

Trust Management Improvement Project

COMPUTER AND BUSINESS SYSTEMS ARCHITECTURE FRAMEWORK PLAN



February 2000

UNITED STATES DEPARTMENT OF THE INTERIOR

Table of Contents

TABLE OF CONTENTS.....	2
EXECUTIVE SUMMARY	4
INTRODUCTION.....	5
SCOPE.....	5
OBJECTIVES	5
RESPONSIBILITY.....	6
<i>Architecture Planning Team.....</i>	<i>6</i>
<i>Organizational Placement of Architecture Activities.....</i>	<i>6</i>
<i>Trust Management Technical Oversight Committee</i>	<i>6</i>
<i>Trust Management Architecture Work Group</i>	<i>7</i>
REPORTS TO MANAGEMENT.....	7
METHODOLOGY	7
A. PLANNING INITIATION	8
WORK PLAN	8
B. BUSINESS MODELING.....	11
ORGANIZATIONAL STRUCTURE	11
IDENTIFICATION AND DEFINITION OF FUNCTIONS	11
OVERVIEW OF TRUST MANAGEMENT BUSINESS FUNCTIONS	11
C. TRUST MANAGEMENT SYSTEM ENTERPRISE SURVEY	14
D. CURRENT SYSTEMS & TECHNOLOGY ARCHITECTURE.....	14
E. DATA ARCHITECTURE	15
DATA-LEVEL APPLICATION INTEGRATION.....	15
APPLICATION-LEVEL INTERFACE INTEGRATION.....	15
METHOD-LEVEL APPLICATION INTEGRATION	15
USER INTERFACE-LEVEL APPLICATION INTEGRATION.....	16
F. APPLICATIONS ARCHITECTURE	16
RECORDS MANAGEMENT.....	16
DEFINITION OF APPLICATIONS	17
APPLICATION MATRICES	17
G. TECHNOLOGY ARCHITECTURE VISION	17
USER/APPLICATION SERVICES	17
PROGRAMMING SERVICES.....	17
DATA MANAGEMENT SERVICES.....	17
DATA INTERCHANGE SERVICES.....	17
NETWORK SERVICES	17
OPERATING SYSTEM SERVICES	17
HARDWARE PLATFORM SERVICES.....	18
SECURITY SERVICES.....	18
CONFIGURATION MANAGEMENT SERVICES	18
CONTINUITY OF BUSINESS OPERATIONS	18
DATA/APPLICATION DISTRIBUTION.....	18
H. IMPLEMENTATION PLAN.....	18
APPLICATION SEQUENCE	18

MIGRATION PLAN	19
COST AND BENEFITS.....	19
SUCCESS FACTORS	19
I. PLANNING CONCLUSION.....	19
REPORTING	19
PRESENTATIONS	19
J. TRANSITION TO IMPLEMENTATION.....	19
STEPS FOR TRANSITION TO IMPLEMENTATION	20
GLOSSARY	21
APPENDICES	22
APPENDIX I – CHARTS AND TABLES.....	23
<i>Relative Time Duration for Enterprise Architecture Development Table 1.....</i>	23
<i>Trust Management Points of Contact Table 2</i>	24
<i>Trust Management Systems Table 3.....</i>	25
APPENDIX II – POLICIES AND STANDARDS.....	27
<i>Relevant Policies and Standards Table</i>	27
APPENDIX III – REFERENCE DOCUMENTS.....	28
<i>Reference Documents Table</i>	28

Executive Summary

This Computer and Business Systems Architecture Framework Plan has been developed as an integral part of the Trust Management Improvement Project.

There are major efforts currently underway to improve the trust management activities. These efforts, in some cases, use commercial off-the-shelf software (COTS) solutions. For example, the Trust Funds Accounting System (TFAS) is over 95% COTS. The immediate focus of the architecture effort is to determine how these efforts will interface with current systems and also to determine what is required to overcome known trust management system deficiencies. The model developed by Dr. Steven Spewak¹ will be used as a framework for blending current information architectures with the overarching enterprise architecture (See Exhibit A).

It is expected that some portion of current computer and business systems architecture documentation will be part of the target documentation. The proportion of the total architecture requirement where this is so is not yet known. Where possible, documentation, studies, processes, policies and procedures used to operate the current environment are referenced in the framework. Also referenced are improvements already made and those forthcoming with new systems such as the Trust Funds Accounting System (TFAS) and the Trust Asset and Accounting Management System (TAAMS).

Interfaces between trust management business processes and computer systems span many organizations and use different

technology. Given the potential for weakness in any interface, a Trust Management Technical Oversight Committee and an Architecture Work Group will be established to ensure the target information architecture is developed, implemented and managed as one entity. A full-time project manager will provide day-to-day management of the architecture.

There is recognition that the computer systems architecture must be in alignment with the overall Departmental Enterprise Information Architecture (EIA) and this will be effected by having the Department's Chief Information Officer represented in the process.

Exhibit A – Trust Management Architecture Process

Steps	Deliverables	Finish Dates
A. Planning Initiation	Scope, objectives, vision, methodology, tools, planning team, presentations, work plan	April 15, 2000
B. Business Modeling	Organization structure, preliminary functional business model	August 1, 2000
C. Enterprise Survey	Complete functional business model	October 1, 2000
D. Current Systems & Technology	Information Resource Catalog (IRC), system schematics	July 1, 2000
E. Data Architecture	Entity definitions, E-R Diagrams, entity to function matrix, data architecture report	November 30, 2000
F. Applications Architecture	Definitions of applications, application matrices, impact analysis, application architecture report	January 15, 2001
G. Technology Architecture	Data/application distribution, technology architecture report	April 15, 2001
H. Implementation Plan	Application sequence, migration plan, costs and benefits, success factors and recommendations	June 1, 2001
I. Planning Conclusion	Final report presentation, considerations of options and final decision making	August 15, 2001
J. Transition to Implementation	Improvements to organization, policies, standards, procedures, detailed project plans	Ongoing

¹ Spewak, Steven, *Enterprise Architecture Planning: Developing a Blueprint for Data, Applications, and Technology* (1993).

Introduction

The work plan for the Computer and Business Systems Architecture Framework Plan was developed as an integral part of the Trust Management Improvement Project and follows the general framework developed by Dr. Steven Spewak. “His approach has helped organizations with modeling, business strategy planning, process improvement, data warehousing, support systems designs, data administration standards, object-oriented and information engineering methodologies, and project management.”²

The framework follows a structured approach of business modeling, description of the current environment, development of the target architecture and implementation planning. Where possible, documentation, processes, policies and procedures that are used to operate the current environment are referenced in the framework. Further, improvements forthcoming with new systems (e.g., TAAMS) are also noted.

