



PARCEL MANAGEMENT (PM)

BUSINESS CASE

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1.0 Executive Overview

1.1 Project Description

Project Proponent/Project Manager	Name: Leslie Cone Title: Project Manager Office: Land and Resource Projects Phone: 303-236-0815
Project Sponsor	Keith Jackson, Director, IRM and Jack Craven, Director, Lands, for the Forest Service. Mike Howell, Acting Assistant Director, IRM and Bob Anderson, Acting Assistant Director, Minerals, Realty & Resource Protection, for the Bureau of Land Management.
Direct Beneficiaries	Land and Resource Management Specialists
Products	A common land data model and a set of land resource management, GIS-based tools.

<p>Justification Statement</p>	<p>The mission of the Bureau of Land Management (BLM) is "to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations."</p> <p>The BLM maintains land and mineral records for the Nation's public and Indian lands, including over one billion documents such as land surveys, surveyor notes, tract books, Master Title Plats (MTP), historical indices, land patents, mining claims, oil and gas leases, and land and mineral case files. Many of these paper documents are deteriorating and some are becoming illegible. Most of the original records and plats are manually maintained and stored in a number of locations throughout the western United States and several locations in the East. Some of the information contained in these documents has been entered into various databases beginning in the 1970s.</p> <p>Looking to the future, the examples of non-automated, non-standardized record keeping cited above are indicative of what is to be expected as requirements increase in number and complexity. The workload, inefficiency and low customer satisfaction associated with manual land management record keeping will be the foremost obstacles to the BLM's mission accomplishment. Parcel data, parcel management business processes and land record maintenance must be automated.</p> <p>Achievement of these demands can only be met with user tools which conform to a standard, are automated as much as possible and are maintained in a Geographic Information System (GIS) environment which preserves its data in a store conforming to a standard model. Parcel Management would provide the BLM and its customers with software to support parcel editing and land management record keeping.</p>
<p>Cost/Benefit Ratio</p>	

1.2 Project Purpose and Objectives

1.2.1 Project Objectives

1.2.1.1 Goal

To create a set of software tools for land management specialists which would encompass all parcel management tasks including editing, updating and fulfilling customer needs; to capture land resource management business processes in software; to create a standardized data model for maintaining land resource records and data.

1.2.1.2 Business Purpose

Parcel Management would be a desktop GIS application that provides tools for land managers to create and manage parcel features and their legal area descriptions. The parcel fabric would be vertically integrated with survey features captured using the Survey Management and Measurement Management applications. Through this vertical integration, changes in the survey fabric can trigger changes to the legal description and parcel fabrics.

Parcel Management would automate the current BLM and land management specialists' business processes and create a common data model for storing parcel data.

With standardized business processes and common method of storing parcel data, efficiency, accuracy and customer service would greatly improve.

1.2.1.3 Business Case and Benefits

Parcel Management would replace the inefficient, error-prone, varied business processes, which are inherent in manual procedures and techniques of accomplishing parcel management tasks. A common data model would provide the means for efficiently sharing land data among agencies and offices with related interests.

1.2.2 Compliance with Laws and OMB guidance

1.2.2.1 Support for BLM's core mission

Parcel Management will provide convenient, faster access to BLM data, timely and effective responses to the needs of customers. It will provide the means to effectively manage BLM's land data, information and knowledge and will effectively support the BLM land resource managers. Parcel Management will support the management of BLM's lands by "externalizing" data, by consolidating the widely distributed pool of land management expertise and by building customer confidence. Parcel Management would be a large step in the Bureau's transition to an e-business enterprise.

1.2.2.2 Support for BLM's strategic goals

BLM Strategic Goal	Parcel Management Support
Standardized, automated information and data analysis on BLM, field desktops.	Provide a standard, GIS-based set of Parcel Management tools for a desktop computer.

BLM Strategic Goal	Parcel Management Support
Provide BLM business data electronically to the Public and government agencies.	Computerized processes will replace manual business processes; this is a necessary step in making information electronically accessible.
Establish corporate data stores for BLM decision-making.	Eliminate the variations in collected and stored data by creating a common, standardized data store.
Provide services, electronically to conform to GPEA	Eliminate the parcel data contained on paper by providing electronic storage and computerized data management tools.
Achieve Capability and IT Management Maturity level 3.	Provide one part of BLM's effort to create a state-of-the-art business and technology environment

This investment needs to be undertaken as it is proposed because it is very enterprise oriented – it is based on the BLM’s business rules and will greatly improve BLM’s day-to-day task efficiency. Due to this unique constraint, the functionality of the custom parcel management does not exist in COTS. The software is being designed as an extension to Environmental Systems Research Institute’s (ESRI’s) ArcGIS. As an extension, it will contain the BLM-unique functionalities. Maximum use will be made of the underlying COTS.

The function of Parcel Management is designed to manage the land resources of the BLM, thus making it inherently Federal.

The NILS System will include a map service (a publication and/or reporting function) to provide BLM, non-proprietary data to the public and other government agencies via the Internet. The information provided by this service will be subject to the Privacy Act and the Freedom of Information Act (FOIA).

Parcel Management and its associated database will be the repository for BLM’s land resource management data and transactions. The records of all business processes listed in Section 3.2 of this document will be contained in the Parcel Management database.

1.3 Project Management Information

1.3.1 Project Management Overview

The Project Manager is Leslie Cone with the Bureau of Land Management, located in the Denver Federal Center, Building 50, WO-330D 80225-0047, Denver, CO. The Project Manager may be reached at 303-236-0815 or by e-mail at Leslie_Cone@blm.gov. This project is documented on the World Wide Web at www.blm.gov/nils.

1.3.2 Project Budget/Resources Overview

- ❖ The Parcel Management project efforts are aligned with the 2002 BLM Performance Plan, Section 2.5 that is titled “ Improve Land, Resource and Title Information”. It will provide the work environment, business processes, and data model, which will standardize the BLM enterprise land resource management business model and practices. Parcel Management is also aligned, either directly or indirectly, with the remaining Plan Goals because it will provide the geometry, location and information about the lands for which BLM is responsible.
- ❖ The implementation of Parcel Management would improve land data accuracy thus reducing technical and legal risks and would develop a higher level of customer confidence.
- ❖ Parcel Management would conform to the BLM mission statement by providing the best practices of managing the public lands.
- ❖ Parcel Management has been initiated and will be tracked to completion using state of the art project management practices.
- ❖ Results would be measurable - consistency of data, efficiency, paperwork reduction, customer satisfaction.

The PO-504 budget request is summarized in the following table.

PO-504 NILS

7/22/2002

FY 2002 Budget Request for WO-330 Land & Resources Project Office.

RESP	DESCRIPTION	ACTIVITY	WMs	OC 11 Labor	OC21 Travel	OC23 Rent/Util	OC24 Print	OC25 Contract	OC26 Supplies	OC31 Equip	Total
LABOR	Project Mgr.	4550	12	146,000							146,000
LABOR	Deputy Project Mgr.	4550	6	48,000							48,000
LABOR	Computer Specialist	4550	6	48,000							48,000
LABOR	Computer Specialist	4550	6	24,000							24,000
LABOR	Program Analyst	4550	12	89,000							89,000
LABOR	Program Analyst	4550	12	81,000							81,000
LABOR	GIS Specialist	4550	6	44,000							44,000
LABOR	Program Analyst	4550	12	80,000							80,000
LABOR	Admin. Asst	4550	12	49,000							49,000
LABOR	Student	4550	7	28,000							28,000
LABOR	Student	4550	6	15,000							15,000
LABOR	Student	4550	6								0
LABOR	Student	4550	5	20,000							20,000
LABOR	Student	4550	5	20,000							20,000
LABOR	SME Participants	4550	12	50,000							50,000
TRAVEL	Travel-staff	4550			50,000						50,000
TRAVEL	Travel Domain Experts	4550			75,000						75,000
TRAINING	Training	4550			40,000						40,000
CONTRACT	Contract Support (CM/QA)	4550						50,000			50,000
CONTRACT	GeoCommunicator O&M (NILS)	4550						250,000			250,000
CONTRACT	Survey Mgmt & Measurement Mgmt	4550						500,000			500,000
CONTRACT	Design and Analysis Parcel Mgt (NILS)	4550						1,225,000			1,225,000
CONTRACT	FGCD Compliance Support Contract	4550						40,000			40,000
CONTRACT	Contract Documentation & Mgt	4550						160,000			160,000
CONTRACT	Integrate BLM Land Data	4550						460,000			460,000
MISC	Maintenance-Evoke Software	4550						90,000			90,000
EQUIPMENT	Equipment	4500								140,000	140,000
MISC	Misc	4550							21,000		21,000
	TOTAL		101	742,000	165,000	0	0	2,775,000	21,000	140,000	3,843,000

