



DETAIL-LEVEL FUNCTIONAL REQUIREMENTS DOCUMENT

*HUD Integrated Financial Management Improvement
Project*

U. S. Department of Housing and Urban Development

August 9, 2005



The MIL Corporation

Revision Sheet

| Release No. | Date | Revision Description |
|-------------|------------|--|
| Rev. 0 | 06/27/2005 | Draft Detail-level Functional Requirements Document submitted |
| Rev. 1 | 07/26/2005 | Incorporated comments from Deliverable Acceptance Report dated July 12, 2005 |
| Rev. 2 | 08/09/2005 | Incorporated additional HUD comments from Deliverable Acceptance Report dated August 4, 2005 |

U. S. Department of Housing and Urban Development

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|-------------------------------|---|--|--|--|
| Contract Number | C-DEN-01982 | | | |
| Request Number | R-2004-AY-00378 | | | |
| Task Number | HIFMIP SDM Define Stage – CDR #10 | | | |
| Deliverable | FINAL Detail-level Functional Requirements Document | | | |
| Due Date | 08/09/2005 | | | |
| Comments Returned Due Date | | | | |
| Comments Returned Date | | | | |

Comments:

Program Area Representative: Mary Kohlmeier Date: _____

GTM: Jenny A. Shaker Date: _____

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FUNCTIONAL REQUIREMENTS DOCUMENT

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5.0 DESIGN CONSIDERATIONS

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5.1 System Description

5.1.1 Background Information

This chapter, *Design Considerations*, is a required section of HUD's *System Development Methodology* (SDM), the official guide for developing HUD automated systems. Because the central focus of the HIFMIP project is the determination of which *JFMIP-compliant*¹ Integrated Core Financial System (ICFS) HUD will select and how it and other supporting software will be integrated, the term *design* takes on a different meaning here than when developing a completely customized system. For that reason, this material concentrates on the HUD requirements for the ICFS and the business functions that the ICFS must perform. In particular, there is a discussion of: (1) the ICFS implementation using a staged approach, (2) system functions, and (3) system flexibility.

The requirements and business functions as recorded in this document will allow HUD financial managers to ensure that the document accurately represents the genuine and complete needs for HUD's ICFS. A *business function* is an operation carried out by HUD personnel that is (1) a common task financial in nature done in a similar manner in other agencies or is (2) a HUD-specific financial function not commonly done elsewhere. The requirements and business functions were compiled and analyzed by experienced systems analysts through interviews with key HUD managers and personnel, and by studying existing documentation and prior studies done for HUD. Once these requirements and business functions were compiled, they were verified by two *Subject Matter Experts* with significant HUD financial systems experience.

These requirements and business functions, when approved by HUD, will serve as the basis for selecting a COTS (Commercial Off-the-Shelf) software package as a major part of the ICFS. The selection process is greatly simplified by the JFMIP's work in certifying COTS package as complying with their Federal accounting standards. JFMIP-compliant COTS are generic in nature and must be customized to an agency's specific requirements. The purpose of the analytical effort in the HIFMIP project is to accurately and comprehensively define HUD's requirements. It also will ensure that HUD's business functions can be performed by the selected COTS package and supporting software. Another factor in the selection is the amount of customization required and the cost of that customization. To assist in the selection, the requirements and business functions included here have been transformed by experienced COTS evaluators into *COTS Evaluation Criteria*. These criteria comprise two basic sections, the first of which include requirements and business functions checklists and commentary on each specific bidder's package. This evaluation is normally done by inspecting vendor documentation, vendor assertions and/or a vendor oral presentation. The second part, the *live*

¹ *JFMIP-compliant* means that a vendor's package has been tested and evaluated as meeting all JFMIP standards for accounting systems. It is then added to the JFMIP GSA Federal Supply Schedule, a procurement method that requires departments and agencies to purchase Core Financial Systems from vendors listed on that schedule.

demonstration, serves to confirm both the ability of the COTS to carry out each required business function including those that are HUD-specific, and to show the manner (complex or simple) in which it is done by a specific vendor.

5.1.2 Effect of HUD's Organizational Structure on the ICFS

A major step in the planning for ICFS was the series of decisions as to how HUD organizations will participate in the system processing. The key decisions were made with careful regard as to the similarities and differences in the accounting needs of the various HUD organizations. The major question was whether a specific organization's needs could be combined with others or were sufficiently diverse to continue with separate systems. Figure 5-1 shows the results of these decisions from an organizational point of view. The lower grouping, HUD Administration and the organizations involved in Grants, Subsidies and Loan Management (in yellow) comprise the integrated financial organization under ICFS. FHA, Ginnie Mae and OFHEO will be integrated through automated interfaces for reporting purposes in the initial stage. These interfaces are described in Figures presented later in this chapter.

