

Licensing Support Network (LSN) Logical Design Document

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Prepared for
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1. INTRODUCTION

The Nuclear Regulatory Commission (NRC) has contracted with GRC International (GRCI) to develop the Licensing Support Network (LSN). The objective of the LSN is to reduce the time needed to prepare for the licensing hearing and give NRC the chance of meeting the Congressionally mandated three-year licensing process time frame. It is generally acknowledged that although the system does not guarantee the licensing time frame will be met, without the LSN it will not be possible to meet the mandated time frame. The LSN will achieve this time saving by:

- a. replacing classic “discovery” exchanges among parties by making all parties’ relevant documents publicly accessible before docketing
- b. establishing an electronic docket that will be publicly accessible
- c. transforming the motions practice to a fully electronic process.

The Motions Practice and the Electronic Docket, while key parts of the LSN overall, are outside the scope of this particular effort. The focus of this project is on the design, development, operation, and maintenance of a web portal capable of working with the other components that make-up the complete LSN system. While the overall LSN is composed of other components, when the term LSN is referred to in this document it will refer to only that portion that is the Web Portal. The LSN Web Portal effort is focused on two of the four LSN functional requirements:

- a. Establishing an effective Internet-based method of accessing (search and retrieval) the record collections of the parties and potential parties to the high-level waste repository licensing proceeding.
- b. Providing an audit/compliance subsystem, including the automated tools and policies and procedures needed to monitor Participant compliance with the availability and document integrity submission requirements found in 10 C.F.R. Part 2, Subpart J.

LSN Participants include individuals from the NRC, Department of Energy (DOE), state of Nevada, counties in Nevada, Nuclear Energy Institute (NEI), other organizations and citizen groups, as well as the general public.

Each Participant, including NRC, must meet core requirements for making available on the web their documentary materials and for providing the computerization necessary to comply with the Subpart J provisions for document production and service. These include requirements for providing web accessible bibliographic headers (structured data) and searchable text (unstructured data) in its documentary material and a description of where an authenticated image of the document may be obtained. Where text is not available (e.g., topographical maps, engineering drawings, etc.), the image will be made available online in lieu of the text file. Structured data bibliographic headers are required for items not suitable for image or text. Similarly, structured data bibliographic headers are required for privileged, confidential, safeguards, and other types of limited access documents.

1.1 Background

Section 114(d)(2) of the Nuclear Waste Policy Act of 1982 (NWPA) requires the Commission to issue a final decision approving or disapproving issuance of the construction authorization for a mined geologic repository to store high-level radioactive waste at Yucca Mountain, NV. This final decision must be reached within three years of the U.S. Department of Energy (DOE) license application. The Licensing Support Network (LSN) is a critical tool to ensure that document accesses, and associated hearing agenda, can all be handled in an expeditious manner. As outlined in 10 C.F.R. Part 2, Subject J, it will establish a system to provide shared document discovery and facilitate electronic motion practice for the hearings on DOE's license application for the repository. Having all parties to the LSN decision share their documents via the LSN Web Portal greatly improves the discovery process, reduces costs, and levels the playing field among all Participants.

1.2 Objectives

The objective of implementing the Licensing Support Network (LSN) is to reduce the time needed for the licensing hearing and give the Agency some chance of meeting the Congressionally mandated three-year licensing process time frame.

The LSN Web Portal is the primary search tool for retrieval and dissemination of the electronic documents concerning the Yucca Mountain Project and will be used by both Participants in the Licensing Activity as well as the general public. The portal will also be in compliance with Section 508 Guidelines.

The core Internet functions that will be provided by the LSN web portal are:

- a. Provides shared access to documentary material;
- b. Provides timely, effective access, search, and retrieval for large collections of diverse documents;
- c. Identifies where associated images are easily located, if not available on the system;
- d. Provides a unique document ID across the enterprise;
- e. Provides priority access (to approximately 500 users) during key phases of the licensing process;
- f. Ensures uninterrupted performance over at least a three-year licensing time frame.

The LSN as a Web Portal is not a central repository, but the central source for information discovery for the LSN. Documents are not copied over or stored on the LSN from Participant sites. The LSN will instead store pointers or links to where the actual documents are on an individual Participant's Web Server. When users find the document they seek and request it, the document is served up from the Participant's site to the requester.

1.3 Scope

The LSN is being developed for the U.S. Nuclear Regulatory Commission (NRC) Licensing Support Network Administrator (LSNA) and is based on the Project Charter dated January 5th, 2001. The LSN is being developed to comply with the provisions of 10 C.F.R. Part 2, Subpart J. The various Participants in the LSN must provide access to their document repositories in order for the LSN to provide the data and information necessary for the licensing process to succeed.

The Agency-wide Document Access Management System (ADAMS) contains publicly accessible docket files that will meet the docket requirements. Similarly, NRC's existing Electronic Information Exchange (EIE) infrastructure will meet the 10 C.F.R. Part 2, Subpart J motions practice requirements. Therefore, the LSN project is focused on the search and retrieval component and the audit capability.

When constructing the LSN, the Development Team will rely heavily on commercial off-the-shelf (COTS) software tools and applications for development as compared to creating custom software. Visually, the scope of this project is shown in Figure 1.3-1 below.