2.0 Project Boundaries

2.1 Supporting Documents

Document Name	Date completed/Updated	Availability
Partnership Agreement	June 11, 1998	L&RPO Project Library
Project Charter	March 9, 1999	L&RPO Project Library
Vision Document	September 22, 1999	L&RPO Project Library
Project Plan	September 22, 1999	L&RPO Project Library
BLM Strategic Plan 2000 - 2005		L&RPO Project Library and http://www.blm.gov/nils
Project Gantt Chart	August 2002	L&RPO Project Library
Work Breakdown Structure	August 2002	L&RPO Project Library and http://www.blm.gov/nils
Concept of Operations and User Requirements document	March 2000	L&RPO Project Library and http://www.blm.gov/nils
PM Use Case Analysis	April 2002	L&RPO Project Library and http://www.blm.gov/nils
Initial NILS System Architecture Design	December 2001	L&RPO Project Library and http://www.blm.gov/nils
NILS System Security Plan	August 2002	L&RPO Project Library
NILS Test Plan	August 2002	L&RPO Project Library
NILS Training Plan	August 2002	L&RPO Project Library
NILS Software Development Plan	August 2002	L&RPO Project Library
NILS Change Control Plan	August 2002	L&RPO Project Library
NILS Requirements Traceability Matrix	August 2002	L&RPO Project Library

2.2 Scope of Project

2.2.1 Primary function of the system

The primary functions of Parcel Management are:

- ❖ Automated business task tools for land resource management specialists.
- ❖ Transactional environment for land management.
- ❖ Capture land resource management business rules in software.
- ❖ Controlled workflow in a GIS environment.
- ❖ Standardized means of storing parcel data.

2.2.1.1 Intended customers/users (types: internal, external, public, specialist, managers)

Federal, state, county, local government land and resource management departments; professionals with requirements for public land data.

2.2.1.2 Estimated total number of users

The total possible number of Parcel Management Editors is 621. The total number of Browsers is estimated at 4500. Browsers would use ArcExplorer or MS Internet Explorer to view data and would not require licensing (ArcExplorer is free from ESRI; MS Explorer is included on workstations).

2.2.1.3 Estimated number of concurrent users

Concurrent use is estimated at 62 users and determines the number of ESRI licenses required on the centralized application server.

2.2.1.4 Estimated number of software licenses

The number of ArcGIS licenses corresponds to the number of concurrent users (62 licenses of each).

2.2.1.5 Estimated number and locations of sites (BLM offices) that will use the system

All of the BLM State offices would have Parcel Management clients. Fourteen locations are estimated to include other BLM offices.

2.2.1.6 Potential interfaces with other systems/processes

Parcel Management (as well as the entire NILS system) would interface with LR2000.

2.2.1.7 Other existing or similar on-going projects (IT Clearinghouse)

None.

2.2.1.8 Planned modules and deliverables

Three alternative methods of implementing the NILS's common data model and toolset to facilitate the collection, management and sharing of survey and land and cadastral information

were considered. They are summarized in the following paragraphs.

Alternative 1 - Each System with “Stand-Alone Spatial”

- Existing alphanumeric BLM systems stay the same
- Spatial access is incorporated into any BLM system
- No integration at any level

Alternative 2 - NILS Integrated Land, One GIS

- Existing BLM Systems’ land data converts to NILS
- Seamless spatial access to NILS from BLM Systems

This alternative involves converting the land data from BLM’s automated systems to NILS in a single effort. The result would be a seamless spatial access to land data in NILS from the BLM automated systems. The BLM automated systems would require alteration to access land information from NILS. Non-land data remains in the original BLM Systems.

Alternative 3 (preferred alternative) - Phased Approach to NILS Integrated Land, One GIS

- Phase 1. Land data converted to BLM Common Land Model
 - Alphanumeric access to integrated land data in the BLM Common Land Model
- Phase 2. Land converted from BLM Common Land Model to NILS
 - Spatial access to land data in NILS from BLM
 - BLM Common Land Model is phased out

This phased approach would integrate the land data that exists in the BLM systems into a BLM Common Land Model. The BLM Common Land Model would be used to derive an integrated land data structure for existing BLM systems. This approach would address known inconsistencies and anomalies that have been identified and documented in the existing BLM systems. The interim step provides an opportunity for the BLM to resolve some of the currently recurring structure-related problems. Most of the current systems are either legacy systems utilizing older technology or re-hosted from legacy systems. The integrated BLM Common Land Model would facilitate the clean up of land data in preparation for migration to NILS when it becomes available.

Following, is an initial cost comparison for the NILS alternatives completed at the beginning of the project:

Cost Elements	Alternative 1	Alternative 2	Alternative 3
Element 1 - Shared HW & SW support, maintenance and licensing costs	\$11,236,152	\$9,390,970	\$9,390,970

Cost Elements	Alternative 1	Alternative 2	Alternative 3
Element 2 – BLM Support Labor Costs	\$25,030,338	\$6,904,316	\$6,904,316
Element 3 – Contractor Labor Costs	\$18,450,000	\$6,273,000	\$6,273,000
Element 4 – Training	\$100,000	\$20,000	\$20,000
Element 5 – Hardware Purchases	\$8,300,000	\$6,600,000	\$6,600,000
Element 6 – Software Purchases	\$601,345	\$472,844	\$472,844
Element 7 – Data Integration Analysis costs	\$1,461,227	\$1,155,653	\$1,337,109
Total	\$65,179,061	\$30,816,784	\$30,998,240

2.3 Project Completion Criteria for the Preferred Alternative

Phase	Milestones	Date
Initiation	Partnership Agreement	6/11/98
Design (Requirements)	Completion of high-level requirements document (COURS document)	3/01
Analysis	Completion of Detailed Feature/Functionality Document	7/01

Phase	Milestones	Date
	Completion of requirements analysis document.	7/02
	ITIB Approval	8/02
Development	Completion of Construction (Final build)	7/03
Transition/ Deployment	ITIB Approval	8/03
	Deployment	9/30/03
Operations/ Maintenance	PM turn-over to Operations and Maintenance; close-out	9/30/03 (start)

3.0 Target Business Processes

3.1 Supporting Documents

Document Citation	Date	Information Content	On Web Site?
Geographic Measurement Management User's Manual and other documentation.	2/28/00	Geographic Coordinate Database and cadastral survey spatial information processes.	http://www.spatial.maine.edu/~kwurm/
NILS Concept of Operations and User Requirements document.	3/00	High-level project requirements which would drive analysis/build /review phase.	http://www.blm.gov/nils
BLM IT Architecture vs. NILS Essential Elements Crosswalk.	3/14/00	Comparison of BLM IT Architecture and NILS proposal	No.
Draft Business Process to Strategic Plan Comparison	3/10/00	Comparison of NILS business processes with BLM business processes	No.
Manual of Surveying Instructions	1973	BLM surveying business rules	No

Document Citation	Date	Information Content	On Web Site?
Detailed Feature/Function Specifications	7/2001	Initial high-level requirements	http://www.blm.gov/nils
BLM Information Technology Architecture Technical Reference Model (TRM) Vol. 1 and Vol. 2.	6/26/01	Direction for design, construction, purchase, deployment and management of Information Technology	http://web.blm.gov/nirm/c/syseng/ita.html
Content Standard for Geospatial Metadata, FGDC STD 001-1998	1998	Metadata standards.	http://www.fgdc.gov
The Red Book	-	BLM title, status and record procedures	No.
FGDC Cadastral Data Content Standard for the National Spatial Data Infrastructure.	1999	Standard for cadastral data model.	http://www.fgdc.gov
Use case Analysis Document	7/02	Detailed Requirements	http://www.blm.gov/nils
Glossary of Use Case Terms	7/02 (update)	Explanation of terms and concepts.	http://www.blm.gov/nils
Initial NILS System Architecture Design	12/2001	Hardware and software deployment strategy	http://www.blm.gov/nils
Standardizing Textual land Descriptions Final Report	1/29/02	Standard land description derived from many existing BLM systems	L&RPO Project Library

3.2 Target Business Processes

Parcel Management. The creation of parcels by combining parcel geometry and parcel attributes into a single entity which graphically represents the parcel on the earth and provides information about it; creation of information for land management operations, publication, and decision support. Currently, Parcel Management maybe summarized as the following tasks:

- ❖ Select and verify land required for action; data input.
- ❖ Create a new legal description for a parcel by combining relevant geometry and attributes; associate an existing description with geometry.
- ❖ Change or create parcels; fit parcel geometry to the existing land base.
- ❖ Obtain ancillary control and use to adjust existing parcel data.
- ❖ Change parcel geometry and attributes as required.