In developing this framework, many documents were researched and have now been catalogued in one central repository for reference purposes. Where possible, electronic copies of these documents have been centralized in a Lotus Notes database.

Scope

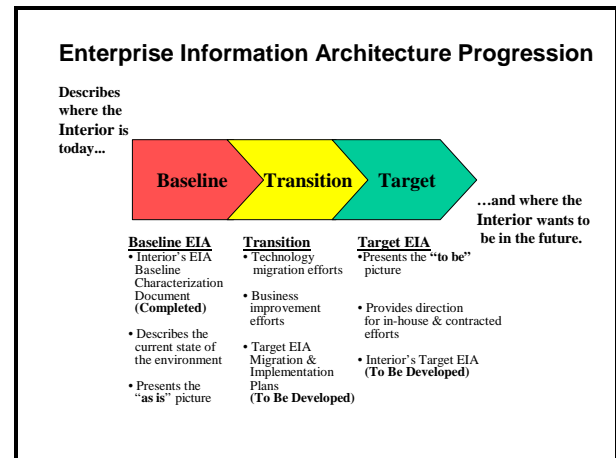
The scope of the Computer and Business Systems Architecture Plan is the trust management activities operated by the Department of the Interior.

The trust management computer systems architecture will be in alignment with the

² Chief Information Officers Council. Federal Enterprise Architecture Framework Version 1.1. September 1999.

overall Departmental EIA as prescribed by the Information Technology Management Reform Act (ITMRA – Clinger-Cohen). In June 1999, Interior published its baseline EIA. The next phase of the Departmental EIA has been funded (i.e., development of the target architecture). Figure 1 depicts the evolution of the Departmental EIA.

Figure 1



The Department will accomplish the alignment between the Trust Management Improvement Project and the Interior's Departmental EIA in two ways:

1. by following the same framework used in the Department's architecture and endorsed by the Federal Council of Chief Information Officers, and
2. by having the Department's Chief Information Officer be a permanent member of the Trust Management Technical Oversight Committee.

Objectives

The objective of this plan is to provide the blueprint for defining and mapping business processes within the trust management activity from existing procedures and systems to the new operating environment.

In pursuit of that objective the architectural effort will be guided by the following planning principles:

1. Oversight of the systems and procedures for Indian trust operations will be provided so that the operations will be integrated as a “virtual” organization involving an integrated set of systems and procedures across relevant Interior bureaus and offices that, taken together, function well to assure proper management of trust monies and actions and an appropriate accounting of the collections and disbursements for tribes and allottees.
2. The oversight will be conducted by senior career officials with programmatic trust responsibilities representing all of the major organizations managing trust operations. They will report to the Trust Management Improvement Steering Committee.
3. All computer and manual systems and procedures involved in managing trust operations will be inventoried and documented:
 - Where documentation is adequate, it will be relied on.
 - Where it is inadequate, it will be improved.
 - Where it is missing, it will be created.
 - The documentation approach for trust operations will use an accepted standard approach for architectural documentation.
4. All such systems will be reviewed periodically for assurance that they are functioning properly and to identify improvements that can be made.

Responsibility

Architecture Planning Team

The Trust Management Architecture Planning Team is comprised of staff from the bureaus and offices involved in the trust management activities as well as other areas as needed. The purpose of the Architecture Planning Team is to lay out this framework plan for the trust management computer and business systems architecture. The Architecture Planning Team will yield their involvement in the project to the architecture project manager and work group when they are selected.

Organizational Placement of Architecture Activities

The trust management business and computer system architecture development is taking place in a dynamic setting since there are constant changes in business functions, practices, and technology that span organizations. **Given this environment, trust management architecture activities should be managed as one entity to ensure success.** In response to this need, two groups will be formed to oversee the development and ongoing management of the architecture:

Trust Management Technical Oversight Committee

Chaired by the Department’s Chief Information Officer, this committee will approve the overall business and computer system architecture for trust management activities and provide long term management including architecture configuration. This committee will be comprised of senior technical executives from the organizations involved in trust management and report to the Secretary’s Trust Management Improvement Steering Committee.

Trust Management Architecture Work Group

Chaired by a full time project manager, this group is comprised of technical and business staff from bureaus and offices involved in trust management activities. This group reports to the Trust Management Technical Oversight Committee and is charged with developing the business and computer system architecture following the framework set forth in this document. The project manager will provide, at a minimum, monthly briefings to the oversight committee. Primary members will be selected from the following organizations:

Bureau of Indian Affairs

- Office of Information Resources Management (OIRM)
- Functional Areas (e.g., trust, realty, land title, etc)

Minerals Management Service

- Royalty Management Program

Office of the Secretary

- Office of the Special Trustee
- Office of the Chief Information Officer
- Office of Hearings and Appeals

Bureau of Land Management

- Minerals, Realty and Resource Protection Office

Figure 2 depicts the new organizational structure.

Figure 2

Trust Management Oversight Structure



Reports to Management

The project manager for the trust management business system and computer system architecture will provide regular briefings on project status, options, and items requiring decision-making to the Trust Management Technical Oversight Committee and to other senior executives following an agreed upon schedule.

Methodology

The methodology used for developing the trust management architecture will follow the model developed by Dr. Stephen Spewak (*Enterprise Architecture Planning: Developing a Blueprint for Data, Applications, and Technology*).³ The following table provides a high-level description of the model.

³ The Spewak Enterprise Architecture Planning (EAP) methodology will provide comprehensive guidance for in-house and contracted support of this project.

Steps	Deliverables
A. Planning Initiation	Scope, objectives, vision, methodology, tools, planning team, presentations, workplan
B. Business Modeling	Organization structure, preliminary functional business model
C. Enterprise Survey	Complete functional business model
D. Current Systems & Technology	Information Resource Catalog (IRC), system schematics
E. Data Architecture	Entity definitions, E-R Diagrams, entity to function matrix, data architecture report
F. Applications Architecture	Definitions of applications, application matrices, impact analysis, application architecture report
G. Technology Architecture	Data/application distribution, technology architecture report
H. Implementation Plan	Application sequence, migration plan, costs and benefits, success factors and recommendations
I. Planning Conclusion	Final report presentation, consideration of options and final decision making
J. Transition to Implementation	Improvements to organization, policies, standards, procedures, detailed project plans

A. Planning Initiation

Work Plan

The work plan for the trust management computer and business systems architecture was developed with the understanding that some activities were already in progress. Therefore, some of the activities may occur concurrently instead of serially as might be the case in a traditional approach where nothing had been started.