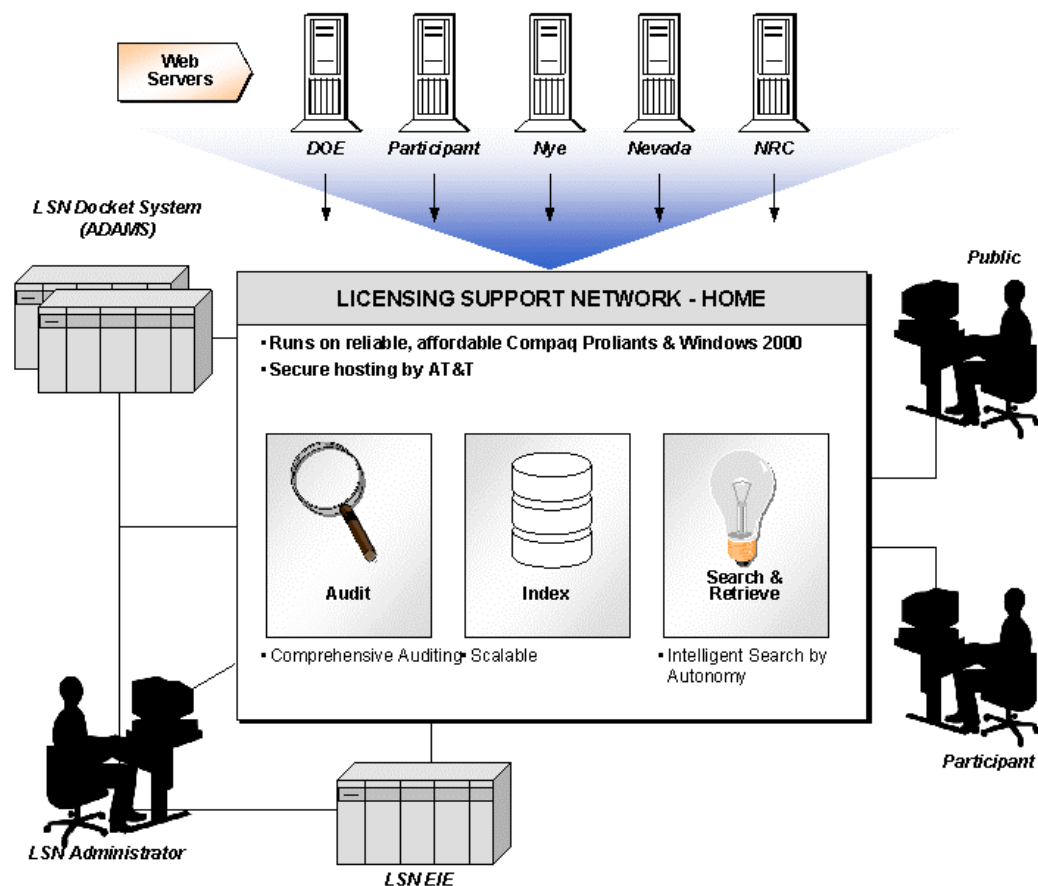


Figure 1.3-1. LSN High-Level Architecture

1.4 Assumptions

The LSN Logical Design has been developed using the following Assumptions:

- a. Several COTS software product selections have already been made. The selected products are shown below in Table 1.4-1. The Autonomy software is a key driver of the LSN software architecture.
- b. The NRC ADAMS documents applicable to the High-Level Waste Repository will be converted to PDF format and bibliographic header data will be made available to the LSN.
- c. In April the LSN will initially open to the Public. At that time the site will display an introductory “under construction” web page. Thereafter the LSN website will become more robust through the addition of other web pages and search/retrieval functionality.
- d. Since the LSN is open to the public on the Internet all information there will be unclassified. There is no provision for encryption nor is the LSN hosted on a secure network. It is the responsibility of the Participant sites to ensure that all documents they place on their servers are not classified, safeguarded, or if copyrighted, provisions have been made with the authors.
- e. The volume of data the LSN will contain is between the High Estimate of Total Cumulative Relevant Pages for the year 2010 of 15,776K and the Low Estimate of Total Cumulative Relevant Pages for the year 2010 of 1,331K. These estimates (as of February 5, 2000) were provided by the Government in Appendix B of the NRC LSN Statement of Work.
- f. The archiving of the data (documents) is the responsibility of the Participant site and the Participant site is responsible for making the data available to the LSN as described in “The Rule”.

1.5 Applicable Documents

- a. Statement of Work, U.S. Nuclear Regulatory Commission, and Contract Number GS-35F-4507G dated 12/12/00.
- b. Licensing Support Network (LSN) Project Definition and Analysis Document (PDAD), Final (Revision 1)
- c. GRC International (GRCI) Nuclear Regulatory Commission (NRC) Licensing Support Network (LSN), Volume 1 – Technical Documentation, August 25, 2000
- d. 10 C.F.R. Part 2, Subpart J.
- e. Technical Documents/Plans/Standards:
 1. Workforce Investment Act of 1998, Rehabilitation Act Amendments of 1998, Section 508, Implementation.
 2. Computer Security Act of 1987.
 3. System Development and Life-Cycle Management Methodology (SDLCM), Procedures Standards and Forms, Version 1.2, dated December 1999.
 4. System Development and Life-Cycle Management Methodology (SDLCM), Handbook, Version 2.2, dated December 1999.

1.6 Overview

This document discusses the logical hardware and software components as applicable to the LSN Web Portal and describes how LSN users will interact with the system. The Logical Design Document is organized as follows:

- e. Section 1 defines the project objectives, scope, assumptions, reference documents used and the organization of this document.
- f. Section 2 identifies the methods used to develop the LSN logical design.
- g. Section 3 presents the Logical Model to include the Logical Data Model.
- h. Section 4 presents a high-level system description of the selected architecture and discusses both the Logical Process Model. The operational environment is briefly characterized in terms of the system and the users of the system. The system components are described in generic configuration item terms.
- i. Section 5 discusses the design from the user's perspective, in terms of usage scenarios and interfaces to the system.
- j. Appendix A contains the Requirements-to-Design Traceability Matrix.
- k. Appendix B contains the Acronyms.