- ❖ Apply appropriate labels and information to parcel drawing.

In detail, Parcel Management is targeting the following business processes for automation and re-engineering:

General

- ❖ Review and Process Application
- ❖ Determine Land Status
- ❖ Verify Parcel Description
- ❖ Update DATA
- ❖ Establish Case File
- ❖ Create Legal Description
- ❖ Edit Legal Description Fabric
- ❖ Edit Parcel Fabric
- ❖ Edit Map Annotations
- ❖ Note to MAPS/DATA
- ❖ Record Case Closure
- ❖ Assign Case File Number (Serialize)

Disposal

- ❖ Assist with Application and Amendment of Filed Applications
- ❖ Adjudication (Conduct Regulatory Compliance Review)
- ❖ Reject Application
- ❖ Issue Title Conveyance Document

Acquisition

- ❖ Acquire Rights in Title

Use Authorization

- ❖ Receive and Initiate Consideration of ROW / TUP Applications

Oil and Gas - Competitive Leases

Recreation and Public Purpose

- ❖ Receive and Initiate Consideration of Application to Lease/Patent Public Land
- ❖ Conduct Public Interest Review of Application to Lease/Patent Public Land
- ❖ Notify Public of BLM Decisions (Publish in NORA)

Congressional Segregation

- ❖ Modify Databases to Reflect Acts of Congress
- ❖ Note General Vicinity of Land Withdrawals on Public Land Tenure Records

Administrative Segregation

- ❖ Segregations - Administrative Proposal

FERC Withdrawal

- ❖ Note FERC Withdrawal of Land on Public Land Tenure Records

3.2.1 High-level Business Requirements

The high-level business requirements are discussed in the Concept of Operations and User Requirements (COURS) document. They are summarized in the following table.

High-Level Parcel Management Business Requirements

Description of Current Process	Proposed Change	New Business Process	Customers for Final Product from Process	Criticality of Process to Business Area	Expected Benefits
<p>Verify land required for action. Data input</p>	<p>To identify and verify parcels affected by an initiating event and to determine the appropriate maintenance actions needed to process the parcel(s) or event.</p>	<p>PM01. Verify Parcel *</p>	<p>Federal, state, county and local government land management specialists; private concerns</p>	<p>(Same)</p>	<ul style="list-style-type: none"> ▪ Automation and readily available data. ▪ Relate information to a specific parcel on the landscape.
<p>Create a new legal description for a parcel by combining relevant geometry and attributes; associate an existing description with geometry.</p>	<p>Process to create the basic legal description components—geometry and attributes (text, ID, source ID, etc.). Legal descriptions may have topological association to features (e.g., parcels), to component features and/or to measurements. Legal descriptions may be saved into a collection of unadjusted legal descriptions (includes historic legal descriptions).</p>	<p>PM02. Construct Legal Description</p>	<p>(Same)</p>	<p>(Same)</p>	<p>Integrate positional and descriptive parcel-based land information for all boundary information.</p> <p>Gis environment</p> <p>Readily available, consistent methods.</p> <p>Create new parcel records and/or edit legal description data.</p> <p>Automated subdivision of parcels based on business rules.</p>

High-Level Parcel Management Business Requirements

Description of Current Process	Proposed Change	New Business Process	Customers for Final Product from Process	Criticality of Process to Business Area	Expected Benefits
<p>Change or create parcels. Fit parcel geometry to the existing land base.</p>	<p>Process to edit the legal description fabric. Insert new legal description components and/or edit existing components. Fit, assemble, and resolve legal description components within the legal description fabric.</p>	<p>PM03. Edit Legal Description Fabric</p>	<p>(Same)</p>	<p>(Same)</p>	<p>Resolves problems with associating or aggregating legal descriptions from the legal description fabric</p> <p>Gis environment</p> <p>Readily available, consistent methods.</p>
<p>Obtain ancillary control and use to adjust existing parcel data.</p>	<p>Process for adjusting the coordinates of an existing feature fabric (e.g., legal description fabric, parcel fabric) to enhance (cartographic) alignment with a reference source that has desired control features (also known as map control).</p>	<p>PM04. Re-adjust Fabric</p>	<p>(Same)</p>	<p>(Same)</p>	<p>Resolve problems with associating or aggregating legal descriptions from the legal description fabric.</p> <p>Edit/move parcel geometry.</p> <p>Gis environment</p>

High-Level Parcel Management Business Requirements

Description of Current Process	Proposed Change	New Business Process	Customers for Final Product from Process	Criticality of Process to Business Area	Expected Benefits
Change parcel geometry and attributes as required.	Process to define parcels within the parcel fabric by associating or aggregating legal description(s) from the legal description fabric. Process to create new parcel records and/or to edit parcel attribute values.	PM05. Edit Parcel Fabric	(Same)	(Same)	Consistent methods of creating and editing parcels. Gis environment
Apply appropriate labels and information to parcel drawing.	Create or modify annotation within or associated to parcel fabric, legal description fabric, or measurement network to support display and formatted output.	PM06. Edit Parcel Annotation	(Same)	(Same)	Standardized annotation. Professional looking documents. Gis environment.

* PM01 – PM06 refer to the initial, high-level use cases in the Concept of Operations and User Requirements document.

Parcel management, as it relates to the BLM, is the process of maintaining a viable accounting of the geometry, attributes and transactions associated with the real estate under its control. Parcel management is the responsibility of land resource management specialists in the BLM's State Offices. Their tasks are centered on honoring their customers' requests for changes to and/or confirmation of such things as ownership, land status, authorized use and leasing of particular parcels. Parcel management is a daily task.

In general, since Parcel Management is a land-based process, it would contribute to most of the high-level, land-oriented high-level business processes – some more than others:

Provide Customer Service

Provide parcel data and maps to customers in consistent, automated format via the Internet

Assess Condition/Status

Collect, store and maintain parcel data.

Perform Planning

Provide parcel data and locations for preparation and evaluation for resources and land use.

Authorize Use

Provide parcel data and locations for preparation and evaluation issuing leases and permits.

Implement BLM-initiated Actions

Provide parcel data and locations for preparation for preparation of project plans, land exchanges and disposals.

Perform Monitoring and Manage Compliance –

Provide and land resource management data as necessary to perform the tasks inherent in this business process.

3.2.2 Tie Business Processes to the Bureau Architecture

Parcel Management has been correlated with the Bureau Architecture at a high level. The Analysis phase provides the information to allow Parcel Management to be correlated, in more detail, to the lower levels of the Architecture.

		Parcel Management Business Processes					
		PM-01 Verify Parcel	PM-02 Construct Legal Description	PM-03 Edit Legal description Fabric	PM-04 Re-adjust Fabric	PM-05 Edit Parcel Fabric	PM-06 Edit Parcel Annotation
Bureau Architecture process							
2.1.1.	Determine Ability to Respond to Request	X	X	X	X	X	X
2.1.2.	Respond to Assessment Request	X	X	X	X	X	X
2.2.1.	Determine Data Collection Protocol/Standards/Location						
2.2.2.	Collect Condition/Status Data		X	X		X	X
2.2.3.	Generate Inventory Report	X	X	X	X	X	X
2.3.1.	Analyze Condition/Status Data	X	X	X	X	X	X
2.3.2.	Generate Condition/Status Report	X	X	X	X	X	X
2.3.3.	Maintain Condition/Status Assessment Record	X	X	X	X	X	X

3.2.3 Business Process Improvement

The Parcel Management business processes would be captured in software and controlled in a Work Flow Manager. The business processes would then be consistent and repeatable. The Work Flow Manager would be a software-implemented method of assembling the business tasks into serialized tasks, which can be assigned to the users by a manager. The unique data store of Parcel Management would allow consistent representation of parcel data and provide a means of easily sharing data. The overall standardization, which would follow from Parcel Management, would eliminate many incompatible systems and create an enterprise-wide means of conducting land resource management, thus improving effectiveness, reliability and customer confidence.