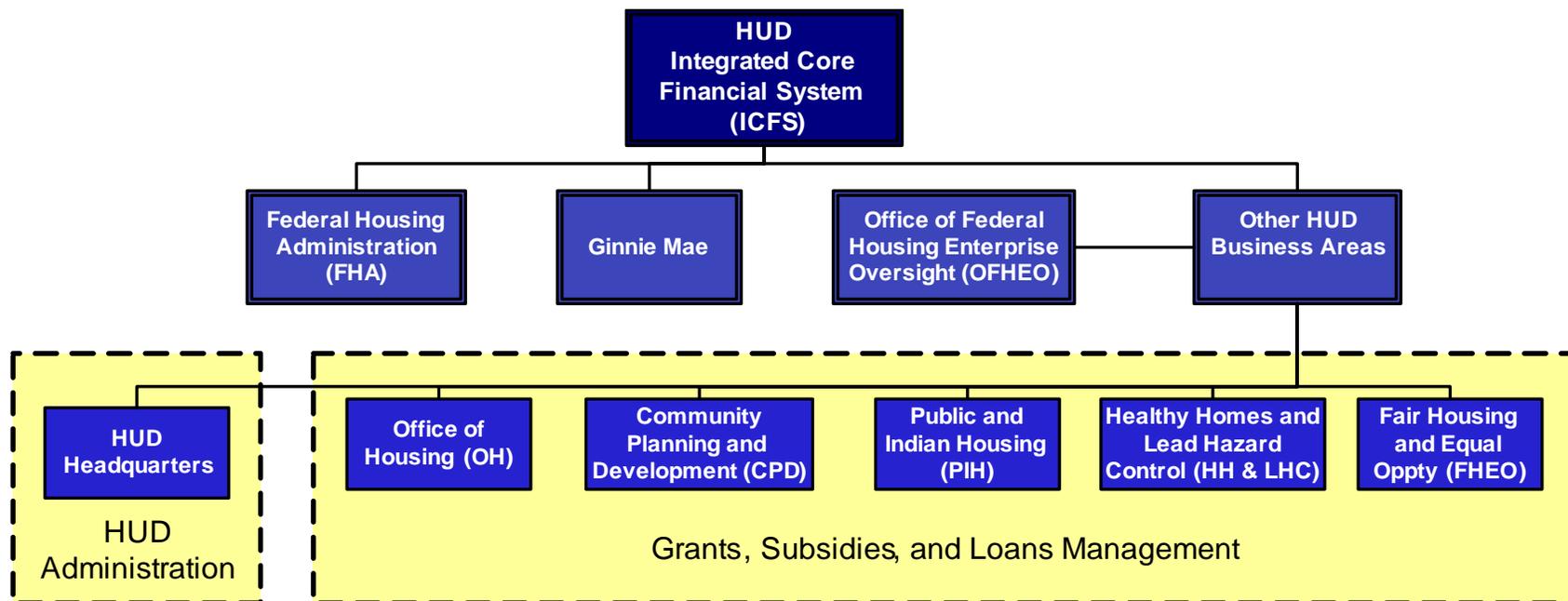


Figure 5-1 ICFS Description by HUD Organizational Structure

5.1.3 The ICFS Implemented in Stages

The study and specification of HUD's requirements, business functions and the selection of a JFMIP-compliant COTS package is the beginning step in the upgrade and integration of HUD's financial systems. The complex process of transitioning to the ICFS will occur over a number of years through a series of planned stages. The next section describes the initial phase of the transition of HUD's current systems to the target ICFS as well as the final phase in which all ICFS systems are in place. A major step in defining the initial stage was a series of decisions by HUD financial managers as to which current systems would be replaced by the ICFS and which would remain in use for the initial stage of transition.

This document lays out the remaining stages as specified by HUD financial managers, ultimately leading to the *final stage*, that is, the future condition when all HIFMIP process improvements have been implemented in HUD's financial systems. The material to follow describes the stages in implementing HUD's ICFS as currently planned.

5.1.4 The Initial Stage in Implementing HUD's ICFS

Figure 5-2, ICFS High-Level System Architecture Initial Stage, illustrates the initial stage system architecture for ICFS. The initial stage will support four separate financial system modernization efforts; however, representatives from CFO, FHA, GNMA and OFHEO will work to standardize their systems, processes and procedures to support eventual migration to a single system. The decision whether to finally transition to a single system will be based on the level of consolidation and integration required to meet the financial information requirements for all HUD stakeholders. It will also consider the software, hardware and support available to HUD. The final decision whether to maintain more than one core financial system will be based on the alternative that is most cost effective and efficient for HUD.

This initial stage architecture will also begin to achieve HUD's overall objectives based on the HUD Financial Management Vision document and subsequent documents and presentations. These objectives are to:

- Comply with JFMIP and FFMIA authoritative guidance
- Resolve OIG audit issues
- Meet the President's Management Agenda initiatives of Improved Financial Performance
- Eliminate labor-intensive, non-value added tasks
- Provide managers with accurate and timely financial information to oversee programs
- Provide a solid foundation for e-Government initiatives
- Comply with OMB circulars and guidelines

The following Figure 5-2 illustrates an overview of how the initial stage will be accomplished.

