

# *FSA Integration Partner*

United States Department of Education

Federal Student Aid



## **EAI Core Operations Services Performance Report VI**

*Task Order #117*

Deliverable # 117.3.4a

**Version 1.0**

December 15, 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 November 1, 2003 through December 15, 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, November - December 15 2003** - Provides the summary and detailed information for all EAI Change Requests for the reporting period.



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- **Appendix F:** *EAI Operations Support Schedule, November – December 15 2003* – The support instructions and schedules provided to the Virtual Data Center (VDC) for EAI Operations.
  - **Appendix G:** *COD 3.0 Development and Test Documentation-* A compact disc containing the technical design and testing documentation to implement the EAI related changes for COD 3.0.



## 2 Major Accomplishments

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

- COD 3.0
  - Updated Interface Control Documents (ICD) for CPS, NSLDS, FMS, and SAIG.
  - COD Transformation code was updated to handle Award Year 2004-2005 message classes and translate into the proper flat file layouts.
  - FMS Transformation code was updated based on the R3.0 requirement for the Gaps Debit Date/Transaction date.
  - Supporting COD R3.0 Product Test interfaces with weekly EAI code deployments.
  - Developed Schools Testing tool to facilitate testing of ISIR files submitted to COD. The tool allows testers to quickly and easily create test data.
- FAFSA 8.0 Performance Testing support
  - Supporting 24 performance test cycles of the updated FAFSA 8.0 application. This included monitoring the MQ infrastructure and tracking throughput and response time statistics for the duration of each test, as well as writing and executing back-end transaction load generation script for two of the cycles.
- 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, 117.1.2c *EAI Production Architecture Performance Report III* delivered – November 15, 2003, 117.1.2d *EAI Production Architecture Performance Report IV* delivered – December 15, 2003)
- EAI Evergreening / Hardware Refresh – Refer to *Appendix A- EAI Software Installation Report* for additional detailed information.
  - Supported the VDC hardware refresh. Provided software installation and other server specifications. A planning effort is in progress to install, configure, test, and migrate the EAI affected servers.
  - Performed the installation, configuration, testing, and migration of the FAFSA and FAFSA Demo environments to the new refreshed servers.
  - MQSeries v5.3 upgrade for the EAI environments will be included as part of the planned VDC hardware refresh. Other EAI enabled application servers will be upgraded as those servers are refreshed. Refer to Section 4.2.1 Virtual Data Center Hardware Refresh for details and current planned dates.
  - MQSI software will be removed from the FSA Production environment as part of the pending hardware refresh effort. MQSI components will not be installed on the replacement servers.



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- Created and distributed EAI Operations support schedule to VDC. Refer to *Appendix F – EAI Operations Support Schedule November - December 15 2003* for detailed information.
  - Delivered, updated, and received approval for the following deliverables:
    - 117.1.1e EAI Operations Services Performance Report V
      - Submitted 10/31
      - Approved 11/14
    - 117.1.2c EAI Production Architecture Performance Report III
      - Submitted 11/15
      - Approved 12/04