2. APPROACH

2.1 Design Methods

The Government had, prior to the Proposal, conducted an analysis of various design alternatives before selecting Alternative 3. The essence of this Alternative was each Participant Site was responsible for its own documents and making them accessible to others vice a centralized solution for the LSN. The logical design in the original LSN proposal was then evolved to make it more complete. At the heart of the design is the integration of commercial software components and hardware. While there will be development necessary to integrate these components, the goal is to minimize custom development.

Incremental design and development allows for earlier and more rapid movement from requirements to operating software. The motivation for this is that the architecture creates coherence between the various sub-systems because they are described in a common, comprehensive set of terms and models. Once all subsystems are described using the same semantics and models, development and integration are greatly simplified. A GRCI development iteration includes seven principal activities: requirements analysis, high level design, detailed design, implementation, unit testing, integration, and integration testing. The scope of each phase will be discussed and agreed in advance by the Design Team and NRC before the start of development.

2.2 Design Alternatives

Design Alternatives have been previously documented in the Project Definition and Analysis Document, Section 6, Analysis of Alternatives.

2.3 Design Studies

Not applicable.

2.4 Design Issues

2.4.1 Hardware Issues

The following were the major activities for the hardware logical design:

- a. Design the candidate hardware architectures
- b. Identify key assumptions and constraints for the candidate hardware architectures
- c. Evaluate the architecture against the criteria

This activity as noted previously was done earlier in the Proposal phase. At that time an assumption was the LSN would cache the most important/frequently requested documents from each site and centrally store them on the LSN to serve them up to users. The advantage of this approach was quicker response to users. However, if the LSN accepts responsibility for serving these documents to users it could be viewed as assuming the responsibility then for ownership of these documents, hence it was not desirable.

Participant sites are responsible for providing their information on a server. Some Participant sites may share (co-locate) on a server. There is no problem provided each has its own Uniform Resource Location (URL) address and file directory tree-structure so the LSN can spider the directories.

2.4.2 Software Issues

Issue 1: Lack of Autonomy Benchmarks.

Issue 2: Autonomy's utilization of textual data with an overall error rate of greater than 0.5% based on character accuracy and a per page error rate of greater than 1.5%.

Issue 3: "Categorization" of Autonomy searches.

4. LOGICAL MODEL

This section of the Logical Design Document provides an overview of the design of the software components and hardware configuration items of the solution. Additionally, the external interfaces are discussed. A brief description of the high-level processes identified on the Top-Level Data Flow Diagram (DFD) is included below.

3.1 System Architecture

3.1.1 Hardware Architecture

Figure 3.1.1-1 (on next page) illustrates the hardware architecture of the new components of the LSN. Existing components are the NRC web-accessible official docket file and the Electronic Information Exchange (EIE) infrastructure. Any changes to existing components are to be determined by NRC. Changes to the existing NRC infrastructure are expected to be minimal.