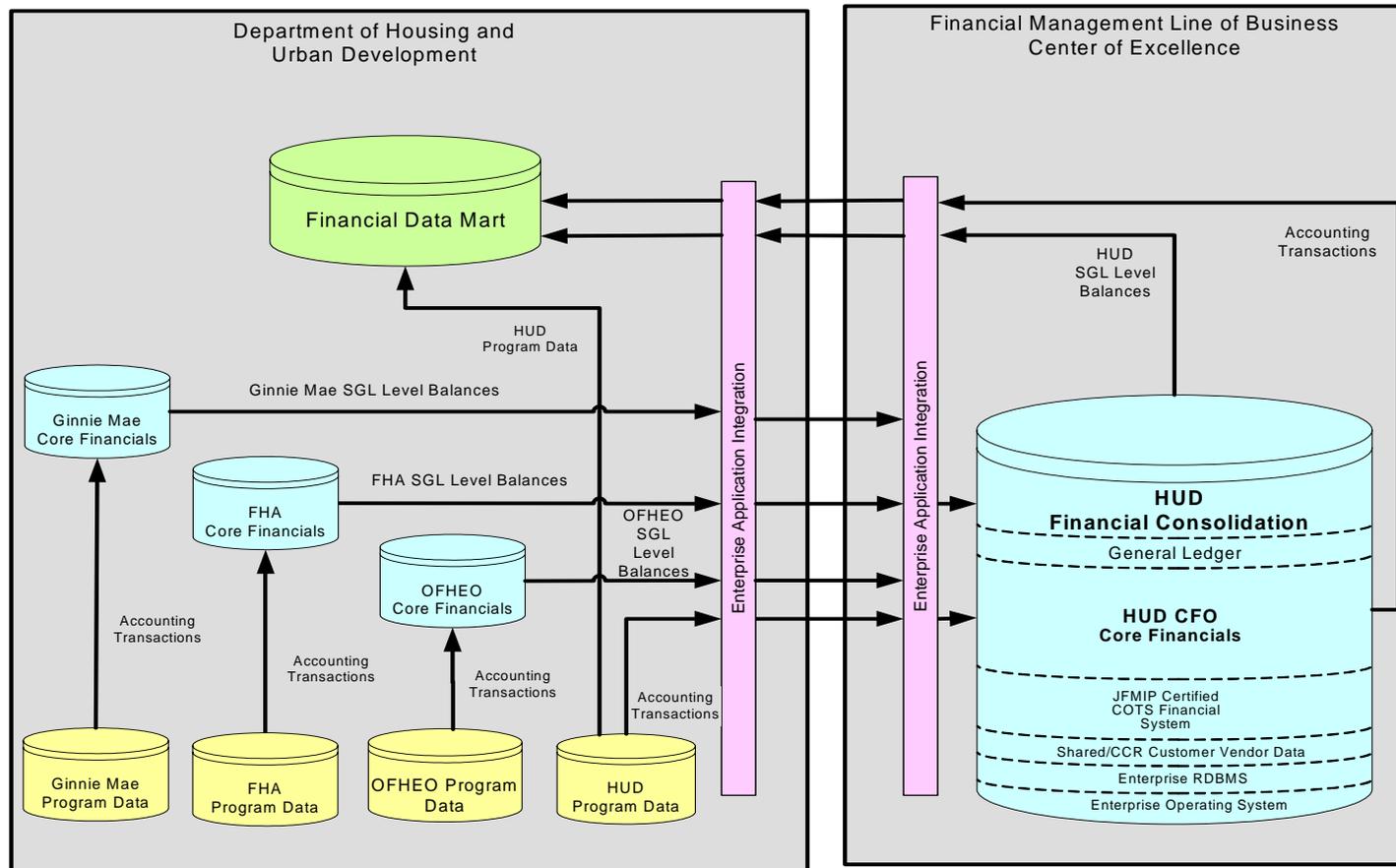


Figure 5-2 ICFS High Level Systems Architecture Initial Stage

Under this concept, HUD’s ICFS would be supported by a *Financial Management Line of Business Center of Excellence (COE)*, an OMB-designated agency or department or commercial entity that has passed OMB’s extensive standards inspection. Such a COE will have a JFMIP-compliant Core Accounting System that can be tailored to accommodate the needs of other agencies. The Transportation Department, for example, was named one of four federal Centers of Excellence for financial management in President Bush’s 2006 budget. Using a single instance of the

accounting software, Transportation was able to meet the specific business needs of their operating administrations, as well as the National Endowment for the Arts. A similar arrangement would be made for HUD with a COE.

Figure 5-2 describes the Initial Stage Systems Architecture. In the lowest shape entitled “HUD Program Data”, accounting transactions are entered directly into the financial system via the *Enterprise² Application Integration (EAI)* facility, a set of interface programs that allows HUD Program Data users to interact directly with the ICFS. Program data from Ginnie Mae, FHA, and OFHEO are first sent to their respective core financial accounting systems and then to the ICFS via the EAI. These data are general ledger balances which are derived from summarizations of the transactions that were processed by the financial systems of Ginnie Mae, FHA, and OFHEO. The Financial Data Mart receives program data directly from HUD and indirectly via the EAI from Ginnie Mae, FHA, and OFHEO. The Financial Data Mart will continue to be used to collect and organize financial data that is vital to HUD’s financial management staff’s daily operations until it is replaced by the Financial Data Warehouse software in a later stage.