Task completion estimates are based on benchmarks from private industry and government architecture projects. There may be a need to refine the work plan (develop subtasks) and times as experience and new circumstances dictate. Table 1 in

Appendix I portrays the time estimate duration of tasks B through H in relation to the whole project.

Below are the major tasks that are being conducted to produce the computer and business systems architecture for trust management activities in the Department of the Interior. Responsibility, schedule, and current status are also noted.

Task A. Initiate Trust Management Project

Subtask A1: Select planning team to prepare initial guidance on architecture planning.

Responsibility: Trust Management Improvement Steering Committee

Completion Date: January 15, 2000

Status: Complete

Subtask A2: Determine and establish organization to manage architecture.

Responsibility: Architecture Planning Team

Completion Date: March 15, 2000

Status: Draft organization plan complete and being briefed to bureaus and offices involved in trust management activities.

Subtask A3: Define scope of architecture project.

Responsibility: Architecture Planning Team

Completion Date: February 1, 2000

Status: Complete

Subtask A4: Determine architecture methodology.

Responsibility: Architecture Planning Team

Completion Date: January 18, 2000

Status: Complete

Subtask A5: Gather and review reference documents.

Responsibility: Architecture Planning Team

Completion Date: February 7, 2000

Status: Complete

Subtask A6: Build electronic library of documents.

Responsibility: Architecture Planning Team

Completion Date: March 15, 2000

Status: Ongoing

Subtask A7: Inventory applicable policies and procedures.

Responsibility: Architecture Planning Team

Completion Date: March 28, 2000

Status: Ongoing

Subtask A8: Develop detailed work plan for architecture project.

Responsibility: Architecture Planning Team/Architecture Project Manager

Completion Date: April 15, 2000

Status: Draft work plan has been completed and will be finalized by the project manager.

Subtask A9: Appoint an Overall Architecture Project Manager

Responsibility: Chief Information Officer

Completion Date: February 16, 2000

Status: Project manager (Julia Laws) has been selected from the Chief Information Officer's immediate staff to manage the overall architecture project. Contractor assistance will also be used as necessary.

Subtask A10: Develop resource requirements

Responsibility: Architecture Project Manager

Completion Date: April 15, 2000

Status: Preliminary resource estimates are being determined by the planning team.

Task B. Develop the Trust Management Preliminary Business Model - Document the organization, identify and define functions, distribute and validate preliminary business model.

Responsibility: Architecture Work Group

Completion Date: August 1, 2000

Status: Organization charts are available; however, they should be verified given ongoing reengineering efforts in MMS and the reorganization (including physical relocation to Reston, Va.) of BIA's IRM Office. A high level business function discussion is provided in the framework plan document for guidance.

Task C. Conduct the Trust Management System Enterprise Survey - Schedule interviews, prepare for interviews, perform the interviews, document interview results, and distribute and validate complete business model.

Responsibility: Architecture Work Group

Completion Date: October 1, 2000

Status: Preliminary contact has been made with all organizations and initial interviews have been conducted. A list of contact names and organizations is provided as Table 2 in Appendix I.

Task D. Determine the Current Trust Management Systems and Technology Architecture - Determine the scope, objectives, and work plans for the trust management information resource catalog (IRC), prepare for data collection, collect current system and architecture information, document the data collected, validate and produce draft IRC, draw schematics depicting relationships, distribute validated IRC, and administer and maintain IRC.

Responsibility: Architecture Work Group

Completion Date: July 1, 2000

Status: During initial contact with trust management organizations, a list of major systems involved in trust management activities was compiled and is provided as Table 3 in Appendix I. A review of current systems documentation should yield

relationship and information flows which will help document the current systems as well as manual procedures related to them.

Task E. Develop the Trust Management System Data Architecture - Determine candidate data entities for definition, define the data entities, attributes, and relationships, document relationship of data entities to trust management business functions, distribute and validate the trust management data architecture.

Responsibility: Architecture Work Group
Date: November 30, 2000

Status: Listings of data elements are available from the individual system owners and managers of current systems. In the case of TFAS and TAAMS, data element catalogues will be obtained from the private service bureaus operating or that will be operating under the umbrella of the trust management architecture.

Task F. Develop the Trust Management Applications Architecture - Determine candidate applications, define trust management applications, document relationship of applications to trust management functions, analyze impact to current applications, and distribute and validate the trust management applications architecture.

Responsibility: Architecture Work Group
Completion Date: January 15, 2001

Status: Two of the major components of the trust management architecture are currently under contract: TFAS which is scheduled to be implemented by March 31, 2000, and TAAMS which is being piloted currently and will be implemented in phases. Defining and interfacing these environments and the manual procedures supporting them should be considered as an early step.

Task G. Develop the Trust Management Technology Architecture Vision - Identify technology principles and platforms to be used, define the platforms and distribution methods, relate the technology platforms to applications and trust management business functions, evaluate and modify applicable policies and procedures for consistency and adequacy, and distribute and validate the trust management technology architecture vision.

Responsibility: Architecture Work Group
Completion Date: April 15, 2001

Status: Similarly as with the Applications Architecture, major work is already taking place that affects the architecture vision. TAAMS, TFAS, and reengineering within MMS are well underway along with a probate tracking system within the Office of Hearings and Appeals. The CIO will ensure these efforts coalesce along standard technologies wherever possible.

Task H. Trust Management Architecture Implementation Plan - Sequence the applications, determine effort and resources, develop benefit cost analysis, develop recommendations, develop transition phase plan, produce final trust management report, and provide presentations to management.

Responsibility: Architecture Work Group
Completion Date: June 1, 2001

Status: Implementing the architecture is already underway given the deployment of TFAS and the development of TAAMS. TAAMS is being implemented in phases beginning with the Land Title portion and continuing to the distribution of information on monies received for beneficial ownership to OTFM. A full deployment schedule of all contracted systems and those developed within the Department will be determined immediately. Refinement of the implementation schedule is anticipated to

include other activities such as MMS reengineering as those activities become operational.

Task I. Planning Conclusion - Final report presentation, consideration of options and final implementation decisions.

Responsibility: Trust Management Architecture Project Manager

Completion Date: August 15, 2001

Status: Information is available on some portions of trust management activities that have been completed or are underway.

Task J. Transition to Implementation - Present improvements to organization, policies, standards, procedures, and provide detailed project plans for implementation.

Responsibility: Trust Management Architecture Project Manager and Technical Oversight Committee

Completion Date: To be determined.

Status: Information is available for some portions of the architecture close to completion (i.e. TFAS) and those items in progress such as TAAMS, reengineering in MMS, etc.

