ClearCase host and install QPasa.
8/31/2003	MQSeries	Development/Test	SU35E17	MQSeries v 5.2	MQSeries v 5.3, CSD04 QPasa!3.0.1	To keep the version of MQSeries consistent across EAI, the EAI Bus servers are also being upgraded.



Date	Software	Environment	Server(s)	Old Version	New Version	Reason
9/03/2003	MQSeries	Production	HPN7	MQSeries v 5.2	MQSeries v 5.3, CSD04	MQSeries v 5.3 is required for the WAS 5.0 upgrade being completed by the ITA team
9/20/2003	MQSeries	CPS	CPSED	MQSeries v5.2	MQSeries v5.3	MQSeries v 5.3 is required for the WAS 5.0 upgrade being completed by joint CSC, Pearson, Accenture team.



4.3 Enhancements

The EAI team continually evaluates products that would improve the EAI infrastructure. For the purposes of this report, an enhancement is defined as new component that has been added to the existing infrastructure (i.e., new software, new hardware).

4.3.1 MQ Software QPasa!

QPasa! is an application that will help to standardize and improve MQSeries configuration management, deployment and monitoring capabilities. EAI has assisted the VDC with the implementation of QPasa! including installation, configuration, and the creation of business process specific reports and views. QPasa! was deployed by the VDC on September 29th. Refer to *Appendix A – EAI Software Installation Report* for a list of all servers and environments that QPasa! is installed. QPasa! replaces MQMon for monitoring MQSeries.

4.3.2 Generic Web Interface with Connection Pooling

The EAI Generic Web Interface is the reusable component that allows Integration Partner developers to access EAI messaging capabilities using a Java application program interface (API). It consists of a set of Java classes that are available to be incorporated into, and used by, an application to send information and receive responses from another application using the EAI Architecture.

Please see deliverable 117.3.1 EAI Enhancement Report for details.

4.3.3 EAI Transformation Engine

The EAI Transformation Engine is a Java program that can simultaneously process application messages from multiple sources and dispatch specialized transformation and response modules. Using an interface to the Transformation Engine, EAI developers create transformation modules to handle customized transformation within the Transformation Engine for each interface. The format of the transformation modules is designed to be easy to learn and use. No knowledge of the WebSphere MQ communications infrastructure is required. Testing, debugging, and maintenance are all much easier to do using the EAI Transformation Engine with the EAI Logger than with MQSI and Control Center.

Please see deliverable 117.3.1 EAI Enhancement Report for details.



5 Environments

This section provides detailed diagrams of the EAI environments, configurations, and interface connectivity to support all phases of the EAI System Design Life Cycle (SDLC). A critical component of Core Operations Services is the maintenance of all EAI environments in addition to Production.

- Development
- System Integration Test (SIT)
- Inter System Test (IST)
- Product Test (formerly called UAT)
- Staging
- Production
- FAFSA EAI Development
- FAFSA Development
- FAFSA Test
- FAFSA Performance Test
- FAFSA Demo Production
- FAFSA Production

Refer to *Appendix D – EAI Environment Diagrams* for detailed diagrams of the current configuration of the above listed environments.

5.1 Environment Updates

5.1.1 Development

SU22E28 has been built out to replace SU35E16 in the Development environment.

5.1.2 COD 2.2 Product Test / IST

The EAI source code build was migrated to Product Test and IST to support COD 2.2 testing. No other major environment updates were made.

5.1.3 FAFSA 7.0

The EAI team is assisting the ITA team with the upgrade of WAS to 5.0 which requires an upgrade of MQSeries to WebSphere MQ v5.3. These upgrades have been implemented in the Development and Test environments and are currently being implemented in the Production environments.

Refer to *Appendix D – EAI Environment Diagrams, FAFSA-Production tab* for a diagram of the current configuration.