The exact nature of the EAI depends on which JFMIP-certified COTS Financial System is chosen. Some interfaces would be via the Web; others might use an Intranet or IP address provided by the COE.

Also, the commercial products used for the *Enterprise RDBMS (Relational Database Management System)* and *Enterprise Operating System* will depend on the COTS package chosen. These components are internal to the COTS package and are not specifically shown on the charts.

The diagram also depicts the use of the Central Contractor Registry (CCR) as the consolidated vendor file. CCR data is downloaded daily as it is the contractor’s responsibility to maintain the accuracy of their own data, including Electronic Funds Transfer (EFT) data.

5.1.5 The Final Stage in Implementing HUD’s ICFS

The HUD Vision final stage is to implement an integrated financial management system that will include all HUD organizations, including FHA, Ginnie Mae and OFHEO. The transition from the “as is” to the “to be” will require a comprehensive multi-year project plan and strategy that will be completed in phases.

HUD’s Financial Management Vision document defines an integrated system as a financial management system designed with effective and efficient interrelationships between software, hardware, personnel, procedures, controls, and data contained within the systems. To be integrated, financial management systems must have, as a minimum, the following four characteristics:

² The term *enterprise* originally meant an organization, either government or commercial, but has since come to have a connotation of *organization-wide* rather than pertaining to a branch or division.

- Standard data classifications (definitions and formats) that are established and used for recording each financial event;
- Common processes for similar kinds of transactions;
- Internal controls over data entry, transaction processing, and reporting that are applied consistently; and
- A design that eliminates the need for duplicate entry of transactions.

HUD has decided upon the architecture of the final stage, to be achieved over time, as HUD organizations are brought into the ICFS architecture through a planned series of transition stages. The final stage is discussed in the “HIFMIP Plan” document— an excerpt of which appears below:

The “HIFMIP Plan” document submitted to OMB in January 005 (*HIFMIP Plan Align with FM LoB 03.03.2005.R*) states:

Integrated financial management for HUD includes all financial management organizations and financial systems that provide financial information to HUD’s consolidated financial statements. HUD currently supports separate financial management organizations within the OCFO, FHA, GNMA and OFHEO organizations. The integrated core financial management system will be implemented in a phased approach that recognizes finite resources and evolving external and internal issues relevant to Federal financial system requirements. The initial phase will implement the integrated core financial management system in the OCFO organization with later phases to include FHA, GNMA and OFHEO organizations.

The HIFMIP Project Team started the System Requirements phase of the project in FY 2005. The Department maintains four core financial systems; each interfaced or integrated with 70+ additional financial systems that perform financial and programmatic functions. The HIFMIP Project Team is developing comprehensive requirements to ensure a single financial system will support all HUD business processes. The requirements document will provide the critical information necessary to start the replacement of the current OCFO systems to implement the Department’s core financial system solution; and concurrently work with FHA, GINNIE MAE and OFHEO to standardize financial processes and financial systems to facilitate the goal to continue the transition to a single core financial system. The requirements phase will include evaluation and selection of an approved COTS core financial system.

The FY 2005 and FY 2006 work includes evaluation and selection of a System Integrator/center of excellence (COE) service provider to work with HUD to transition the Department’s four core financial systems to a single system. The System Integrator will work with the HIFMIP Project Team to identify issues and develop a migration plan starting with

transitioning the OCFO financial systems to the new system and operating environment in FY 2007³; and later transitioning FHA, GINNIE MAE and OFHEO to the single core financial system when each of the three financial systems has completed their modernization and standardization plans. The transition of the remaining 3 core financial systems is scheduled for FY 2008 through FY 2009. Concurrently, HUD will initiate a plan to implement long-term business improvements and complete disposition of existing systems.

The ICFS end stage high-level system target architecture depicted in Figure 5-3 fulfills the above requirements and other value-added features in areas such as program reporting and performance management. The end stage, which represents the final integrated stage of the architecture, will be achieved when all entities are supported by a common instance of the JFMIP-certified COTS financial system.

³ Updated information indicates that the new core financial system will be piloted/started in FY 2007 and implementation completed in FY 2008.