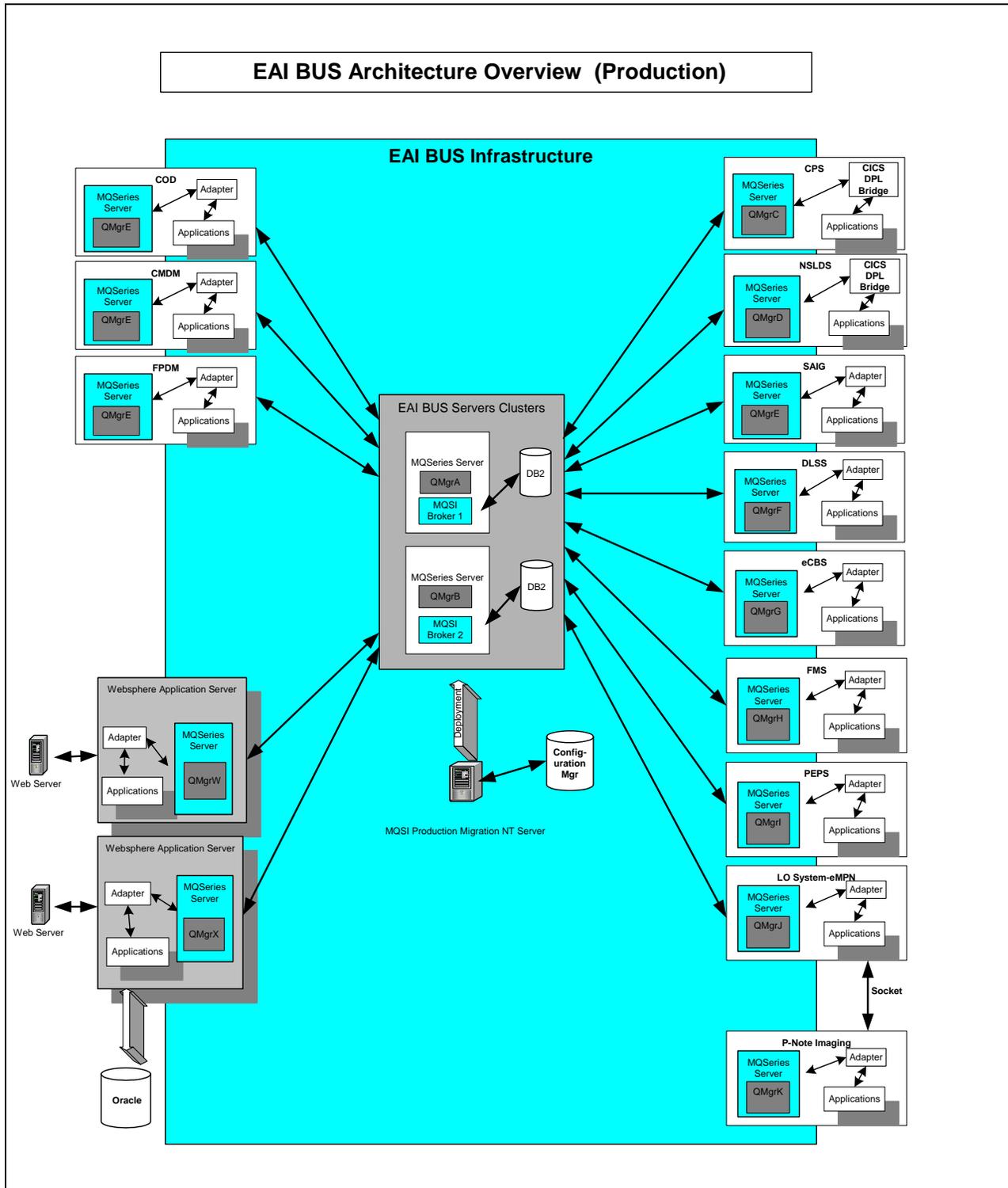
### 3 EAI Architecture Overview

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). No changes were made to the EAI architecture this reporting period.

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.





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## 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. Change Requests are logged either by the EAI Team or by members of the VDC staff. During this reporting period of FY2004, 41 Change Requests were logged affecting the Development, Test, and Production environments. Before submitting a Change Request 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, November – December 15 2003* for a detailed summary of all change requests.



## 4.2 Upgrades

Upgrades or evergreening 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
11/02/2003	Data Integrator	Production	SU35E18	4.3.3.2	4.2.4.0	Originally installed newer version improperly. Problem correction.
11/09/2003	JDK	Production	HPL16	1.4.1.03	1.4.1.05	Version upgrade



#### 4.2.1 Virtual Data Center Hardware Refresh

The VDC is currently undergoing an effort to replace a subset of the existing FSA servers with updated servers. This includes migrating the affected Sun midrange servers to HP servers. An initial high level plan has been published which includes the dates in which the VDC plans to have all the replacement servers installed with the required software. The following table lists the servers and planned dates for all the affected servers in the EAI architecture. The information in the table is based on the published FSA Server Refresh Project 2003 dated December 3, 2003.

Computing Environment	Server (Host Name)	Planned Start Date	Planned End Date	Status
EAI Development	SU22E28	11/11/2003	12/05/2003	In Progress
EAI Test (SIT,IST,UAT)	SU35E17	11/11/2003	12/05/2003	In Progress
EAI Staging	SU22E25	1/12/2003	2/15/2003	In Progress
EAI Production	SU35E3,SU35E14	11/11/2003	12/05/2003	In Progress
FAFSA Performance	rp7410-3	9/28/2003	10/14/2003	Complete
FAFSA Demo Development	SU35E5	10/05/2003	11/10/2003	Complete
FAFSA Demo Production	SU35E9	10/16/2003	11/16/2003	Complete
FAFSA Demo Production	SU35E13	10/16/2003	11/16/2003	Complete
Informatica - Data Marts Production	SU35E18	11/10/2003	12/05/2003	In Progress
FMS/Oracle Production	HPV2	11/09/2003	12/07/2003	In Progress
FMS/Oracle Production Failover	HPV1	11/09/2003	12/07/2003	In Progress
PEPS Production	HPK2	10/03/2003	11/21/2003	In Progress
FMS Development	HPL6,HPL7	11/11/2003	12/07/2003	In Progress