5.1.3.1 Development and Test

Computing Environment	Server Manufacturer & Model	Queue Manager (Port)	Queue Manager Cluster	CPS Manager Cluster
EAI Dev	HPA2	FAFSAD2 (1420)	FAFSADC1	CPD1
FAFSA Development	HPA2	FAFSAD1 (1416)	FAFSADC1	CPD1
FAFSA Test	HPA2	FAFSAT1 (1417)	FAFSATC1	CPT1
FAFSA Performance	HPN3	FAFSAI1 (1414)	FAFSAIC1	CPA1
FAFSA Performance	HPN8	FAFSAI2 (1414)	FAFSAIC1	CPA1
FAFSA Demo Development	SU35E5	FAFSAD3 (HPA2: 1417)	FAFSATC1	CPT1
FAFSA Demo Development	SU35E9	FAFSAT2(1417)	FAFSATC1	CPT1
FAFSA Demo Development	SU35E13	FAFSAT3(1415)	FAFSATC1	CPT1

5.1.3.2 Production

Computing Environment	Server Manufacturer & Model	Queue Manager (Port)	Queue Manager Cluster	CPS Manager Cluster
FAFSA Production	HPN4	FAFSAP7 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN15	FAFSAP2 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN16	FAFSAP3 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN2	FAFSAP6 (1414)	FAFSAPC1	CPP1
FAFSA Production	HPN7	FAFSAP5 (1414)	FAFSAPC1	CPP1

Additional information for FAFSA 7.0 can be found in the following FAFSA 7.0 Production Readiness Review documentation:

- FAFSA_7.0_Operations Checklist v3_12_20_02.doc
- FAFSA_7.0_TroubleShootingGuide_12-19-02.doc



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- FAFSA_7.0 TechArchRequirements_v1.1_12-20-02.doc
 - FAFSA 7.0 Performance Test_ver1.6_12-19-02.doc
 - FAFSA_7.0_Install Guidelines (ITA) v1.2_12-20-02.doc



6 Test Summary

This section provides a summary of application EAI interface testing activities during the reporting period.

Type	Effort	
Integration	COD to/from FMS	EAI Transformation Engine developed in Java to replace the existing MQSI message flows
Integration	SAIG to COD	RFMS Conversion - developed interface to pull data from the RFMS mailbox on SAIG and send it to COD
Integration	SAIG to/from COD	EAI Adapter modified to use the new Btrade adapter for SAIG mailbox access
Integration	SAIG to/from COD	Transformation code and configuration developed for new School interfaces supported in COD R2.1.
Integration	NSLDS to/from COD	New Data Integrator interfaces created for COD R2.1 functionality
Performance	SAIG	The EAI team began planning of performance testing of EAI components on SAIG to determine the performance impact of EAI on SAIG peak processing periods.



Refer to **Appendix G – COD 2.2 Development and Test Documentation**. The enclosed CD contains Interface Control Documents (ICD) s and Testing Documentation. The complete list of files on the CD is included below:

Interface Control Documents:

- COD-SAIG_GetPut.vsd
- COD-SAIG_ICD_Put_R21.doc
- CODFMS-FinNonFin_IID_R22.xls
- COD_Transformation_IID_R22_v1.0.doc
- FMS-FPDM ICD.doc
- NSLDS-FPDM ICD.doc
- PEPS-FPDM ICD v1.1 8-6-03.doc
- SAIG-COD_ICD_Get_R21.doc
- SAIG_COD_ICD_Transformation_R22_v1.1.doc

Test Documents:

- CODFMS-TestConditions_R22.xls
- COD_Transformation_Test_Plan_R22_v1.0.doc
- PEPS_NSLDS_FMS_FPDM_Assembly_Test_Script.xls
- SAIG_Adapter_Enhancements_Test_Scripts.xls
- PL Spec Edits 0001 Conditions v01.xls
- PL Spec Edits 0001 Scripts v01.xls
- PL Spec Edits 0102 Conditions v01.xls
- PL Spec Edits 0102 Scripts v01.xls
- PL Spec Edits 0203 Conditions v01.xls
- PL Spec Edits 0203 Scripts v01.xls
- PL Spec Edits 0304 Conditions v01.xls
- PL Spec Edits 0304 Scripts v01.xls
- PL Spec Edits 9900 Conditions v01.xls
- PL Spec Edits 9900 Scripts v01.xls



7 Integrated Planning Summary

The EAI team is working with the Data Strategy and the Technology Strategy teams by meeting with them and reviewing their deliverables (123.1.9 Internal Data Strategy, 123.1.11 External Information Access (FSA Gateway) Strategy) to ensure that the strategies they develop leverage the EAI Architecture effectively. The EAI team also met with the Security team to discuss potential uses of EAI as component of the overall security solution.