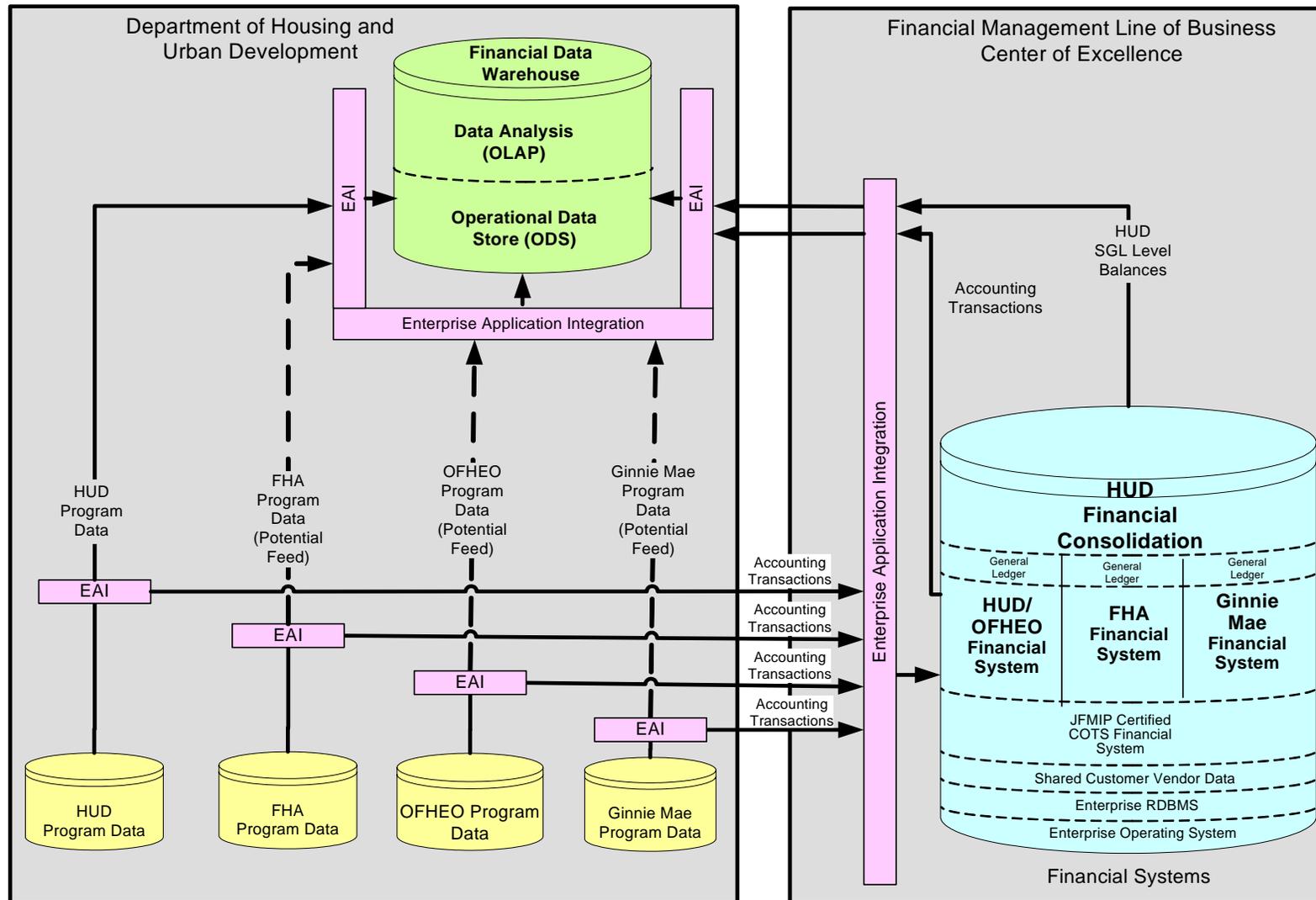


Figure 5-3 ICFS High Level Systems Architecture End Stage

Figure 5-3 depicts the ICFS High Level Systems Architecture End Stage. In this stage, not only HUD Program Data users interact directly with the ICFS, but also Program Data users from Ginnie Mae, FHA, and OFHEO as well using the same EAI. These data are all Standard General Ledger (SGL) transactions, not derivations and summarizations of the transactions as depicted in the initial state. As noted in the right half of the diagram, HUD and OFHEO's SGL data reside in a common database while FHA and Ginnie Mae have their own separate SGL databases.

The Financial Data Mart has been transformed into a *Financial Data Warehouse* and has enhanced features used to collect and organize vital HUD financial data. OLAP (On-Line Analytical Processing) is a catch-all term for various automatic analysis features offered by JFMIP-compliant financial systems. OLAP systems provide substantial libraries of analytical routines commonly used by financial organizations as well a transaction language that allows users to define custom routines specific to the client. This means that HUD can define HUD-specific OLAP rules for processing data that can be potentially fed from Ginnie Mae, FHA, and OFHEO, depending on the nature of the specific vendor's software.

The warehouse also contains an *operational data store*, a term for a customized database which is populated during business hours to show, for example, trends and other data that is useful in tactical planning. Its use is not limited to operational data but will also be used for quality assurance exception reporting where budget tables differ from general ledger account balances, for example. Another example would be budgetary general ledger accounts out of balance with proprietary general ledger accounts.

5.2 System Functions

5.2.1 General Information on ICFS Required System Functions

The selected ICFS will have the following capabilities:

- Standard data classifications (definitions and formats) for establishing and recording financial events,
- Common processes for similar kinds of transactions,
- Internal controls over data entry and transaction processing,
- Elimination of duplicate transaction entries and
- Elimination of fragmentation (e.g., manual entries or excessive file transfers) in accounting operations.