The Parcel Management concept would completely re-engineer the land resource management and data storage business processes of the BLM. The processes would be moved from manual bookkeeping tasks into a computerized GIS environment. In addition, the Analysis phases and its associated use cases would analyze and refine the processes to remove redundant, inaccurate and inefficient practices.

The future business processes of Parcel Management would be carried out by the current land

resource managers in an automated environment on a daily basis.

Land resource management will be re-engineered into an automated GIS functioning in a controlled workflow environment. Requirements analysis and gap analyses have verified that some functionalities required for parcel management do not exist in COTS, especially those of the BLM. Parcel Management will consist of custom software to implement the non-existent requirements. Many of the requirements do exist in ESRI's ArcGIS products. Parcel Management would be designed as an extension to the COTS and consist of only the requirements not available in commercial software; the ESRI COTS would supply the remainder.

3.2.4 End Users/Customers/Sponsor

End users and customers are land management specialists (development planners, consultants, data stewards, assessors, case recordation specialists, recreation planners). Their employer may be the Federal government; state, county or city governments or private concerns. Parcel Management will serve any individual or organization whose primary data/information requirements are current, consistent and accurate parcel and data.

The Parcel Management requirements were determined in a team environment, in brainstorming meetings of user technical representatives and in cooperation with the contractor. The initial, high-level use cases were presented in a series of public meetings in Atlanta, Denver, Portland, Washington, DC and Phoenix. The high-level requirements were documented in Concept of Operations and User Requirements and made available to meeting attendees. In fact-finding tours of several land management offices, the requirements were verified. Refinement and decomposition of the use cases was continued in the same environment to define, in greater detail, the requirements. Drafts of all documents were posted to the NILS website, followed by notification e-mails to BLM and Forest Service offices that they were available for viewing.

NILS has been accepted by the cadastral community as a much needed and pertinent effort to consolidate land management data and make it easily available. The positive response to the Project is apparent from the activity on the website, the requests for presentations and the attendance at the public review meetings.

That Parcel Management will provide a standardized, easy-to-use work environment, easily available data for land resource management and customer satisfaction, are the main concerns of users.

3.2.5 Other Business Areas/Programs

Since the NILS is a project directed at creating an efficient means of working with land data and information, it will integrate with the business processes and activities of the BLM because BLM's functions are land based (land use planning, recreation, etc). This also pertains to other agencies and organizations involved in land management. The functionalities of LR2000, GCDB, and RAS, leasing, rights-of-way, mining claims and the many other land-based activities within the BLM will benefit from a common land data model and set of tools.

3.3 Data Management

3.3.1 High Level Data Groups

Parcel Management, being primarily concerned with land resource management, uses the cadastral and parcel data groups of the BLM. These directly affect the locations of all BLM real estate. Thus, PM would contribute to all data BLM high-level groups that rely on land descriptions.

DATA GROUP	DESCRIPTION
APPEAL	All correspondence and documents generated by both the appellants and the BLM regarding legally contested decisions.
ASSESSMENT	The result of an analytic process. Does not include performance assessments, condition/status assessments.
AUTHORIZATION	The instruments that allow use to occur such as leases, grazing permits, mining claims, deeds, conveyances, etc. Includes terms & conditions, standards, and implicit authorizations.
COMMENT	Concerns, recommendations, issues, observations, etc. raised by the public regarding a BLM plan or proposed actions.
COMPLIANCE	Information on determinations of compliance with use terms, conditions and stipulations. Includes analysis of compliance (i.e. not under Assessment), also includes performance evaluation of customers (i.e. not under Results Evaluation).
CONDITION	Natural resource, social, economic, boundary and land tenure data used to compare landscape condition/status against identified standards and criteria and to define the current condition/status of the landscape. Includes analysis of resource data to derive Condition information.
CONTRACT	Leases, agreements, permit, etc., which legally obligate the BLM and at least one other party.
CUSTOMER	Individuals, corporations and groups, which conduct business with the BLM or are involved in actions of the BLM.
ENFORCEMENT	Information about the exercise of compliance authority, including fines, impoundment and cancellation of use contracts. This includes the identification and resolution of trespass cases. Includes determination of corrective action (i.e. not under Assessment).

DATA GROUP	DESCRIPTION
FACILITY	Information on structures erected and maintained by the BLM and others, including buildings, fences, culverts, etc. Includes information on all facilities (BLM or customer owned).
INCOMING REQUEST	Expressions of interest for use authorization as well as requests for general information or BLM-produced products.
LAND STATUS	Information on land ownership, sensitive or critical areas, lands available for disposal or use, etc. Includes determination of Land Status (i.e. not under Assessment).
LAND USE PLAN	Information on Resource Management Plans (RMPs) (does not include project plans, strategies, or work plans).
MANDATE	All imperatives placed on the BLM by law, regulatory bodies, executive orders, courts, etc.
NEPA	All correspondence and BLM-generated documents related to the NEPA process.
NOTICE	Formal communications both to and from the BLM such as sundry notices, demand letters and other legal documents.
OUTGOING REQUEST	Requests for information, models, protocols, permits, etc. initiated by the BLM, to the customer or other agencies or members of the public.
PROJECT	All actions undertaken on the ground except for the development and maintenance of facilities. Includes project plans. Also includes development and maintenance of BLM facilities.
RESOURCE	Information on both renewable and non-renewable resources.
RESPONSE IN	Information, permits, etc. provided to BLM as requested by BLM. Includes communications solicited by the BLM.
RESPONSE OUT	Information, approvals, denials of use authorization request, BLM materials, etc., provided to customers or the public as requested. Includes communications to other agencies, customers and the public, which require some response.

DATA GROUP	DESCRIPTION
USE	Information on the legal enjoyment of property or resource. Includes all uses (legal & illegal), includes proposed & planned, as well as actual. Does not include allowed which is under authorization.

Proposed data groups to be added to the BA:

- Cadastral
- Land Resource Management (Parcel)

These are significant, unique groups of data, which are maintained independently of other data. They provide the basis (location, accountability) of all land-related business processes within the BLM.

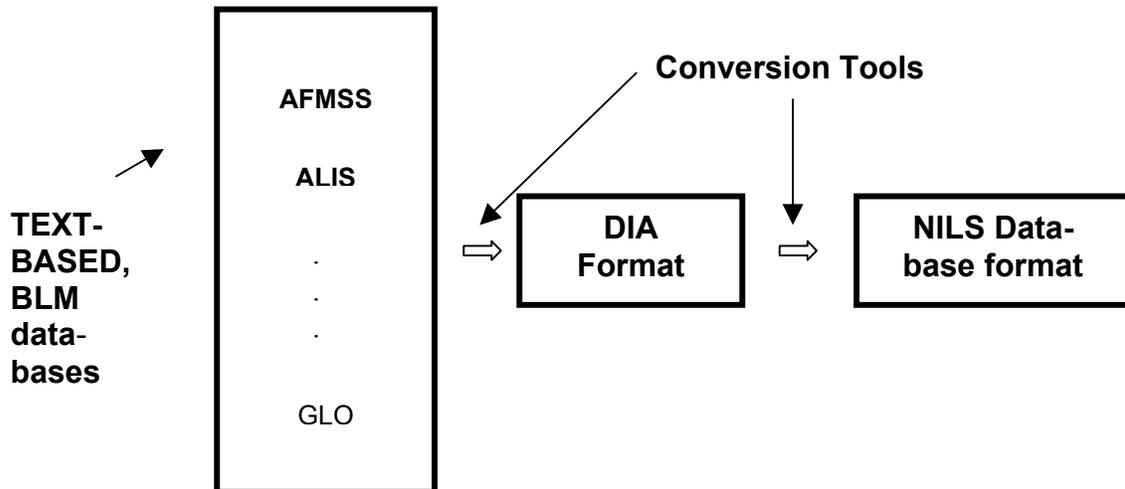
3.3.2 Data Sources

Data sources for parcel mapping fall into one of two general categories: primary or secondary data. Primary data sources include data compiled directly from field measurements using traditional surveying methods or GPS. The most common methods of producing parcel maps depend on secondary sources. Secondary data sources include data compiled from deeds, legal descriptions, survey maps or previously compiled hard copy parcel maps, such as tax maps. The quality of spatial data secondary sources depends not only on the accuracy of the descriptions and extractions but also on the ability of the parcel manager to interpret the information in the documents

Parcel data are available from various sources. The most common data sets are the maps and deeds that can be found at in county courthouses across the country. In the federal government the BLM is designated as the official keeper of the land records for federally owned land. Other land agencies such as the Forest Service, Fish and Wildlife and the National parks also have land information that can be used to build parcel maps.