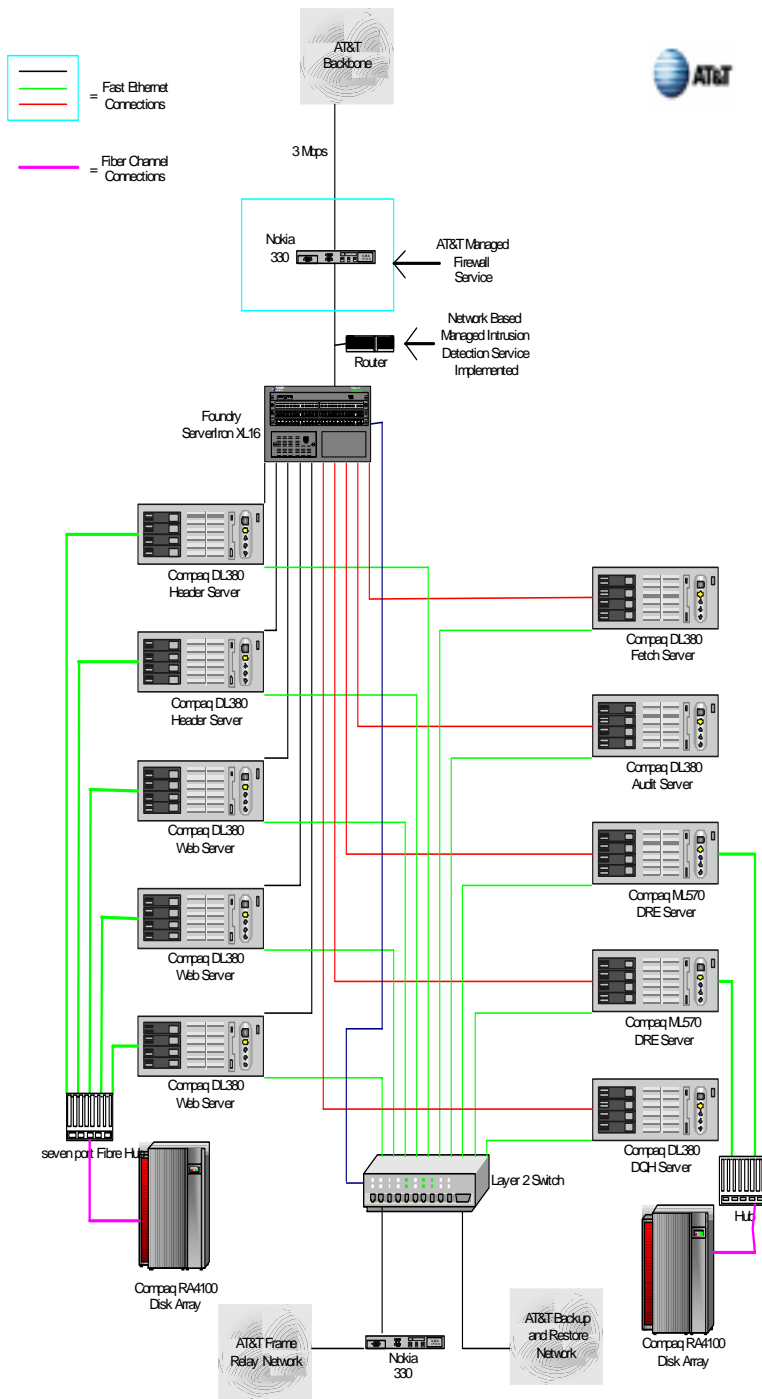


Figure 3.1.1-1. LSN Hardware Architecture

The LSN hardware architecture shown in Figure 3.1.1-1 above includes computer equipment that will be located in the AT&T Hosting facility in Ashburn, Virginia. This hardware is identified Table 3.1.1-2 below:

CI NAME	DESCRIPTION
Header Server #1	Compaq DL380, PIII 800Mhz CPU, 256 MB RAM, 2 x 9.1 7200 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
Header Server #2	Compaq DL380, PIII 800Mhz CPU, 256 MB RAM, 2 x 18.2 7200 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
Web Server #1	Compaq DL380, PIII 800Mhz CPU, 512 MB RAM, 2 x 18.2 7200 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
Web Server #2	Compaq DL380, PIII 800Mhz CPU, 512 MB RAM, 2 x 18.2 7200 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
Web Server #3	Compaq DL380, PIII 800Mhz CPU, 512 MB RAM, 2 x 18.2 7200 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
DQH Server	Compaq DL380, PIII 800Mhz CPU, 512 MB RAM, 2 x 18.2 7200 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
Fetch Server	Compaq DL380, 2 X PIII 800Mhz CPU, 2 GB RAM, 2 x 18.2 10000 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
Audit Server	Compaq DL380, 2 X PIII 800Mhz CPU, 2 GB RAM, 2 x 18.2 10000 rpm hard drives in RAID 1 configuration, Integrated RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply
DRE Server #1	Compaq ML570, 2 X PIII XEON 700Mhz CPU with 1MB cache, 2 GB RAM, 2 x 18.2 10000 rpm hard drives in RAID 1 configuration, SmartArray 3200 RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply, Redundant Fans
DRE Server #2	Compaq ML570, 2 X PIII XEON 700Mhz CPU with 1MB cache, 2 GB RAM, 2 x 18.2 10000 rpm hard drives in RAID 1 configuration, SmartArray 3200 RAID controller, Integrated 10/100 NIC, additional dual port 10/100 NIC, Redundant Power Supply, Redundant Fans
DRE Disk Array	Compaq RA4100 Fibre Channel Disk Array, 6 9.1 GB 10000rpm hard drives in RAID 5 configuration, Redundant RAID controller, seven port Fibre Hub with rack mount kit, 2 PCI to Fibre Channel Host Adapters for servers
Header/Web Server Disk Array	Compaq RA4100 Fibre Channel Disk Array, 6 9.1 GB 10000rpm hard drives in RAID 5 configuration, Redundant RAID controller, seven port Fibre Hub with rack mount kit, 5 PCI to Fibre Channel Host Adapters for servers

Table 3.1.1-2. LSN Hardware

3.2 Logical Data Model

The LSN design team constructed the Logical Data Model by first studying the requirements and identifying the set of LSN entities. Then, the team identified those entities that would be handled by Autonomy. Autonomy is at the core of the solution and will handle the bulk of the data entities. The non-Autonomy data entities were then modeled using ERWin.

3.2.1 Entity Relationship Diagram

This section provides a graphical view of the logical data model and discusses its content. The LSN Logical Data Model is greatly simplified by the use of COTS products like Autonomy. Autonomy has its own data structures and automated process for populating these structures with pertinent index information. The Autonomy data model is proprietary, so it is not possible to include it in this document.

The LSN will require some data to reside outside of Autonomy in SQL Server. This data includes identification of Participant organizations (Participant_Organization entity), Participant (priority) users (Participant entity), and document headers (Header entity and other related entities in Figures 3.2.1-2 and 3.2.1-2). Figures 3.2.1-1 through 3.2.1-3 below illustrate the entire LSN Logical Data Model.

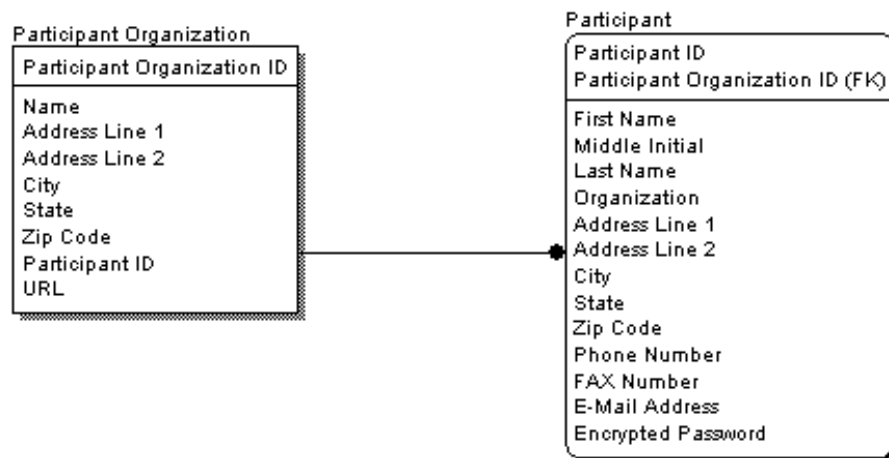


Figure 3.2.1-1. LSN Logical Data Model (Part 1)