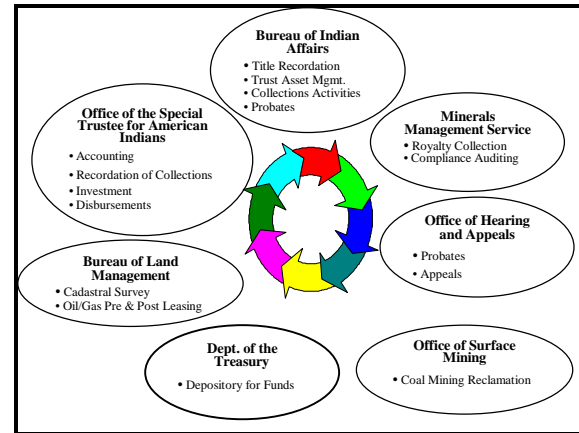
B. Business Modeling

Historically, business-modeling efforts for trust management were conducted independently without an overarching framework. This framework provides a method for pulling previous, current and new modeling efforts together for validation and integration. As a result, a unified functional business model will emerge to form the basis for the trust management system's business and systems architectures.

The business model for trust management will identify the functions, provide a brief

description of each function, and identify the organization that performs each business function. The identification and depictions of business functions will be completed irrespective of whether they are manual or automated activities. A high-level depiction of the trust management monetary business functions is shown in figure 3.

Figure 3



Organizational Structure

This section will contain the organizational structure for each major component within the Department that deals with trust management activities.

Identification and Definition of Functions

A functional decomposition will be conducted for the trust management business functions. These functions will start at a high level and be subsequently broken down to processes that are single-action oriented, executed repeatedly, have an identifiable outcome, or are associated with a specific Interior organization unit.

Overview of Trust Management Business Functions

The Department of the Interior has overall responsibility for Indian trust management activities. The principal offices responsible for this task are the Office of the Special Trustee for American Indians and the

Bureau of Indian Affairs (BIA). However, the Department of Treasury and DOI's Minerals Management Service (MMS), the Bureau of Land Management (BLM), the Office of Hearings and Appeals (OHA) and the Office of Surface Mining (OSM) have responsibilities for significant functions of the overall trust management business process.

The following general discussion on business functions and interfaces is provided as background information.

Bureau of Indian Affairs

The BIA is responsible for the management of natural resource assets held in trust by the United States Government on behalf of individual Indians and Tribes and for the associated land records. This includes such things as conservation, leasing, and collection of funds that may result from activities associated with the asset. Examples of surface and sub-surface natural resources managed would include: oil and gas, solid minerals, forestry and surface land (range, agricultural, grazing, rights-of-way, etc.).

If, for example, a parcel of allotted Indian land were leased, BIA is responsible for coordinating the processes surrounding that leasing activity. This might include the updating of ownership in the Title system as the result of an OHA probate order, the advertisement of the leasing opportunity, the awarding of the lease, the collection of any performance bond/bid deposit, and collection of the lease payments. BIA is responsible for maintenance of basic information on owners and ownership shares.

Office of the Special Trustee for American Indians

In 1994, Congress passed the American Indian Trust Fund Management Reform Act of 1994. This legislation established the Office of the Special Trustee for American Indians. Under this act, the Special Trustee, who reports to the Secretary of the Interior, is responsible for oversight, reform and coordination of systems and practices used by various Departmental agencies in the managing of Indian trust assets. In January 1996, the Office of Trust Funds Management (OTFM) was shifted by Secretarial order from the BIA to the Office Special Trustee. It is the OTFM arm of OST that is responsible for the trust accounting functions.

In very general terms, the flow of funds can be broken down into two components - those that involve oil and gas royalty payments and those that do not. In both cases, the funds are deposited with the U.S. Treasury. In the case of royalty payments, funds are collected by MMS based upon an underlying document. These funds are deposited and OTFM is notified. OTFM will then post the funds to the TFAS system so that they can begin to earn interest. Twice each month, MMS sends distribution files to BIA for ultimate distribution to individual Indian landowners. In the case of wholly-owned Tribal leases, monies are posted directly to the Tribal account upon notification to OTFM by MMS.

If the funds are non-royalty in nature, they are typically collected at the BIA agency, and are based upon some underlying document. The funds are then forwarded to a regional office for deposit with Treasury. OTFM is notified of the deposit and it is posted to TFAS. Investments are then made either in the Treasury overnight investment vehicle or in a specific investment instrument. Disbursements from the TFAS take the form of automatic clearing

house/electronic funds transfer (ACH/EFT) or hard copy check. In either case, Treasury must be notified that a disbursement has taken place.

The other agencies depicted are typically involved in non-financial trust management activities. The actions of these agencies may result in the creation of a financial transaction (e.g., an OHA probate may distribute funds held in an estate to accountholders).

Minerals Management Service (MMS)

The Minerals Management Service's Royalty Management Program (RMP), located in Lakewood, Colorado, is responsible for royalty collections and compliance auditing of Indian mineral leases. Royalty payments are collected at the lease level from payors on a monthly basis. Payment distribution data for individual Indian leases is transmitted electronically to BIA. BIA, in turn, uses this information to distribute lease level funds to the individual owners and tribes. On a separate track, lease operators submit mineral volume data to the RMP. RMP compares the volumetric data received and generates exception reports for audit purposes. These reports are used to reconcile discrepancies and provide a back-end check of data validity. In addition, RMP also conducts compliance auditing of companies extracting minerals from Indian leases. Audit offices are located in strategic areas with on-site audit staff at major oil and gas companies.

Bureau of Land Management (BLM)

The Bureau of Land Management provides technical support to Indian minerals owners at the lease operations level. Pre-lease functions include appraisals to determine fair market value of mineral estates to assist with lease negotiations and probate matters.

Post-lease activities document changes to production-related lease activities, including drill permits, well plugging and abandonment operations. Other lease activities include oil and gas well spacing, commitment of Indian trust lands to units and communitization agreements, and commingling of production from different wells. BLM also inspects oil and gas wells for compliance with lease terms, health and safety concerns, resource protection, and site security. Additionally, cadastral surveys of Tribal and allotted lands are performed by BLM.

Department of the Treasury

The primary role of the Department of the Treasury is to act as a depository for funds collected and disbursed on behalf of allotted Indian and Tribal owners. At the direction of the OTFM, the Department of the Treasury invests in its overnight vehicle any funds not already invested in specific instruments by OTFM.

Office of Hearings and Appeals (OHA)

Interior's OHA, through its staff of Administrative Law Judges, adjudicates probate cases and decides appeals in cases relating to the use and disposition of trust property owned by both individual Indians and tribes. BIA uses the probate decisions to update its records showing the ownership of trust property. BIA uses decisions in cases involving the use and disposition of trust property to determine who the proper person is to use trust property and to determine to whom, and under what conditions, trust funds can be released.