Specifically, for the BLM, data for Parcel Management will be obtained from existing systems. The Data Integration Analysis (DIA) project is an effort to determine the scope, level of effort and impact of integrating land data from LR2000 and other existing BLM systems into a common data set in preparation for migration to the NILS Project. Results of DIA will be shared and used as the basis for the design, development and deployment of a consolidated land record data set. Upon completion of the parcel data model, conversion of existing data models would be addressed.

The DIA conversion process is diagrammed below:



New databases within Nils would be implemented in accordance with the FGDC Cadastral Data Content Standard.

3.3.3 Data Sharing

The Parcel Management database would contain transaction side of the land resource management business processes. A publication database, drawing its information from Parcel Management would provide reports and maps to external and internal customers.

3.3.4 Data Contacts

State Data Administrators and stewards would remain as they are; their level of involvement would remain the same also only they would operate in an automated environment.

3.4 Records Management

The data model, tools and work environment of Parcel Management would greatly improve the accuracy, availability and reliability of land resource management data. Information would be available to both users and managers via the BLM Intranet as an asset for the enterprise and to the public as an easily available service. The usefulness of the data would be greatly improved when in a standard, enterprise-wide form.

Proprietary data would be restricted from access following existing BLM and Federal guidelines. The policies would be the responsibility of the data steward and implemented as restriction to access using the functionalities of the software and database tools. The PM transaction database would be behind the BLM firewall and will have assigned database administrators to implement and monitor the policies.

3.5 System Coordination with State, Local and Tribal governments

The basic processes within the requirements gathering phase of Nils, from the very beginning,

has included the expertise of representatives from many agencies at all levels of government (US Forest Service; state, county and local governments).

The Bureau of Indian Affairs (BIA) reviewed the COURSE document and provided many valuable comments. Minerals Management Service (MMS) is also a participant.

3.6 System Accessibility

The software, graphical user interfaces and websites will be developed in accordance with the guidelines in Section 508 of the Americans with Disabilities Act of 1990 as much as is possible. The primary contractor develops commercial products following 508 principles and practices and will adapt them to the custom software developed for NILS.

Appendix 1 contains the software development contractor's Guide to Section 508, their guiding principles and 508 compliance of their COTS products.

3.7 System Security

Access to the software applications and data via the BLM Intranet would be controlled by the procedures now in place for access to the BLM systems.

Parcel Management users will access information in the system via the Intranet. There will be three user levels associated with the NILS system. The three user classifications (type, level) will determine the level of access required by each:

Editors

The NILS editors will be state and field office personnel who are responsible for field survey data collection and land resource management specialists. The tasks associated with Parcel Management focus on the management of parcels, case processing and other land business transactions in an automated environment. The PM user is responsible for assembling all parcel feature data and submitting it to the NILS database. They will require full access to all parcel data.

Power Users

The BLM has a number of GIS users who perform spatial analysis and mapping functions. These users may need access to sophisticated GIS data and tools, but are not primarily responsible for the creation and maintenance of survey data, the measurement network, or the parcel fabric. The users might be considered "end users" or consumers of the core GIS data developed and maintained by NILS Editors. From a system architecture perspective, these users are considered "non-editing" GIS users.

Browsers

The Browsers at the BLM require tools that will allow them to perform simple GIS browse and

query functionality against the NILS data. These users are typically customer service representatives, management, administrative, and public users who need to perform research using NILS's data and do not have complex GIS analysis needs. These users are expected to access data through a Web browser, ArcExplorer, or another thin desktop client that does not require licensing.

The applications, which each user type must access, are shown in the following table:

Types of Users

User Type	Requirement	Technology	Functions
NILS Editors	Survey Management Measurement Management Parcel Management	GeoCommunicator SM,MM,PM ArcEditor Survey Analyst	Database Maintenance Data Analysis Map Production Display and Query
Power Users	Data analysis, map production, GIS Studies, GIS power users	ArcView 8.1	Data Analysis Map Production Display and Query
Browsers	Published GIS information products	ArcIMS	Standard Map Products Web Mapping Services

A comprehensive System Security Plan will be completed for the NILS Project. It will cover all security issues for all modules of NILS.

4.0 Target System Requirements

4.1 Supporting Documents

Document Citation	Date	Information Content	On Web Site?
NILS Concept of Operations and User Requirements document.	March, 2000	Project requirements which would drive the analysis/build/review phase	http://www.blm.gov/nils
Manual of Surveying Instructions	1973	BLM surveying business rules	No
BLM Information Technology Architecture Technical Reference Model Vol. 1 & Vol. 2.	6/26/01	Direction for design, construction, purchase, deployment and management of Information Technology	http://web.wo.blm.gov/blma
PM Use Case Analysis Document		Detailed Requirements	http://www.blm.gov/nils
Initial NILS System Architecture Design	12/2001	Hardware and software deployment strategy	http://www.blm.gov/nils

4.2 Requirements Summary

The high-level requirements of the Parcel Management system are listed in the following table:

Functional Category	Functional Requirement	Description
Cadastral/land data Architecture	Object-oriented Data model	Implementation with extensible architecture adaptable to custom deployment.
	FGDC Compliance	NILS's architecture will comply with and possibly extend the FGDC content.
	Tiered Network	Support map management as topologically related layers of parcel-based features.
	Feature-level Metadata	Automatically capture the metadata of parcel-based features.
	History/Lineage management	Maintain parent-child relationship of cadastral data.

Functional Category	Functional Requirement	Description
Geographic Information systems	Map Data and Display	Display, pan, zoom, modify, select, and annotate feature-level geometry.
	Query	Search for and refine selected features and feature sub-sets.
	Analysis	Spatial, logical, Boolean, mathematical analysis.
	Reporting and Plotting	Create text reports, map plots of specialized cadastral/land management information.
Database Management	Manage Data and Subsets	Find and manage files; select, create subsets, merge, append data.
	Manage Data Properties and Relationships	Edit properties of selected data.
	Perform Datum Transformation	Convert projections, perform x, y, z data transformations.
	Administer Access Rights	In multi-user environment, maintain passwords and database security.
	Transactions and Versioning	Manage locking, commits, rollbacks, version conflicts
	Data Automation Support	Provide tools, which support migration from existing databases to the NILS data schema; support digitizing, scanning, manual data entry.
	Import/Export	Ability to share data in various formats.
System Integration	Workflow, Document and Event Management	Guide and track business transactions
	Architecture for Data Sharing	Access, integrate, and manage spatial and tabular datasets across various platforms.
	Audit Support	Quality control, auditing, system event logging, operational review.

Functional Category	High-Level Functional Requirement
Input	Data from Survey Management, Measurement Management, LR2000
Output	BLM land resource management records, public information via Internet
Processing	Parcel management business rules
System Interfaces	Survey Management and Measurement Management, LR2000
Human Factors and ADA	Required in development of software and in COTS.