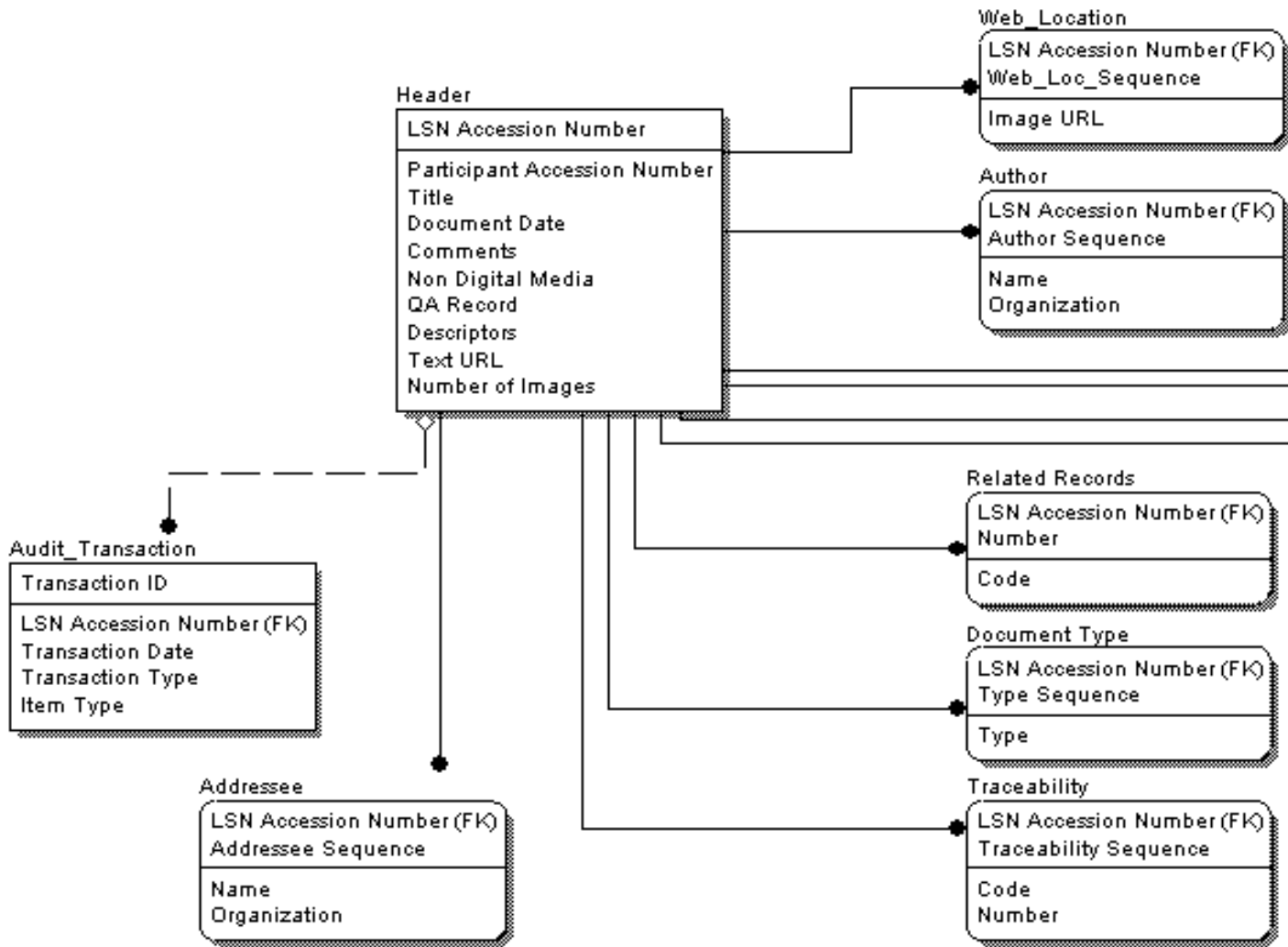
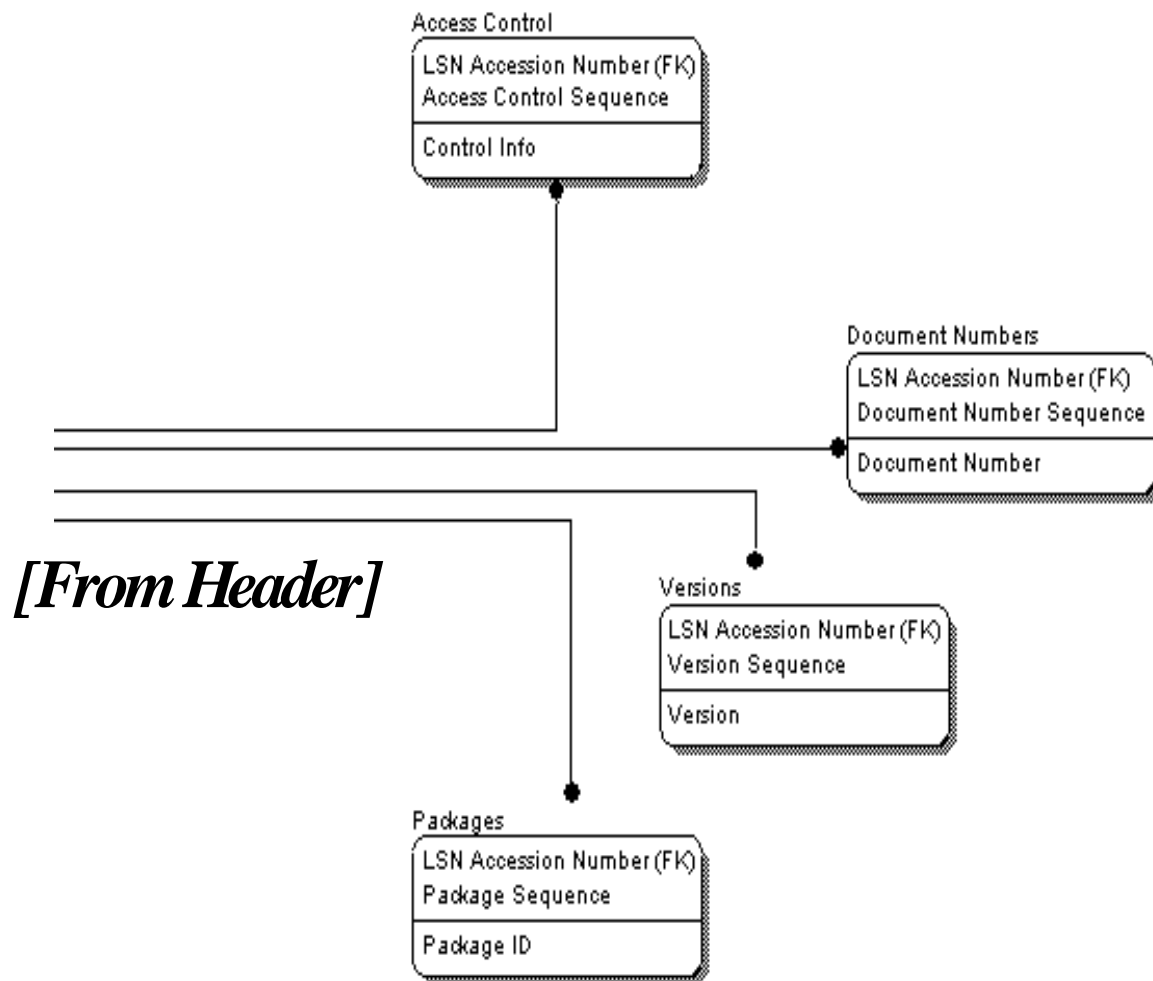