Included in the hardware refresh will be the upgrade of MQSeries v5.2 to WebSphere MQ (formerly MQSeries) v5.3 and the retirement of MQSeries Integrator (MQSI). MQSI will not be installed on the replacement servers.



### 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!

No change in the status of the QPasa! implementation. The VDC continues to have challenges implementing QPasa! on the mainframe and is working with the vendor to resolve. The VDC has not determined the final plan to retire MQMON.

Refer to *Appendix A – EAI Software Installation Report* for a list of all servers and environments that QPasa! is installed.



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## 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. The following table represents the environments built previously to, but supported during this reporting period.

- Development
- System Integration Test (SIT)
- Inter System Test (IST)
- Product Test (formerly called UAT)
- Staging
- Production
- FAFSA EAI Development
- FAFSA Development
- FAFSA Demo 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 COD 3.0 Product Test / IST

The EAI source code build was migrated to Product Test and IST to support COD 3.0 testing. The message transformation code was updated to translate the proper Award Year 2004-2005 message classes.

#### 5.1.2 FAFSA 7.0

The FAFSA Performance Test server HPN3 has been replaced by the new HP server rp7410-3.

The FAFSA Demo Development server is now HPA2; it was formerly SU35E5.

FAFSA Demo Production now runs in the production environment, on HPN15 and HPN16.

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



### 5.1.2.1 Development and Test

Changes since last report have been highlighted in bold.

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	<b>rp7410-3</b>	FAFSAI1 (1414)	FAFSAIC1	CPA1
FAFSA Performance	HPN8	FAFSAI2 (1414)	FAFSAIC1	CPA1
FAFSA Demo Development	<b>HPA2</b>	FAFSAD3 (HPA2: 1417)	FAFSATC1	CPT1
FAFSA Demo Production	<b>HPN15</b>	<b>FAFSAP2 (1414)</b>	<b>FAFSAPC1</b>	<b>CPP1</b>
FAFSA Demo Production	<b>HPN16</b>	<b>FAFSAP3 (1414)</b>	<b>FAFSAPC1</b>	<b>CPP1</b>

### 5.1.2.2 Production

No changes since last reporting period.

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
FAFSA Production	rp-7410-1	FAFSAP1 (1414)	FAFSAPC1	CPP1

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



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- FAFSA\_7.0\_Operations Checklist v3\_12\_20\_02.doc
  - FAFSA\_7.0\_TroubleShootingGuide\_12-19-02.doc
  - 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	SAIG to/from COD	Transformation code and configuration developed for updated School interfaces supported in COD R3.0
Integration	FMS to/from COD	Transformation code and configuration developed for updated interfaces supported in COD 3.0
Performance	FAFSA 8.0 Performance Testing	Developed and executed test scripts for several of the test cycles. Generated simulated transaction load to test the FAFSA back-end components.  Monitored the MQ infrastructure, transaction throughput, and response time statistics for the duration of every test.

Refer to **Appendix G – COD 3.0 Development and Test Documentation**. The enclosed CD contains Interface Control Documents (ICD) and Testing Documentation. The complete list of files on the CD is included below:

### Interface Control Documents:

- COD\_CPSPELL\_RECIPIENT\_ICD\_R30\_v0.91.doc
- COD-SAIG\_ICD\_Put\_R30\_v0.2.doc
- COD-SAIG\_ICD\_Reports\_R30\_v0.2.doc
- CPS\_COD\_AAP\_ICD\_R30\_v0.8.doc
- CPS\_COD\_AAP\_ICD\_R30\_v0.9.doc
- EAI\_COD\_to\_NSLDS\_ICD\_R30\_v0.91.doc
- FMS\_COD\_TRAN\_ICD\_R30\_v0.5.doc
- SAIG-COD\_ICD\_Get\_R30\_v0.2.doc
- SAIG-COD\_ICD\_Transformation\_R3.0\_v0.2.doc