Functional Category	High-Level Functional Requirement
Data Storage and Access	NILS System Architecture
Data Integrity	Parcel data model
Performance	State-of-the-art desktop and system hardware and software.
Security	Security Plan
System Operations Support	System Administrators
Training	Training Plan

5.0 Target System Architecture

5.1 Supporting Documents

Document Citation	Date	Information Content	On Web Site?
NILS Concept of Operations and User Requirements document.	March, 2000	Project requirements which would drive the analysis/build/review phase	http://www.blm.gov/nils
BLM Information Technology Architecture Technical Reference Model Vol. 1 & Vol. 2.	6/26/01	Direction for design, construction, purchase, deployment and management of Information Technology	http://web.wo.blm.gov/blma
Use case Analysis Document	7/02	Detailed Requirements	http://www.blm.gov/nils
Initial NILS System Architecture Design	12/2001	Hardware and software deployment strategy	http://www.blm.gov/nils

5.2 Planned Architecture

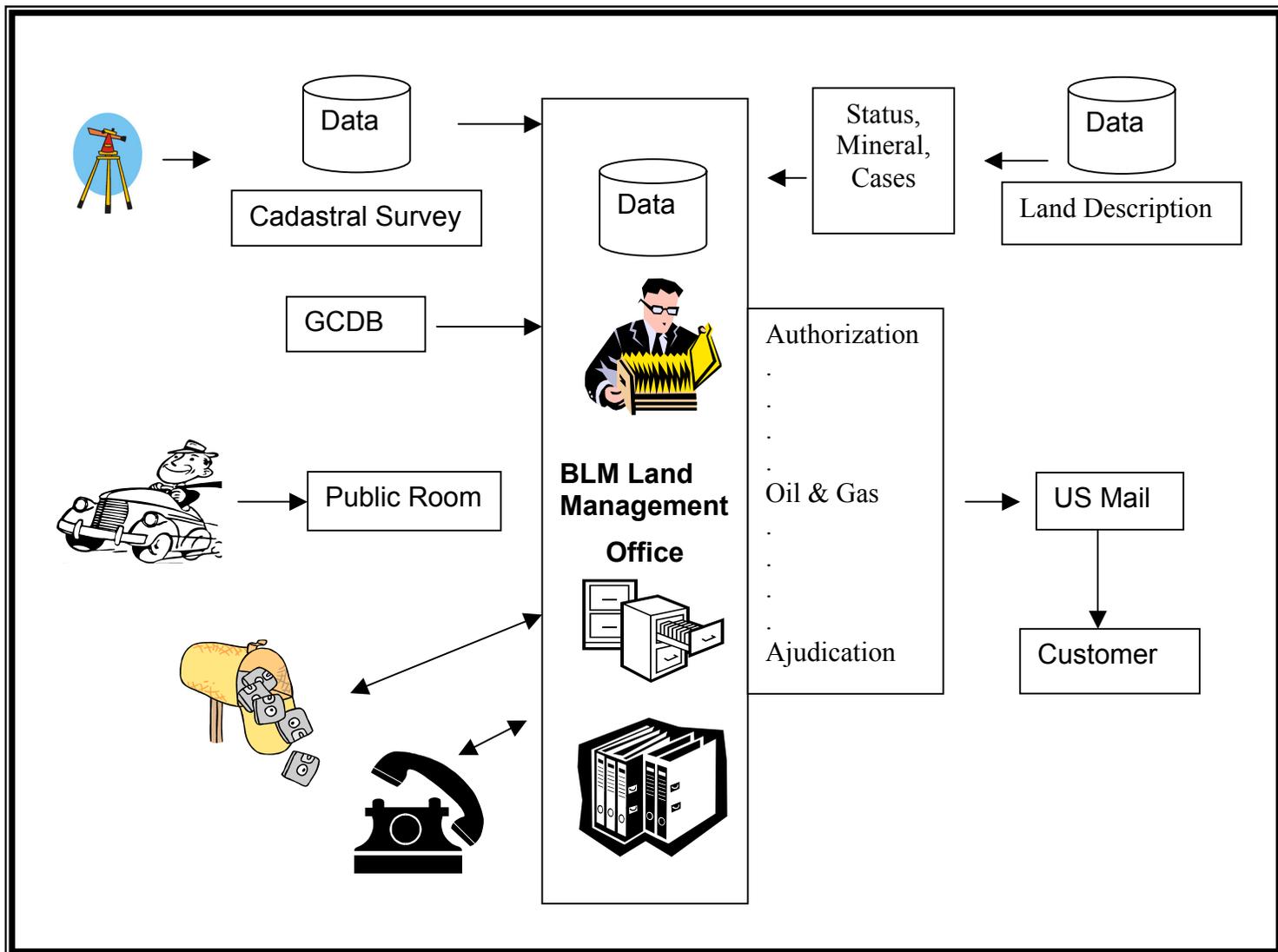
The proposed NILS system hardware architecture is shown in the following figure:

In following the basic tenets of the TRM, Parcel Management would:

- ❖ Function within the existing Bureau system architecture without special needs.
- ❖ Allow users and managers to effectively perform their jobs using repeatable processes.
- ❖ Create an enterprise-wide solution for land resource management.
- ❖ Be implemented using state-of-the-art hardware and software.
- ❖ Preserve the land resource management business rules of the BLM.
- ❖ Fit within the Bureau Architecture and conform to the BLM Strategic Plan.
- ❖ Be cost effective.
- ❖ Raise BLM data to a much higher asset level.

5.2.1 Operational Architecture

The existing land resource management process is primarily manual; use is not made of a centralized, standard process.



Components and categories addressed in the TRM, which may require modification are:

HW/SW Component	TRM Category	Comments
Data Vehicle	WAN	Possibly increase data transfer data rate to some BLM offices.

5.2.1.1 Development Environment

The Parcel Management application software would be analyzed, built, reviewed and developed by a contractor in their offices. The NILS Project Staff Team Leads would track the contractor's progress. See the Parcel Management Work Breakdown Structure. Development would be in a Rapid Application Development (RAD) environment. Object-oriented Analysis and Design, Managed Evolutionary Development and Life Cycle Management techniques would be applied throughout the entire evolution of NILS.

Monthly status reports are submitted to the Project Manager by the contractor

5.2.1.2 Test Environment

Testing not performed by the contractor, will be performed in accordance with normal BLM procedures. Software Test Plan, Software Test Description, Software Test Report, Final Qualification Test Scripts (FQTS) and FQTS Sign-off documents will be written and adhered to. The functionality will be tested from the remote clients and in NIRMC.

A test plan will be completed NILS. It will be a comprehensive test plan which will cover all of the NILS modules.

6.0 Master Plan and Schedule

6.1 Implementation Plan for Project

6.1.1 Roles and Responsibilities

Technical Project Team

Key Project Roles	Name
NILS Technical Lead	Roy King
Lead User Representative(s)	Bob DeViney
Staff Lead	Jerry Sullivan
CM Specialist	Elizabeth Powers
Project Schedule Maintainer	Jerry Sullivan
Documentation Specialists	Jerry Sullivan, Andy Doll
Security Specialist	David Cavalier

Integrated Project Team

Key Project Roles	Name
Project Proponent	Bob Anderson, Acting
Project Manager	Leslie Cone
Deputy Project Manager	Chris Hamilton
Business Process Owner	Bob Anderson, Acting
Contracting Officer	John Sherman
WO Division Representative	Ray Brady
WO Budget Representative	Tom Hewitt
Field Manager(s)	N/A

6.1.2 High Level Work Breakdown Structure (WBS)

See Appendix 2

6.1.2.1 High Level Project Schedule

See Appendix 2

6.1.2.2 High Level Gantt Chart

See Appendix 2.

6.1.2.3 High Level Resource Requirements

The following table shows the NILS total project costs by phase. The table does not include approximately \$4.3 million in indirect shared costs.