The ICFS will serve as the single, authentic source for the following data:

- Approved budgetary information at every level of the budget process; i.e., once an appropriation has been passed, from appropriation to apportionment to allotment to the field site budgetary control levels;
- Commitments, obligations, costs, and outlays based on funds availability as established by the budgetary controls;
- Detailed financial/cost accounting transactions within sub-ledgers; and
- General Ledger budgetary, proprietary and memorandum balances based on posted entries from the sub-ledgers or documents.

Funds will be controlled through a combination of budgetary general ledger entries that establish basic funding limits. Before any item of spending can be approved, these basic funding limits must be applied. Integrated purchasing controls will verify available funds before allowing commitments, obligations and resultant contracts to be executed. Invoice approval and matching receipt of goods and/or services will be controlled by the associated contract or purchase order. Budget authority will be extended down through the budget chain to field offices and program offices; approval of contracts and grants agreements will be dependent on the availability of funds.

Proprietary general ledger account balances will be maintained by the ICFS in accordance with the FASAB statements or other industry standards.

This section describes the system functions that are being performed or supported by one or more of HUD's financial systems. These system functions relate to activities that fall within a core financial system requirement as well as other financial and mixed systems. HUD performs business processes associated with the following system functions:

- Funds Management
- Purchasing Management
- Accounts Payable Management
- Accounts Receivable Management
- Asset Management
- Cost Management
- Core Financial System Management
- General Ledger Management
- Financial Reporting Management
- Grants/Subsidies Management
- Loans Management

The HIFMIP team used these function designations to categorize and arrange the requirements for each system. As the functions are decomposed, it is important to note that the execution of an accounting transaction may be used by more than one system function within the core financial system.

Each of these functions is further described below. In addition, the diagrams included with each description reflect the function and the decomposition of related activities (or elementary processes). Chapter 4 documents business processes that are supported by these system functions in greater detail.

Table 5-1 System Functions and Descriptions

| System Function | Description |
|-----------------------|--|
| Funds Management | <p>The Funds Management function will provide HUD the ability to record and manage budget allocations in compliance with the laws, regulations, orders and policies relating to funds control plans. The ICFS will allow HUD managers to define multiple budget levels with budgetary limitations for each level. The types of budget authority that HUD records are fully supported by the ICFS and include:</p> <ul style="list-style-type: none"> • Direct and contract authority • Credit reform program, financing and liquidating accounts • Reimbursable authority • Transfers from other appropriations and carry-over amounts • Offsetting collections |
| Purchasing Management | <p>Purchasing Management activities include purchasing goods and services and recording grants and subsidy obligations. In addition, under credit reform, HUD reserves (commits) and obligates authority for lenders to extend loans. For simplicity we are calling all these functions purchasing management. They include:</p> <ul style="list-style-type: none"> • Commitment, obligation, and de-obligation of funds • Funds availability verification • Accruals and account reconciliation activities • Tracking security • Verifying reference data • Posting of the activity to the journal, cost accumulation and transaction tracking <p>The procurement /acquisition system functions referenced herein only include the financial aspects of the procurement cycle. Non-financial components of the financial cycle will be addressed in the Department's Procurement and Contracts system. The Department's Procurement and Contracts system should be integrated seamlessly with ICFS.</p> |

| System Function | Description |
|--------------------------------|--|
| Accounts Payable Management | <p>The Accounts Payable Management function involves transactions such as invoice processing and supplier inquiries-- an area where HUD can reduce procurement cycle times and lower administrative costs. This can be done using e-commerce such as the Internet. Authorized suppliers can enter their invoices against approved purchase orders and submit the invoices online, over the Internet. ICFS will allow suppliers to view their authorized purchase orders, choose the quantities to invoice, and enter only minimal required information such as an invoice number. The Accounts Receivable Management function also includes the tracking of guaranteed loans extended by HUD to authorized lenders under the several HUD guaranteed loan programs including Section 108 and Indian Housing. Authorized personnel from HUD-approved recipients can access ICFS to enter payment requests (drawdowns) either via the internet or using the voice response system (VRS). They can also query the ICFS to determine the status of the payment request, available balance, etc. The Accounts Payable Management function also generates monthly payments for those programs that use the monthly payment schedule method.</p> |
| Accounts Receivable Management | <p>The Accounts Receivable Management function includes recording, billing, monitoring, and collecting amounts due the Government. Activities include: aging receivables, accruing interest, calculating administrative fees and penalty charges for overdue payments. Using ICFS, receivables records and updated general ledger financial balances are done automatically. Defaulted insured FHA loans require the department to receive title to the properties or loan receivables. Collections include principal, interest, late charges, and service charges. Ginnie Mae receives payments due from Mortgage Backed Securities and interest earned on the securities held by Ginnie Mae. Ginnie Mae also collects fees for guaranteeing Mortgage Backed Securities instruments. The Accounts Receivable Management function also includes the tracking of guaranteed loans extended by HUD authorized lenders under the several HUD guaranteed loan programs including Section 108 and Indian Housing.</p> |
| Asset Management | <p>The Asset Management function includes the following categories of assets:</p> <ul style="list-style-type: none"> • Furniture and equipment • Hardware and software • Real Estate Properties that are under its custody (from FHA) • Real Estate Properties that have been acquired through seizure or forfeiture <p><i>Personal Property Management</i> involves all purchases of furniture and equipment including identification and tracking external to ICFS with accounting data imported into ICFS. Hardware and software assets will be maintained within the ICFS including valuation and depreciation. FHA Headquarters staff, Field Offices, Regional Offices, HUD's contractors, vendors, and contracted parties share the responsibilities for the administration of property and property disposition. The accounting data for FHA real estate assets will be imported into ICFS. The Department will probably maintain a Property System to maintain detail property records, record accumulated depreciation, track the property accountability officer, and any other pertinent information for each asset. The financial information will then be sent to the ICFS.</p> |