### Test Documents:

- COD\_Transformation\_Test\_Plan\_R3.0\_v1.0.doc
- 24.02 DL Legacy Batch Level Edits 0304 Unit Test Conditions.xls
- 24.02 DL Legacy Batch Level Edits 0304 Unit Test Scripts.xls
- 24.03 Specific DL Origination Edit Codes 0304 Unit TC v01.xls
- 24.03 Specific DL Origination Edit Codes 0304 Unit TS v01.xls
- 24.04 Specific DL Disbursement Edit Codes 0304 Unit TC v01.xls
- 24.04 Specific DL Disbursement Edit Codes 0304 Unit TS v01.xls
- 24.05 Pell Legacy Batch Level Edits 0405 Unit TC v01.xls
- 24.05 Pell Legacy Batch Level Edits 0405 Unit Test Scripts.xls
- 24.06 Pell Legacy Origination Specific Edits 0405 UTC v01.xls



- 24.06 Pell Legacy Origination Specific Edits 0405 UTS v01.xls
- 24.07 Pell Legacy Disbursement Edits 0405 Unit Test Scripts v01.xls
- 24.07 Pell Legacy Disbursement Edits 0405 UTC v01.xls
- 24.08 DL PLUS Orig Edit Codes 0304 Unit Test Conditions v01.xls
- 24.08 DL PLUS Orig Edit Codes 0304 Unit Test Scripts v01.xls
- 24.09 DL Change Legacy Specific Edits 0405 Unit TC v01.xls
- 24.09 DL Change Legacy Specific Edits 0405 Unit Test Scripts v01.xls
- 26.02 DL Legacy Sub Unsub Ori Ack 0405 TC v01.xls
- 26.02 DL Legacy Sub Unsub Ori Ack 0405 TS v01.xls
- 26.02 DL Legacy Sub Unsub Orig Ack 0405 Mapping Document v01.xls
- 26.03 DL Legacy PLUS Ori Ack 0405 Map Doc v01.xls
- 26.03 DL Legacy PLUS Orig Ack 0405 TC v01 .xls
- 26.03 DL Legacy PLUS Orig Ack 0405 TS v01 .xls
- 26.04 DL Legacy Dis Ack 0405 Map Doc v01.xls
- 26.04 DL Legacy Dis Ack 0405 TC v01.xls
- 26.04 DL Legacy Dis Ack 0405 TS v01.xls
- 26.05 DL Legacy Change Acknowledgement 0405 Mapping Document v01.xls
- 26.05 DL Legacy Change Acknowledgement 0405 Test Conditions v01.xls
- 26.05 DL Legacy Change Acknowledgement 0405 Test Scripts v01.xls
- 26.06 Pell Legacy Origination 0405 Mapping Document v01.xls
- 26.06 Pell Legacy Origination 0405 Unit Test Conditions v01.xls
- 26.06 Pell Legacy Origination 0405 Unit Test Scripts v01.xls
- 26.07 Pell Legacy Disbursement 0405 Mapping Document v01.xls
- 26.07 Pell Legacy Disbursement 0405 Unit Test Conditions v03.xls
- 26.07 Pell Legacy Disbursement 0405 Unit Test Scripts v02.xls
- 26.09 DL Legacy PNote SysGen 0405 Mapping Document v01.xls
- 26.09 DL Legacy PNote SysGen 0405 Unit Test Conditions v01.xls
- 26.09 DL Legacy PNote SysGen 0405 Unit Test Scripts v01.xls
- 26.10 DL Legacy Payment to Servicer Ack 0405 Map Doc v01.xls
- 26.10 DL Legacy Payment to Servicer Ack 0405 Test Conditions v01.xls
- 26.10 DL Legacy Payment to Servicer Ack 0405 Test Scripts v01.xls
- 26.11 - DL Legacy Booking Notification 0405 Mapping Document v01.xls
- 26.11 - DL Legacy Booking Notification 0405 Unit TC v01.xls
- 26.11 - DL Legacy Booking Notification 0405 Unit TS v01.xls
- 26.12 - DL Legacy PLUS Credit Decision SysGen 0405 Map v01 .xls
- 26.12 - DL Legacy PLUS Credit Decision SysGen 0405 UTC v01.xls
- 26.12 - DL Legacy PLUS Credit Decision SysGen 0405 UTS v01.xls



## 7 Integrated Planning Summary

No change to this section during this reporting period.

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.