NILS Total Project Costs by Phase						
Contractor Costs						
	Est. cost	2000	2001	2002	2003	
Analysis	\$119,000	\$192,498	\$138,130	\$119,000		
Design	\$289,000	\$467,494	\$335,459	\$289,000		
Development	\$986,000	\$1,594,981	\$1,144,506	\$986,000	\$493,000	
Implementation	\$153,000	\$247,497	\$177,596	\$153,000	\$442,000	
Quality Assurance/Quality Cntrl	\$34,000	\$54,999	\$39,466	\$34,000	\$144,500	
Project Support	\$34,000	\$54,999	\$39,466	\$34,000	\$34,000	
Project management	\$85,000	\$137,498	\$98,664	\$85,000	\$85,000	
Sub total	\$1,700,000	\$2,749,967	\$1,973,286	\$1,700,000	\$1,198,500	\$7,621,753
Actuals		\$2,749,967	\$1,973,286			
Operations & Maint. (through 2008)						\$8,720,000
FGDC Compliance				\$25,000.00	\$40,000.00	\$65,000.00
Integrate Land Data				\$460,000.00	\$460,000.00	\$920,000.00
Configuration Management (through 2008)						\$645,711.00
Total contractor costs						\$17,972,464
BLM costs						
H/W, S/w Purchases						\$342,608
Misc. Equip.						\$73,859
BLM support (labor)						\$5,473,236
Training						\$131,930
Travel						\$478,934
Training Travel						\$30,000
Trainee salaries						\$26,063
Total BLM costs						\$6,556,630
Total Project Costs						\$24,529,094

6.2 Project Investment Management

6.2.1 Return on Investment Summary Sheet

See Appendix 3.

6.2.2 Benefit/Cost Analysis

See Appendix 4.

6.2.3 Cost / Benefit Assumptions

See Appendix 5.

6.3 Sensitivity Analysis

Resource Risk	Description
All development costs increased by factor of 2	Benefit/Cost Ratio reduced from 2.2 to 2.0
Yearly shared costs increased by factor of 2	Benefit/Cost Ratio reduced from 2.2 to 1.9
Increased, by 5%, the cost estimate to “Support adjudication and derive land status to support case processing” under NILS (this item has single largest cost savings/year of any business process)	Benefit/Cost Ratio reduced from 2.2 to 1.4
Increased <u>all</u> project direct and indirect costs by 50%. Includes Hardware Purchases/Support, Software Purchases, Contracted Project Costs, BLM Support Costs, Training Costs, and Indirect Costs	Benefit/Cost Ratio reduced from 2.2 to 1.5

6.4 Risk Identification and Management

6.4.1 Risk Identification Forms

See Appendix 6.

6.4.2 Risk Management Summary Spreadsheet

Priority	Risk Statement	Project Phase	Assigned to:	Overall Risk Rating
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Priority	Risk Statement	Project Phase	Assigned to:	Overall Risk Rating
1.	Dedicated technology lead from BLM is required	All	Staff	<i>Risk eliminated</i>
2.	Decentralized data conversion effort	All	Staff	<i>Risk static</i>
3.	Missing fundamental user requirements	All	Staff	<i>Risk decreasing</i>
4.	Late, infrequent deliverables to illustrate progress	All	Staff	<i>Risk eliminated</i>
5.	Lack of support and/or acceptance because of perceived insufficient input from multiple levels of users	All	Staff	<i>Risk eliminated</i>
6.	Tools do not enforce data model standard and business rules effectively	All	Staff	<i>Risk decreasing</i>
7.	System not capable of aggregating and splitting land units properly	All	Staff	<i>Risk decreasing</i>
8.	Changes in business rules mandated by legislation.	All	Staff	<i>Risk static</i>
9.	Freedom of Information Act mandates.	All	Staff	<i>Risk static</i>
10.	Software and procedures unfamiliar to users.	All	Staff	<i>Risk static</i>
11.	Incomplete hardware/software deployment – lack of servers, redundancy hardware, client hardware, application software, etc.	All	Staff	<i>Risk static</i>

6.5 IT Investment Management Summary

The costs in the following table are extracted from the NILS ROI.

Project Name Funding Strategy and Budget Request						
New Funding Required						
	FY +1 2003	FY +2 2004	FY+3 2005	FY+4 2006	FY+5 2007	FY+6 2008
Labor (new BLM labor costs)	\$600,120	\$600,120	\$600,120	\$600,120	\$600,120	\$600,120
Contract costs	\$2,710,753	\$1,652,253	\$1,652,253	\$1,652,253	\$1,652,253	\$1,652,253
Travel	\$115,000	\$65,000	\$0	\$0	\$0	\$0
Training	\$50,032	\$40,032	\$10,000	\$10,000	\$10,000	\$10,000
HW/SW Purchases	\$88,900	\$46,900	\$10,900	\$10,900	\$10,900	\$10,900

Parcel Management will be deployed in September 2003. Deployment will be the Parcel Management custom software, installed as an extension to ESRI's ArcGIS applications. At that time, the project will enter the Operations and Maintenance (O&M) phase. O&M will be under the direction of the Land & Resource Projects Office (L&RPO) in Denver. The contractor and NIRMC will aid in the testing, transition and deployment stages. O&M operations will be performed by a combination of Help Desk facilities, L&RPO representatives and Parcel Management technical experts.

6.5.1 Acquisition Strategy

BLM has acquired the services of the following companies for Parcel Management:

- ❖ Environmental Systems Research Institute (ESRI) is the primary contractor. They will create and deliver the final product
- ❖ Apex Solutions provides data analysis support. Apex's major responsibility has been the analysis of the many land databases within the BLM and the development of a data model to support all of them (DIA).
- ❖ TRW provides support for documentation, financial analysis and configuration management.
- ❖ Fairview Industries provides expertise in parcel data modeling for non-Federal agencies and oversees the parcel Consortium. Fairview also verifies the Compliance of NILS databases with the FGDC Cadastral Data Content Standard.

6.5.2 Overall Project Management Strategy

The Parcel Management Team is located in the Land & Resource Projects Office, Denver, CO:

Key Project Roles	Name	% Salary for PM	Phone	Email Address
NILS Project Manager	Leslie Cone	50%	303-236-0815	Leslie_Cone@blm.gov
NILS Deputy Project Manager	Chris Hamilton	10%	303-236-6539	Chris_Hamilton@blm.gov
NILS Technical Lead	Roy King	10%	303-236-2628	Roy_King@blm.gov
Staff Lead	Jerry Sullivan	100%	303-236-1089	Jerry_Sullivan@blm.gov
Subject Matter Expert	Bob DeViney	50%	503-808-6154	Robert_DeViney@blm.gov
NILS GIS Specialist	John Reitsma	10%	303-236-1984	John_Reitsma@blm.gov

Travel associated with the project is part of the project cost. The PM Management and/or Technical Teams will travel to various agencies and sites to gather requirements, confirm requirements and conduct project organizational meetings. The Teams will meet with the primary contractor in their headquarters office. Also, the Parcel Management subject matter experts will be required to meet in a central location to work on the analysis of the requirements.