Office of Surface Mining (OSM)

The Interior's Office of Surface Mining is responsible for coal mining reclamation activities on Indian land.

C. Trust Management System Enterprise Survey

The purpose of the Enterprise Survey Phase is to gather details about the trust management activities to complete the current business model, including:

- **What** information is used to perform a function?
- **When** that function is performed?
- **Where** the function is performed?
- **How** often that function is performed?
- **What** opportunities exist to improve the function?
- **Who** owns the functions?
- **Who** currently performs the function?

A variety of process and functional modeling efforts have been conducted for trust management. For example, land records, title plant, and distribution of trust funds have all been modeled in the past, but should be revalidated for inclusion in the overall trust management business and systems architecture. The survey needs to be performed on a consistent and iterative basis to ensure the business processes and models are kept current. The review will also ensure that Interior can evaluate areas on a continual basis.

The Special Trustee, in the development of his strategic plan, conducted the most recent survey (1996 – 1997). The User Needs Analysis identified those items needed to assure that the Secretary of the Interior fulfilled his trust related responsibilities. This information should be validated since implementation of many of the suggestions has begun, and changes may have been made. For example, the report called for a commercial off-the-shelf (COTS) application program to be purchased for trust accounting and provided in a service bureau environment. The Office of Trust

Funds Management (OTFM) has leased SEI's Investment Trust 3000 application. At this time, the Trust Funds Accounting System (TFAS) is operated by the SEI in Oaks, PA. OTFM has converted all of the Tribal Trust accounts and 9 of 12 Regional Area Individual Indian Monies Accounts to the new TFAS.

The User Needs Analysis, the Special Trustee's Strategic Plan and the High-Level Implementation Plan (HLIP) were initiated in response to the requirements and direction set forth in the Trust Fund Management Reform Act of 1994. While much of the baseline information has been gathered, the fact that the operating environment is dynamic means that the initial information will have to be validated and updated to reflect the current "as is" state. Careful analysis of this information will form the foundation for the trust management business and computer system architecture.

D. Current Systems & Technology Architecture

This portion of the project will conduct an inventory of current (e.g., TFAS and legacy IRMS) and developing (e.g., TAAMS, Royalty Management Program Reengineering, and OHA Probate Tracking Project) systems and technology being employed by all portions of the trust management operations within the Interior.

The major deliverable of this phase is called an Information Resource Catalog (IRC), (also known as a systems encyclopedia or systems inventory). The IRC is at a high summary level and does not go into exhaustive detail for every system. This effort will eliminate the guesswork and suppositions by providing substantiated, documented information about the current technology being employed to perform trust management activities.

Schematics for the trust management applications will be developed that show the inputs, outputs, files or databases, and the source of the inputs and destination outputs. See Table 3, Appendix I for a current list of trust management systems.

E. Data Architecture

The data architecture identifies and defines the major kinds of data that support the trust management business functions defined in the business model. During this phase, available data dictionaries will be identified and provided for data administration analysis purposes.

The Spewak framework requires four steps for completing the Data Architecture Phase:

1. List candidate data entities
2. Define the entities, attributes, and relationships
3. Relate the entities to the business functions
4. Distribute the data architecture

Data modeling techniques will be used for specifying complex data structures and business rules without being concerned about the characteristics of the database management system that will be used to implement these structures and rules. Examples of these methods include but are not limited to:

- Entity Definitions,
- Entity-Relationship Diagrams,
- Entity to Function Matrix,
- Data Architecture Synopsis, and
- Data Dictionaries

These activities will allow system interfaces/integration opportunities to emerge to support the exchange of data across organizational lines. This will result

in improved effectiveness and data integrity within all trust management activities. Toward this end, application interfaces and integration among the trust management systems will be analyzed to determine the appropriate integration/interface solutions.

Determining the level of integration is dependent on the existing and “to be” technologies employed by trust management activities and the business requirements. Examples of these levels of integration are noted in the next four paragraphs.

Data-Level Application Integration

These are the processes, and the techniques and technologies, for moving data between data stores. For example, extracting information from one database, perhaps processing that information, and updating it in another database.

Application-Level Interface Integration

These are processes for leveraging interfaces (i.e., application program interfaces) exposed by custom or packaged applications. Developers use these interfaces to access both business processes and simple information. Using these interfaces, developers are able to bundle together many applications, allowing them to share business logic and information. The limitations developers face are the specific features and functions of the application interfaces.

Method-Level Application Integration

The sharing of business logic that may exist within an enterprise. For example, the method for updating a customer record may be accessed from any number of applications, and applications may access each other's methods without having to rewrite each method within the respective application.

User Interface-Level Application Integration

These are techniques for bundling applications together using their user interfaces as a common point of integration. For example, mainframe applications that do not provide database or business process-level access via standard or proprietary application interfaces may require access through the user interface of the application.

F. Applications Architecture

The applications architecture defines the major kinds of systems needed to manage the data and support the trust management business functions.

Significant inroads have already been made in several areas:

- A modern, COTS based Trust Funds Accounting System (TFAS) is in its final phases of implementation.
- A new system, the Trust Asset and Accounting System (TAAMS) is being developed. TAAMS is in a pilot phase and is scheduled for implementation in the near future. The purpose of TAAMS is to develop a comprehensive, national system for land title and records, and realty activity, including accounts receivable for Indian Tribes and allottees and for BIA Regional and Agency locations. TAAMS will interface with other DOI management systems, such as the Trust Funds Accounting System (TFAS) and the Royalty Management System (RMS) of the Minerals Management Service (MMS). TAAMS is an integral component in the BIA's management improvement plans for the future and will be deployed at 12 Regional Offices, 86 Agency and field offices and 123 tribes.

- The Minerals Management Service is completely reengineering its royalty collection and auditing processes and the Office of Hearing and Appeals is developing a probate-tracking system. These initiatives are scheduled for implementation in 2001.
- The Bureau of Land Management will complete its target Bureau information architecture in fiscal year 2000.

Concomitant with these activities, this project will map an overall architecture for the entire trust management community. To accomplish this effort, existing and envisioned architectures for these specific projects must be mapped and integrated into the target architecture, taking advantage of economies of scale and evolving technologies.

In addition to a prospective view of an improved systems environment, the proposed underlying architecture may also need to lend itself to building an application to support a historical or retrospective reconciliation of Indian trust accounts.

Records Management

Records Management requirements will be considered throughout the development of the trust management architecture. Development of a records management program is a key subproject under the HLIP. A comprehensive trust management records management solution that crosses organization lines is being developed. Architecturally, these solutions must maintain interoperability and all records disposition schedules and archiving must comply with appropriate regulations.