| System Function | Description |
|----------------------------------|---|
| Cost Management | Cost Management through the ICFS will provide reliable and timely information on the full cost of HUD programs. ICFS will capture costs for managerial and other purposes such as establishing fee/rate/price structures to cover costs. ICFS will establish cost objectives and perform cost analyses and comparisons and be integrated with the time and attendance system. The functionality will allow management of indirect and direct costs for each program or objective. Cost allocation tools will be used to allocate cost to programs and activities as required. This will provide HUD management and the Congress with the ability to compare the benefits of government programs with their associated total costs. HUD can track the effect of financial events and identify the actual cost of programs. |
| Core Financial System Management | Core Financial System Management comprises system administrator activities that configure the core system to HUD's specific application requirements. This is done by selecting the parameters and options within the software that are available for configuration. It does not involve programming customizations by developers. It also includes the period-end system processes needed to open a new reporting period by rolling forward account balances or reversing selected year-end entries. The ICFS core system will provide multiple views of general ledger data by organization, program, and other key data elements. It will enhance financial controls, data collection, information access, and financial reporting throughout the Department. |
| General Ledger Management | The General Ledger Management function involves the maintenance of HUD's general ledger in compliance with the US SGL. HUD maintains its general ledger at a more detailed level than the SGL. HUD includes sub-accounts that carry attribute and other information for FACTS and other reporting. The General Ledger Management Function includes the ability to add/change/delete accounts as the SGL and/or reporting requirements change. It also provides the ability to designate HUD general ledger postings for specific transactions. Finally, the General Ledger Management function includes the controlled use of journal vouchers for accrual and other adjusting or reconciling journal entries. |
| Financial Reporting Management | Financial Reporting Management encompasses the production of standard external reports (i.e., SF 224, FACTS I, FACTS II, and the Consolidated Financial Statements), internal reports, and ad hoc (unplanned and non-repetitive) reports. The ICFS will provide a new capability for reporting that will far surpass current methods because of the use of an RDBMS and the wide variety of reporting software designed specifically for relational systems. The Federal Housing Administration (FHA) has its own reporting authority to the U.S. Department of Treasury and the Office of Management and Budget (OMB). |
| Grants/Subsidies Management | Grants/Subsidies Management involves separating the duties and responsibilities of individuals establishing program policy from those selecting grantees. The ICFS will improve management procedures by facilitating internal controls for the entire process of budget formulation, budget execution, and funds control through grant award, payables management and debt collection. |
| Loans Management | Loans Management involves the establishment of funding levels for program and financing funds received from Treasury as well as to loan commitments, routine invoicing, and debt collection. The ICFS will improve this process by increasing visibility of transactions as they are carried out by the various parties involved: HUD, |

| System Function | Description |
|-----------------|--|
| | lending institutions, and loan recipients. |

5.3 Flexibility

This section describes the capability for modifications to ICFS to be implemented in the design based on changing requirements, operational changes, interaction with new or improved systems, or periodic modifications. This flexibility is an essential requirement because of regulatory changes such as credit reform, new reporting requirements to Congress and OMB, and new or changed program rules such as the splitting of elderly and disabled from one appropriation to two.

The business rules that control the behavior of the COTS federal financial system are parameter driven allowing flexibility in many dimensions of the application's operation. In some cases these flexibility features are specified as mandatory or value added requirements by the JFMIP, while in other instances they are either industry standard components which may not be found in each one of the JFMIP certified federal financial systems. This section discusses how flexibility is provided through relational database management systems, object-oriented programming, interoperability, workflow/messaging, document management, internet access, transaction control process, ad hoc reporting, and operational data store.

5.3.1 Relational Database Management System

The use of a relational database management system (RDBMS) used by all of the COTS potential bidders provides a high degree of flexibility not found in other file handling systems. Because processes can access the database independently, it is much simpler to add or modify a process without the possible *side effects* (unwanted consequences) that are present in tightly related programs that are common in *legacy applications*, a term usually describing older systems running on hardware such as mainframes. Besides being simpler to use and to develop systems, an RDBMS has many important standard features that do not have to be especially programmed. One of the most important is *automatic backup* which protects data in case of equipment failure. Another feature is the availability of *user roles*, that is, the ability of the RDBMS and associated applications to give different users access to different software facilities. An example is the so-called *CRUD* matrix. CRUD is developer terminology for *create, read, update and delete* (database records). Depending on the role assigned to a user, any or all of these rights may be assigned in any combination. Through the use of the RDBMS' *Structured Query Language* (SQL, pronounced *see-kwill*), almost any *ad hoc report* (a report for a specific purpose) can be developed without a great deal of programmer effort and delay. Using this facility, the ICFS can respond quickly and efficiently to OMB and Congressional requests for reports that formerly required piecing together data from several non-integrated systems.