Figure 3.2.1-2. LSN Logical Data Model (Part 2)

**Figure 3.2.1-3. LSN Logical Data Model (Part 3)**

Design assumptions made during creation of the LSN Logical Data Model include:

1. One (1) Participant may belong to only one (1) Participant_Organization
2. One (1) Participant_Organization may have zero (0), one (1) or many Participants.
3. One (1) Header may have zero (0), one (1) or many:
 - a. Web Locations
 - b. Authors
 - c. Related Records
 - d. Document Types
 - e. Traceability
 - f. Audit Transactions
 - g. Addressees
 - h. Access Control
 - i. Document Numbers
 - j. Versions
 - k. Packages
4. There must be an entry for Author Name or Author Organization or both.
5. There must be an entry for Addressee Name or Addressee Organization or both.
6. If the Author Name is not known, N/A will be entered.
7. If the Author Organization is not known, N/A will be entered.
8. If the Addressee Name is not known, N/A will be entered.
9. If the Addressee Organization is not known, N/A will be entered.

HEADER FIELD DESCRIPTIONS

The following data descriptions for the contents of the Header Records have been provided by NRC as of March 13, 2001:

Access Control Information

A code indicating that access to a document is restricted. Access is restricted if the document is privileged, proprietary, or copyrighted.

Addressee Name

The names of all the persons to whom a document is addressed. Each entry in this field is linked to a corresponding entry in the Addressee Organization field.

Addressee Organization

The affiliation of each receiver or the organization to whom the correspondence is addressed if there is no personal receiver. Each entry in this field is linked to a corresponding entry in the Addressee Name field.

Author Name

The name of each person listed on the document as responsible for all or part of its creation. Only personal authors are entered in this field. Corporations as authors are captured in the Author Organization field. Each entry in this field is linked to a corresponding entry in the Author Organization field.

Author Organization

The name of the organization (i.e., company, corporation or group) with which the author is affiliated at the time the document was created, or the name of the organization responsible for creating or originating the document when there is no personal author. If an author works for one organization and is representing another, both affiliations should be captured. Each entry in this field is linked to a corresponding entry in the Author Name field.

Comments

Any information not covered in other fields which the submitter or indexer believes would be of help to identify or retrieve the document, or to further explain any field entry for the document. This field can be used for entries such as the language of the document (if it is not English) or the page numbers that are missing in an incomplete document. This field may contain information on where an image version of a document may be acquired. This field may contain a description of the contents of a document that cannot be imaged and converted to searchable text. This field may include summaries of documents that are privileged or physical “things” if that data is not elsewhere explicitly detailed in the textual document. Participants utilizing a special instruction sheet must make all these types of information accessible in a text version of the special instruction sheet, otherwise, such data is to be included in the Comments field, Physical Location Reference Information field, or comparable fielded data location.

Descriptors

Words or phrases (identifiers, keywords) that the submitter provides with the document to represent the subject content of the document and to assist the user in retrieval. Keywords may be, but are not necessarily, contained in a controlled vocabulary.

Document Date

The date on which the document was completed, issued, effective or published. If the date is unknown, information in the document will be used to estimate a date.

Document Number

The identifying number(s) assigned to a document that distinguishes it from other documents (e.g., DOE Order No., Public Law number, report number). Document numbers appear (typed or handwritten) on the document itself and are considered to be control numbers. The Document Number is generally assigned by the issuing agency. Examples are report numbers, or public law numbers such as SAND86-1023, PL95-16, or H101-364.