Definition of Applications

An analysis of the trust management databases and the data types contained in these databases will be conducted.

Application Matrices

See Table 3, Appendix I for a listing of trust management systems.

G. Technology Architecture Vision

The technology architecture vision defines the major kinds of technologies needed to provide an environment for the applications that are managing the trust management data. The trust management technology architecture vision (target architecture) will be organized into 11 service areas:

User/Application Services

User services are methods by which people interact with an application. Application services provide the functions required for creating and manipulating displayed images, multimedia, client/server operations, etc. The target architecture will explore opportunities for standardizing user interfaces within the trust management information systems.

Programming Services

Provides the structure to develop and maintain software that exhibits desired characteristics. This includes languages, tools, and methodologies.

For example, the target architecture will establish a strategy for the programming services that support the trust management activities. This will include a comprehensive strategy for programming libraries and objects, program configuration management tools, application program interfaces and life cycle management methodologies. A thorough understanding and integration strategy for the

programming services will improve the interoperability of the trust management systems.

Data Management Services

Provides the procedures, practices, methods and software used to manage data (e.g., data dictionary/directory, DBMS, distributed data).

Data Interchange Services

Provides specialized support for information exchange, including format and semantics of data entities between applications on the same or different platforms (e.g., records/document management, text data, spreadsheet data interchange, graphic interchange, image compression and decompression, geospatial, geographical).

Network Services

Provides connectivity and basic services to foster communications across workgroups and sites (e.g., data communications, electronic mail services, directory services, transparent file access/transfer, and remote network access). The target architecture will explore ways to exploit new services gained from the FTS 2001 (MCI WorldCom) contract to improve network services that support the trust management systems.

Operating System Services

Allows the software environment and lower level system interfaces within all computing devices to function while maximizing machine resources, capabilities and security. There will be a direct relationship between the required operating system services security features and the results of security needs analysis. The target architecture will explore opportunities for standardizing operating system services (both desktop and back-end servers) to reduce total cost of

ownership of Trust Fund activities and improve overall system reliability.

Hardware Platform Services

Provides the physical layer and addresses the infrastructure necessary to support the other services. The target architecture will explore opportunities for standardizing hardware platform services (both desktop and back-end servers) to reduce total cost of ownership of Trust Fund activities and improve overall system reliability. Note references in Appendix II: Policies and Standards for Departmental Administrative Systems (DAS) standards.

Security Services

Supports the secure distribution and integrity of information and protects the computing infrastructure from unauthorized access (e.g., OS, network, data interchange, data management security). Conducting a needs assessment will determine the appropriate security levels required for the trust management systems. Note references in Appendix II: Policies and Standards for related guidance and regulations for systems security (i.e. OMB Circular A-130).

Configuration Management Services

Provides the mechanism to monitor and control individual applications, databases, systems, platforms, networks, and user interactions with these components. A best practices approach to managing software versions (e.g. request change proposals) and the overall change management structure will be adopted. The information systems comprising the trust management activities are viewed as a single entity. Particular emphasis is placed on managing the interfaces within the trust management systems environment.

Continuity of Business Operations

Provides the plans and standard operating procedures for continuity of business functions in the event of resource failures. This activity applies to both computer system processes and manual procedures. Moreover, it will address: (1) how long business processes may be postponed in the event of computer systems failure, (2) procedures for moving to and engaging the designated back-up computer site, and (3) procedures for conducting the business processes in strictly a manual mode if automated methods are not available.

Data/Application Distribution

A strategy for distributing trust management data and the applications that support these data will be developed and documented. This will include but is not limited to:

- Data and application distribution tables and lists,
- Configuration of technology platforms, and
- Conceptual architecture evaluations.

H. Implementation Plan

The purpose of this phase is to prepare a plan for the implementation of the target architectures.

Application Sequence

This section establishes priorities and formulates a sequence for implementing the applications.

For trust funds management, the Trust Funds Accounting System (TFAS) has been successfully deployed in 9 of 12 regional areas, and full deployment is expected by March 31, 2000. The Trust Asset and Accounting Management System (TAAMS) will deploy in phases. The pilot phase is currently underway in the Rocky Mountain

Region (Billings, MT). After a successful pilot, all Land Record Information System (LRIS) data will be converted to TAAMS and all future recordations will be made using the new system.

There are currently OHA and MMS reengineering efforts underway. MMS Royalty collection and auditing processes are being reengineered with deployment currently scheduled for September 2001. OHA intends to implement a probate tracking subsystem designed for use by both OHA and BIA.

Migration Plan

For this activity migration plans should encompass detailed paths/mapping of legacy systems (for example IRMS) data to the target architecture (TAAMS) to ensure that data are populated and reconciled during the phased transition. The focus of this activity is to ensure data integrity and availability. In the spirit of Raines' Rules (ref: Appendix II), pilots and phased implementations will be used where possible.

Cost and Benefits

Historically, cost and benefit data were difficult to determine. This effort will depict the complexities associated with trust management activities. Therefore, cost and benefit data are more readily available for analysis and budget formulation (ref: Appendix II – 375 DM 7 Benefit/Cost Analysis).

In essence, the benefit of these efforts is to ensure that the trust management EIA allows the Department of the Interior to meet the trust responsibilities outlined in the Trust Fund Management Reform Act of 1994.

Success Factors

A scorecard, depicting measurable success factors, will be developed for each known

trust management deficiency. Deficiencies are noted in a GAO report titled Indian Trust Funds of April 1999 and in ongoing reengineering project reports. Further, scorecards will be developed for Interior's strategic goals for improving the Secretary's trust management systems.

I. Planning Conclusion

This section provides guidelines and suggestions for managing the final phase of enterprise architecture planning for trust management. The two major portions of this activity are preparing reports and presenting the information to management.

Reporting

Because implementation of improvements for trust management is already underway, continuous reporting to management is important. The initial report should discuss the methodology and outline of the project as well as deliverables and schedules. Subsequent reporting should provide the status of activities and any changes to deliverables or schedules.

Presentations

Presentations of the trust management architecture should be prepared for both the Trust Management Technical Oversight Committee and for non-technical level executive management. These presentations may involve sign-off on the end architecture or for making decisions on implementation options. While this will require additional work, it is important that both audiences understand from their perspectives what is happening and what their responsibilities will be in implementing the trust management architecture.

J. Transition to Implementation

The purpose of this phase is to describe activities that need to occur during a

successful transition from the definition stages of an enterprise architecture plan to the design stages of implementation. During the transition period, most of the recommendations formulated as part of the migration strategy are accepted and implemented.