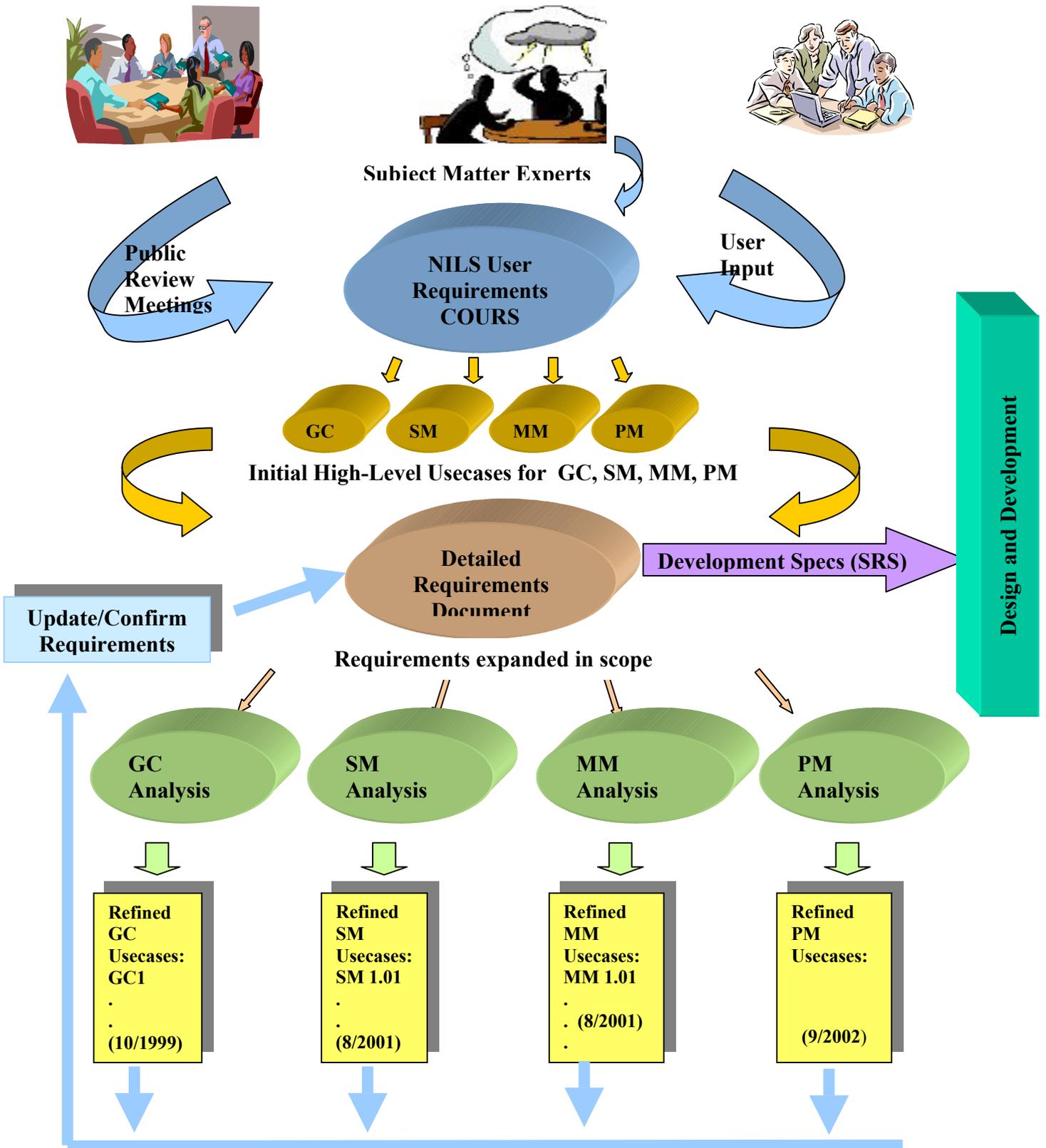
The Requirements phase of the Parcel Management project was completed in March 2000. In this phase, the business rules, business requirements and functionality were determined and documented. User meetings and workshops, facilitated by Subject Matter Experts and Staff Leads, were held to gather the requirements directly from representatives of the user community. The results were presented to a much wider audience in open meetings and on the Internet. Comments were solicited and incorporated into the final documentation. See Concept of

Operations and User Requirements (COURS) document.

The Analysis phase, scheduled for completion in July 2002, includes detailed refinement of the high-level user requirements from the COURS document and gap analyses with existing Commercial-Off-The-Shelf (COTS) software. Parcel Management functionalities and software will be developed by Environmental Systems Research Institute (ESRI), contractor for the project. It is being developed in parallel with ESRI's COTS parcel management functionalities. The Analysis phase and the gap analyses will determine the requirements which would be contained in COTS and which requirements must be built as the custom software, Parcel Management. Development is scheduled to begin following the August 2002 ITIB meeting; deployment is September 2003.

The NILS Requirements and Analysis Process is depicted in the following diagram:

NILS Requirements and Analysis Processes



6.6 Performance Based Management System

An object-oriented analysis and design (OOAD) method was used to capture the essential business process requirements that would be supported by the Parcel Management software application. Analysis, data modeling, build and review phases of Parcel Management would also follow OOAD principles. Project management is based upon the concepts of Managed Evolutionary Development (MED) and would follow these concepts throughout the life of the project. Resources and scheduling would be tracked throughout the life of the project using a Work Breakdown Structure (WBS) and a Gantt chart. Other project management techniques applied to the project would include forms of Life Cycle management and Uniform Modeling Language (UML).

Appendix 1

Contractor's Guide to Section 508

Appendix 2

High Level Work Breakdown Structure (WBS)

and Gantt Chart

Appendix 3

Return on Investment Summary

Appendix 4

Benefit/Cost Analysis

Appendix 5

Cost / Benefit Assumptions

Appendix 6 Risk Identification Forms

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: HW/SW Specifications
Probability of Occurrence: low	Schedule Impact: none	Overall Risk Rating: low
Risk Statement (explanation): Dedicated technology lead from BLM is required		
Risk Mitigation Measures Appointed by Project manager.		
Risk Mitigation Strategy: (avoid, mitigate, or accept) Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Data Modeling
Probability of Occurrence: low	Schedule Impact: ?	Overall Risk Rating: low
Risk Statement (explanation): Decentralized data conversion effort would impact schedule by creating lack of data.		
Risk Mitigation Measures: Analyze data and business rules prior to data model development. DIA Project and data modeling.		
Risk Mitigation Strategy: (avoid, mitigate, or accept) (circle one) Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Requirements
Probability of Occurrence: Low	Schedule Impact: ?	Overall Risk Rating: Low
Risk Statement (explanation): <i>(describe the range of possible outcomes, expected timing, frequency)</i> Missing fundamental user requirements would require unanticipated changes to software/hardware.		
Risk Mitigation Measures: <i>(tie mitigation to the project schedule, identify each by it's Activity Id #)</i> Requirements gathering, data analysis, OOAD project management techniques.		
Risk Mitigation Strategy: <i>(avoid, mitigate, or accept) (circle one)</i> Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Milestones
Probability of Occurrence: Low	Schedule Impact: ?	Overall Risk Rating: low
Risk Statement (explanation): Late, infrequent deliverables to illustrate progress		
Risk Mitigation Measures: Follow project schedule, track contractor progress.		
Risk Mitigation Strategy: <i>(avoid, mitigate, or accept) (circle one)</i> Mitigate.		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Requirements
Probability of Occurrence: Medium	Schedule Impact: ?	Overall Risk Rating: Low
Risk Statement (explanation): Lack of support and/or acceptance because of perceived insufficient input from multiple levels of users		
Risk Mitigation Measures: Involve users and technical experts in requirements gathering and analysis		
Risk Mitigation Strategy: <i>(avoid, mitigate, or accept) (circle one)</i> Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Requirements
Probability of Occurrence: Low	Schedule Impact: ?	Overall Risk Rating: Low
Risk Statement (explanation): Changes in business rules mandated by legislation.		
Risk Mitigation Measures: Create reusable modular software which allows changes in business rules.		
Risk Mitigation Strategy: <i>(avoid, mitigate, or accept) (circle one)</i> Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Requirements
Probability of Occurrence: Low	Schedule Impact: ?	Overall Risk Rating: Low
Risk Statement (explanation): Freedom of Information Act mandates.		
Risk Mitigation Measures: Create reusable modular software which allows changes in business rules.		
Risk Mitigation Strategy: <i>(avoid, mitigate, or accept) (circle one)</i> Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Requirements
Probability of Occurrence: Low	Schedule Impact: ?	Overall Risk Rating: Low
Risk Statement (explanation): System not capable of aggregating and splitting land units properly		
Risk Mitigation Measures: Extensive modeling of section subdivision processes.		
Risk Mitigation Strategy: <i>(avoid, mitigate, or accept) (circle one)</i> Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module:Parcel Management	Project Focus Area: Requirements
Probability of Occurrence: Low	Schedule Impact: ?	Overall Risk Rating: Low
Risk Statement (explanation): Tools do not enforce data model standard and business rules effectively		
Risk Mitigation Measures: Extensive data modeling and requirement s analysis.		
Risk Mitigation Strategy: (avoid, mitigate, or accept) (circle one) Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module:Parcel Management	Project Focus Area:
Probability of Occurrence: Medium	Schedule Impact: ?	Overall Risk Rating: Medium
Risk Statement (explanation): Incomplete hardware/software deployment – lack of servers, redundancy hardware, client hardware, application software, etc.		
Risk Mitigation Measures: Complete and follow system architecture design		
Risk Mitigation Strategy: (avoid, mitigate, or accept) (circle one) Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team

RISK IDENTIFICATION FORM		
Project Name: NILS	Module: Parcel Management	Project Focus Area: Training
Probability of Occurrence: Low	Schedule Impact: ?	Overall Risk Rating: Low
Risk Statement (explanation): Software and procedures unfamiliar to users.		
Risk Mitigation Measures: Effective training, training plans, Work Flow Manager		
Risk Mitigation Strategy: <i>(avoid, mitigate, or accept) (circle one)</i> Mitigate		
Identified by : NILS Team	Date Identified: 3/00	Assigned to: NILS Team