Document Type

The general format or physical presentation of the document. Examples include correspondence, report or procedure.

Image URL

The Uniform Resource Locator reference to the image associated with the header.

LSN Accession Number

A unique identifier assigned to each document entering the system. The capture station at which the document enters the LSN is identified as part of this number.

Non-Digital Media

Flag indicator that documentary material is in non-digital form and neither text or image are therefore available online.

Number of Images

The number of images of a document that was imaged from a hard-copy.

Package Identifier

An identifier assigned to all components of a group of documents submitted as a single entity. This field enables a package containing many documents which may or may not have relationships among them to be reassembled quickly and easily.

Participant Accession Number

A unique identification number assigned by the Participant organization to each document submitted for entry into the LSN. This number assists the organization in locating documents it has submitted. This field should contain a specific alpha code identifying the Participant organization (e.g., DOE, NRC, NEV) and any other alphanumeric scheme which the submitting organization might use in accessioning their own documents. The number used may be the accession number used in the submitting organization's records system.

QA Record Indicator

An indicator of whether the document is a quality assurance record. Quality assurance records are those whose contents have been determined to furnish evidence of the quality and completeness of data, items, and activities related to the safety of the repository program.

Related Record Code

The code that represents the type of relationship between the document being entered and a document to which it is related. Each code in the authority list will have a reciprocal code; for example, the reciprocal of a document (A) that is attached to another document (B) is document (B) has attachments (A). Examples of Related Record Codes include: REV (revises or is a later version of), COR (corrects) or SUPR (supersedes). Each entry in this field is linked to a corresponding entry in the Related Record Number field.

Related Record Number

This field contains the LSN Participant Accession Number(s) of a document that has a particular relationship to the document being entered. There are several types of relationships, such as: parent/child (a document and its attachments); original/subsequent (a document and a later version, comments, corrections, or errata); and whole/part (a book and its chapters, a journal and its articles); and an information package and the cataloging units it contains. The type of relationship is captured in the Related Record Code field. Each entry in this field will be linked to a corresponding entry in the Related Record Code field.

Text URL

The Uniform Resource Locator reference to the text associated with the header.

Title

An identifying sentence or phrase given to the document that appears on the document, i.e., the actual title. If the actual title is not present for a document, a title must be created.

Traceability Code and Number

An identifier that has been assigned to a document in order to link it to a specific activity. These identifiers will enable searchers to easily retrieve all documents associated with any given activity by providing a special linkage not available through other fields. Examples of traceability numbers include WBS numbers, Data Tracking Number, and configuration item identifiers. This number may include a code that indicates the type of traceability number. Examples of this code include: DTN (technical data link), DI (Document Identifier), and WBS (Work Breakdown Structure).

Version

The version, revision number, or status of a document that has or will have multiple iterations. It will correspond to information contained on the document (e.g., Revision 2, Version 1, Final, or Draft).

3.2.2 Data Mapping and Navigation to Legacy Systems and Screens

Not applicable.

4. SYSTEM DESCRIPTION

The proposed architecture for the LSN software components is reflected in Figure 4-1 and Table 4-1 below. Existing software components include the NRC WorldWide Web-accessible official docket file and the Electronic Information Exchange (EIE) infrastructure. Any changes to these existing components are to be determined by NRC. Changes to the existing NRC software infrastructure are expected to be minimal. The detailed explanation of these components begins in section 4.1 below.

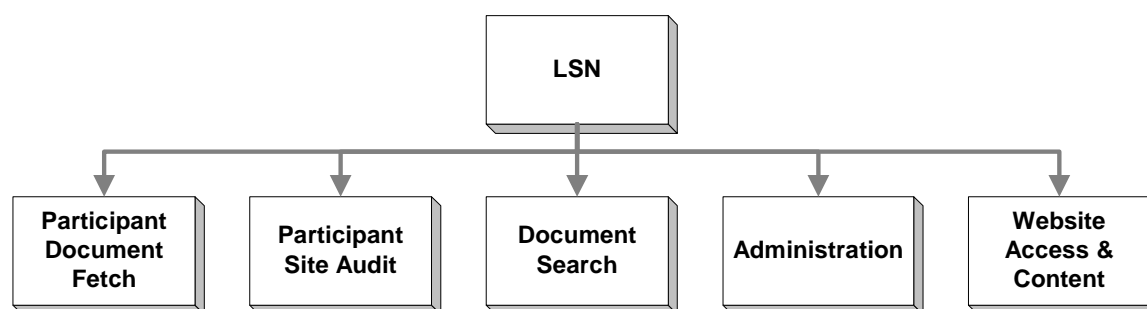


Figure 4-1. LSN Software Components

The software components indicated in Figure 4-1 above, have been assigned the following Component Numbers:

<i>Component Number</i>	<i>Component Name</i>
<i>1</i>	<i>Participant Document Fetch</i>
<i>2</i>	<i>Participant Site Audit</i>
<i>3</i>	<i>Document Search</i>
<i>4</i>	<i>Administration</i>
<i>5</i>	<i>Website Access and Content</i>

Table 4-1. LSN Software Components

Table 4-2 below displays the current versions of the COTS software products that are to be integrated into the LSN:

<i>COTS SOFTWARE PRODUCT</i>	<i>VERSION</i>
<i>Autonomy</i>	<i>2.2</i>
<i>WebTrends Enterprise Suite</i>	<i>5</i>
<i>WhatsUpGold</i>	<i>5</i>
<i>Microsoft SQL Server</i>	<i>2000</i>