The steps noted below are those that normally apply to the transition phase. However, it is recognized that they may not necessarily be conducted in the order presented and all may not apply. The applicability and timing issues are particularly noteworthy in the trust management activity since improvements which in fact dictate an end architecture are already being made.

Steps for Transition to Implementation

Plan the Transition

Specify objectives, create a transition work plan, assign responsibilities, designate a leader.

Adopt a System Development Framework

Select the system life cycle methodology (DOI draft policy exists), consider modern tools such as computer-aided software engineering (CASE) programs.

Arrange for Computer Resources

Determine and acquire computer resources - create a stable environment for managing the data, hardware, and software tools.

Refine the Architecture

Revise architecture through feedback with functional and technical contacts, add additional detail to architecture.

Institute Organizational Changes

Create an environment conducive to implementing architecture, consider reorganizing the Information Systems area

to respond, issue policy statements e.g. data ownership, technology standards.

Recruit Implementation Personnel

Review and update job descriptions, hire to new positions, consider consultants.

Provide Training

Determine training requirements, encourage staff to take applicable courses, develop training plan for organization and for individuals, create an environment for learning.

Establish Programming Standards

All technical areas should be considered and consultation with the Department's CIO office should take place. If outsourcing, ensure contractors follow standards also.

Establish Procedural Standards

Set procedural standards that apply to both the technical and user environments to ensure standard business practices and interfacing to automated systems.

Develop a Detailed Schedule for the First Set of Applications

Detail the deliverables and schedules for both the architecture and for implementation to end users of the systems.

Confirm the End of Transition

Officially close out achievement of initial enterprise architecture planning implementation with the recognition that changes in function, business practices, and technology will necessitate continued updating and management of the architecture.

GLOSSARY

Trust Funds Management Improvement Project

COMPUTER AND BUSINESS SYSTEMS ARCHITECTURE FRAMEWORK PLAN

AFS	Auditing and Financial System
AFMSS	Automated Fluid Minerals Support System
ACH/EFT	Automatic clearing house/electronic funds transfer
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CIO	Chief Information Officer
COTS	Commercial off-the-shelf software
CRD	Common Reference Database
DAS	Departmental Administrative Systems
ECS	Electronic Certification System
EIA	Enterprise Information Architecture
FTS 2001	MCI WorldCom
GOALS	Government Online Accounting Link System
HLIP	High-Level Implementation Plan
IIM	Individual Indian Money
IRC	Information Resource Catalog
ITMRA/Clinger-Cohen	Information Technology Management Reform Act
IRMS	Integrated Records Management System
LRIS	Land Record Information System
LOMAS	Loan Management and Accounting System
MMS	Minerals Management Service
NBC	National Business Center
OHA	Office of Hearings and Appeals
OIRM	Office of Information Resources Management
PAM	Office of Acquisition & Property Management
OTFM	Office of Trust Funds Management
POB	Office of Budget
PPP	Office of Planning & Performance Management
OSM	Office of Surface Mining
PFM	Office of Financial Management
PA	Office of Administration
PPM	Office of Personnel
ODR	Open Data Replication
PAAS	Production Accounting and Auditing System
RDO	Regional Dispersing Offices
RMP	Royalty Management Program
SSAS	Social Services Assistance System
SOL	Solicitor
TFAS	Trust Funds Accounting System
TAAMS	Trust Asset and Accounting Management System

Appendices

Appendix I – Charts and Tables

Relative Time Duration for Enterprise Architecture Development Table 1

Phase and Step	% of Phase	% of Entire EA
A - Planning Initiation		
B - Preliminary Business Model		7%
• Step 1: Document the Organization	10%	
• Step 2: Identify and Define Functions	75%	
• Step 3: Distribute the Functional Business Model	15%	
C - Enterprise Survey		23%
• Step 1: Schedule Interviews	10%	
• Step 2: Prepare for the Interviews	15%	
• Step 3: Perform the Interviews	50%	
• Step 4: Enter Data Into the Toolset	15%	
• Step 5: Distributed the Full Functional Business Model	10%	
D- Current Systems and Technology Architecture		15%
• Step 1: Determine the Scope, Objectives, and IRC Workplan	10%	
• Step 2: Prepare for Data Collection	15%	
• Step 3: Collect the IRC Data	25%	
• Step 4: Enter the Data	5%	
• Step 5: Validate the IRC and Produce a Draft of the IRC Report	15%	
• Step 6: Draw Schematics	10%	
• Step 7: Distribute the IRC	10%	
• Step 8: Administer and Maintain the IRC	10%	
E-Data Architecture		15%
• Step 1: List Candidate Data Entities for Definition	5%	
• Step 2: Define the Data Entities, Attributes, and Relationships	70%	
• Step 3: Relate Data Entities to the Business Functions	15%	
• Step 4: Distribute the Data Architecture	10%	
F-Applications Architecture		15%
• Step 1: List Candidate Applications	10%	
• Step 2: Define the Applications	50%	
• Step 3: Relate Applications to Functions	15%	
• Step 4: Analyze Impact to Current Applications	15%	
• Step 5: Distribute the Applications Architecture	10%	
G - Technology Architecture		10%
• Step 1: Identify Technology Principles and Platforms	15%	
• Step 2: Define the Platforms and Distribution	50%	
• Step 3: Relate the Technology Platforms to Apps. and Business Functions	20%	
• Step 4: Distribute the Technology Architecture	15%	
H - Implementation Plan		15%
• Step 1: Sequence the Applications	20%	

• Step 2: Effort, Resources Schedule	15%	
• Step 3: Cost and Benefits	10%	
• Step 4: Recommendations	10%	
• Step 5: Transition Phase Plan	5%	
• Step 6: Final Report	20%	
• Step 7: Final Presentation	20%	
		100%

Trust Management Points of Contact Table 2

Bureau of Indian Affairs	
Hilda Manual	BIA
Debra Maddox	BIA
Nancy Jemison	BIA
Art Gary	BIA
Dom Nessi	BIA Information/Processes
George Gover	BIA Information/Processes
Ed Socks	BIA Information/Systems and Processes
Mike Jones	BIA
Terry Virden	BIA
Office of the Special Trustee	
Tom Thompson	OST
Donna Erwin	OST Information/Systems and Processes
Bob McKenna	OST Information/Systems and Processes
Bureau of Land Management	
Pete Culp	BLM Minerals
Bob Anderson	BLM Minerals
Stephen Adams	BLM
Scott MacPherson	BLM Information/Systems and Processes
Minerals Management Service	
Bob Smith	MMS Information/Systems and Processes
Bob Brown	MMS
L. Querques Denett	MMS
Office of the Secretary	
Ed Cohen	Solicitor
Stephen Swanson	Solicitor
Dianne Shaughnessy	POB
Tom Gernhofer	PMB
Bob Lamb	PMB
Sky Leshner	PFM
Office of Information Resources Management	
Daryl White	Background Information/Chief Information Officer
Bill Pfancuff	Planning Team Leader/Deputy Chief Information Officer
Julia Laws	Project Manager – Trust Management Architecture
David Shearer	Architecture
John Snyder	Technical/Background Information
Bobby Swain	Telecommunications Analyst