5.3.2 Object-Oriented Programming

The use of *object-oriented* programming techniques allows developers to greatly simplify what would otherwise be complex programs. Object-oriented programming is closely tied to Graphic User Interface (GUI) techniques that use the *Windows* or *X-Windows* mode of operation. For example, in implementing the CRUD matrix previously mentioned, the GUI would be programmed to recognize the role of the logged-on user and activation or deactivation of the command buttons that allow use of the CRUD matrix facilities. Object-oriented programming languages such as *Java* also permit the developer to isolate various procedures in such a way that there are fewer side effects as compared to traditional languages such as COBOL or PL-I.

5.3.3 Interoperability

Interoperability is the ability of the COTS federal financial system to process transactions that are originated by another system. This includes interfaces such as IDIS or TRACS as well as outside systems such as NFC and the GOALS Treasury System. This capability provides considerable flexibility when it is necessary to add a new integrated application. JFMIP includes a mandatory requirement to support interoperability through Application Program Interfaces (API), and more recent versions of COTS federal financial system also include Enterprise Architecture Interface (EAI) capabilities or embedded EAI products.

5.3.4 Workflow/Messaging

This capability supports the generation and routing of internal forms, reports, and other financial documents for processing or approval. This capability eliminates the need to physically distribute hardcopy forms or reports, and significantly increases the flexibility to design or redesign business processes to lower cycle times and improve efficiency. There is also the ability to apply electronic approvals to the documents and to distribute notifications to other personnel. There is also the ability to send electronic messages and notifications via e-mail through gateways and to transmit or receive business documents from external organizations through Electronic Document Interchange (EDI). JFMIP contains a mandatory requirement for an integrated workflow management and electronic approval capability.

For example, CPD field office workers can approve contracts for HOPWA or HOME and instantly notify CPD regional personnel of those actions without the necessity of composing an e-mail. At present, it may take as long as two months to get contracts approved, posted in PAS and LOCCS and then IDIS as the documents travel from Detroit to Chicago and then Ft. Worth.

5.3.5 Document Management

Document management includes the technical requirements that define how the COTS federal financial system should store and retrieve electronically formatted documents. This allows electronic documents, such as invoices, to be stored within the system to substantiate payments or for hardcopy documents to be scanned and then stored electronically. This capability adds significant flexibility to the ability to design effective business processes and supports the benefits associated with the elimination of hardcopy documents. There are no mandatory JFMIP requirements for Document Management, however there are several value added requirements identifying various document management industry standards. Grant reporting and archiving copies of grant agreements are good applications of this technology for HUD.

5.3.6 Internet Access

Remote access to HUD financial processes is currently done by the *Voice Response System (VRS)* which is especially useful to Indian Tribes and rural or poor Public Housing Authorities. In addition to VRS (which will be retained), the capability to access the ICFS (or portions of it as allowed by HUD) via the Internet will provide a valuable *global reach* to the ICFS. There is no JFMIP mandatory requirement for Internet access but there are several value added requirements. The value added requirements provide for obtaining secure web browser access to all COTS federal financial system modules, including workflow related features to be able to enter new financial documents and to review or apply electronic approvals. The value added requirements also provide for obtaining secure internet access to the integrated ad hoc data query tool and for receiving public payment collections over the internet. This capability provides further flexibility in designing business processes and in being able to access the COTS federal financial system from anywhere internet access is provided.

5.3.7 Transaction Control Process

The transaction control process provides significant flexibility in the definition of transaction edits, posting of accounts, and enforcement of business rules. This provides flexibility by allowing the COTS federal accounting system to be configured to meet the specific requirements of the Agency or Department and is a mandatory requirement of JFMIP.

5.3.8 Ad Hoc Query

The ad hoc query capability mentioned previously as a featured capability of a RDBMS provides the ability for users to obtain access to financial data that might not be readily obtained through standard reports. There are several JFMIP mandatory requirements for ad hoc reporting capabilities that provide for data access and reporting tools, a scripting language, batch or on-line submission, report distribution, graphical output, downloads, and report printing.

5.3.9 Operational Data Store (ODS)

An *operational data store* is a type of database often used as an interim area for a data warehouse. An ODS is designed to quickly perform relatively simple queries on small amounts of data (such as finding the status of a grant request), rather than the complex queries on large amounts of data typical of the data warehouse. ODS are usually updated continually through the day and provide reports about business transactions for that day such as contract awards or invoices paid. ODS are used as an integration layer of different operational systems where are transactional systems data are integrated to obtain more insight of various operations. ODS are also used as a feeder system to the Data Warehouse.