Martin Quinlan	Architecture
Erich Groess	Y2K/Systems Analyst

Trust Management Systems Table 3

		Hardware/ Software
	BIA Systems	
Integrated Records Management System (IRMS)–Individual Indian Money (IIM)	A system to track funds due to individual Indians and Tribes from leasing, permits and other uses of Indian lands.	Unisys Clearpath NX, COBOL
IRMS–Lease/Range	A system for managing payouts for leases on Indian lands.	Unisys Clearpath NX, COBOL
IRMS–Owner	A system that tracks ownership of Indian tribal and trust lands.	Unisys Clearpath NX, COBOL
IRMS–Lease Distribute	A payout system for leases on Indian trust lands.	Unisys Clearpath NX, COBOL
IRMS–Oil and Gas (RDRS)	A tracking system for mineral and surface land ownership for oil and mineral leases.	Unisys Clearpath NX, COBOL
IRMS–People	A tracking system for data on tribes and per capita payouts.	Unisys Clearpath NX, COBOL
Land Records Information System (LRIS)	A land title system showing and tracking Indian ownership, including all rights conveyed or changed over time.	IBM Mainframe, Adabas, Natural, System 2000, COBOL
Osage–Annuity System	A system to pay out monies to members of the Osage Tribe who are descendents of the original Head Right owners.	PC: Visual Basic, Access, Unisys Clearpath NX Server: COBOL
	Minerals Management Systems	
Auditing and Financial System (AFS)	Processes receipts from minerals companies and distributes dollars collected.	Hitachi Server, IDMS, COBOL
Production Accounting and Auditing System (PAAS)	Compares and generates exception reports of production volumes received from revenue payors and lease operators.	Hitachi Server, IDMS, COBOL
Common Reference Database (CRD)	Maintains common reference data (e.g., lease data, codes) for royalty management systems.	Hitachi Server, IDMS, COBOL
	BLM Management Systems	
Automated Fluid Minerals Support System (AFMSS)	Integrated oil and gas database to support lease operations and enforcement.	IBM Servers, AIX (UNIX), Informix, Prolifics Panther
	OTFM Systems	
Trust Funds Accounting System (TFAS)	COTS trust accounting system.	IBM, 3090, Located in Wayne, PA. Operated by SEI Investments, Inc.
Government Online Accounting Link System (GOALS)	Used to retrieve information from regional finance centers.	U.S. Treasury hosted.
Cash Link	Used for U.S. Treasury reporting.	Riggs National Bank has current contract.
Electronic Certification System	Used to transmit ACH/EFT information to Treasury Regional Dispersing Offices (RDOs)	U.S. Treasury hosted.

		Hardware/ Software
(ECS)	Offices (RDOs)	
Banker's Trust	Centralized custodial system.	Hosted by Banker's Trust
Pacer	Used to retrieve negotiated check information or initiate stop payment	Hosted by Financial Management Services (FMS) Reston, VA
ARCIS	Siemens document imaging system.	Windows NT Server back-end server running Microsoft SQL Server.
STRATAVision	FileNet's Panagon Report Manager.	COLD product running under Windows NT
Open Data Replication (ODR)	SQL-based application that parses selected fields from TFAS for previous day.	Windows NT, SQL Server.

Appendix II – Policies and Standards

Relevant Policies and Standards Table

Policy/Document Name:
Information Technology Management Reform Act (ITMRA) of 1996
OMB Circular A-130 Management of Federal Information Resources
OMB Circular A-127 Financial Management Systems
Chief Financial Officer’s Act of 1990
Federal Manager’s Financial Integrity Act of 1982
341 DM1 Financial Management Systems Policies and Responsibilities
376 DM 4 – Information Technology Investments
375 DM 1 – IRM Program Management
375 DM 2 – Policy/Program Coordination
376 DM 7 – Benefits/Cost Analysis
Raines’ Rules for Information Systems
Departmental Administrative Systems Standards

Appendix III – Reference Documents

Reference Documents Table

(Undated)	Bureau of Indian Affairs Trust Funds Management System Information Technology Architecture Report (table of contents and outline)
12/16/99	Memorandum – To: Robert Baum(PHA), Carolyn Cohen (PPM), Melodee Stith (PEO), Paul Denett (PA), Tim Vigotsky (NBC), Norma Campbell (PPP), Debra Sonderman (PAM), John Trezise (POB), Sky Leshner (PFM), Daryl White (CIO), Steve Swanson (SOL), Sandy Streets (MMS); From: Thomas Gernhofer; Subject: Review of HLIP Revisions
July 1998	Trust Management Improvement Project High Level Implementation Plan (HLIP)
April 1999	U. S. General Accounting Office Report to the Chairman, Committee on Indian Affairs, U.S. Senate Indian Trust Funds: Interior Lacks Assurance That Trust Improvement Plan Will Be Effective@ GAO/AIMD-99-53 with letter of April 28, 1999 (B-280590) to The Honorable Ben Nighthorse Campbell, Chairman
April 25, 1997	Office of the Special Trustee for American Indians Needs Analysis Project Presentation (w/costs and notes)
April 7, 1997	Office of the Special Trustee for American Indians Needs Analysis Project Final Report
April 7, 1997	Office of the Special Trustee for American Indians Needs Analysis Project Final Report - Appendix Part 1
	Office of the Special Trustee for

April 7, 1997	American Indians Needs Analysis Project Final Report - Appendix Part 2
August 1995	Draft IIM Related Systems Improvement Project - The Tiger Team
September >99	Chief Information Officers (CIO) Council Federal Enterprise Architecture Framework Version 1.1 (signed 8/5/1999)
12/28/99	E-mail from Pat Dzieszkowski (Macro International) to Tommy M. Thompson; Subject: Concept of Operations (for Office of Trust Fund Management in its role as guardian of the Trust Funds)
June 1, 1999	U.S. Department of the Interior Enterprise Information Architecture Baseline Characterization Version 0.2
March 1998	Reengineering Business Processes and Support Systems for the 21st Century: Preliminary Design Concepts of the [Royalty Management Program] RMP Reengineering Team.
November >98	Reengineering Royal Management Business Processes and Support Systems: Road Map to the 21st Century
September >98	Reengineering Royal Management Business Processes and Support Systems: Financial Management Recommendations