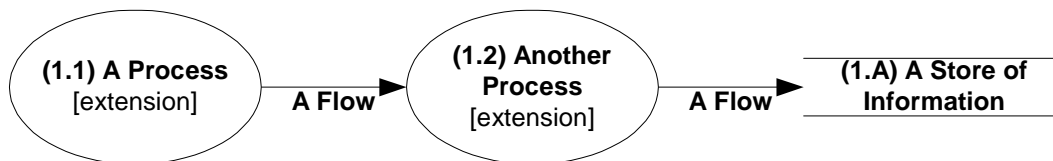
Table 4-2. LSN COTS Software

4.1 Logical Process Model

The following Data Flow Diagrams (DFDs) provide a procedural decomposition of the LSN system into subsystems and major software components. It focuses on the process-centric portions of LSN, and does not attempt to model web-centric portions, such as look-and-feel, page organization or navigation. These will be addressed elsewhere in the logical and physical design.

These diagrams consist of three major elements or symbols: processes, stores and flows. The processes are shown as ovals; the data stores of permanent information are shown as two parallel lines; and the major flows of information between processes and stores are shown as arrows. This section briefly introduces the notation and describes how it has been tailored to model web designs and COTS integration.

Notation



PROCESSES

Each process is numbered (shown in parentheses within the oval) to uniquely identify it and its level of decomposition. For example (1.2) is the second sub-process inside major process 1. Each process generally contains a brief verb-noun phrase that defines the activity that occurs within. For example: Import Log Files. The process is described more fully in the accompanying text.

STORES

Each store (pictured as two parallel lines) represents information that is somehow stored for a discreet period of time within the system. Physically, a store may be implemented as a database table, a file in the system or an object that persists over time; however, this detail is unimportant to the logical design.

Please note that many of the stores in this design are in standard, predefined formats, dictated by Internet standards or COTS products. For example, many of the COTS products shown here are configured or controlled with small product-specific files. These are clearly named “(something) Config” in the data flows. These products also store results, such as content indexes, usage statistics and so forth in proprietary format, which in this design is considered a black box – the format immaterial to the design.

The stores are lettered, rather than numbered, to avoid confusion with the processes. For example, store 1.A is the first store in process one. If there were a second store in this process, it would be lettered 1.B.

FLows

The flow of information between processes and stores are represented with arrows. Note that by convention the arrowhead indicates the direction of the major flow of data, not the command that initiates the flow. For example, a process may issue an "HTTP Get" command to a web site and receive back a document. The arrowhead points from the web site back to the process, indicating the major flow of data, not forward, indicating the direction of the command.

EXTENSIONS TO THE DFDs

For COTS products, the name of the product is sometimes shown in quotes, rather than as a verb-noun pair. For example: "Web Trends".

Sometimes an extension (shown in square brackets) also provides additional detail about the process. For example "[COTS]" clearly identifies that a COTS (commercial off-the-shelf) product implements this process; "[HTML]" indicates that this process is a hypertext page. Or "[from DFD 1]" indicates that a process, repeated for clarity in this diagram, is actually implemented and discussed in another diagram (in process DFD 1 in this example).

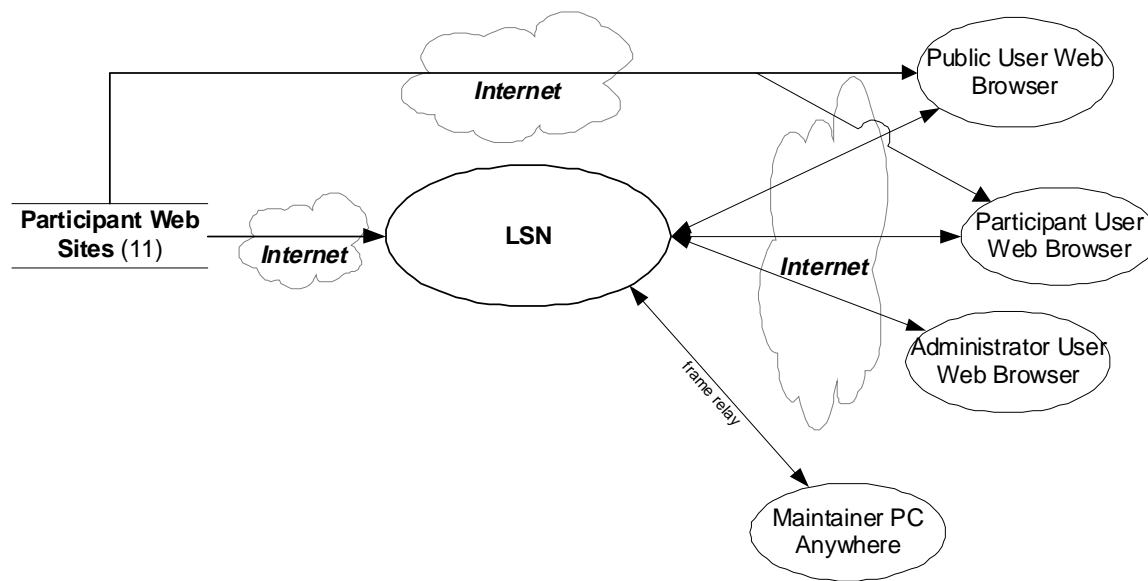
When meaningful to the overall diagram, the lines connecting two processes will be shown passing through an Internet cloud, as a visual reminder that one process is running in a user's browser and another remotely in the LSN site.

Furthermore, the Active Server Page (ASP) technology used in this implementation dynamically generates or "customizes" an HTML page on the web server that is then sent from the server to the user's browser. Although this is part of the physical implementation, it is modeled logically here when needed to document the process. For example: "(3.2) Generate Search Results Page [ASP]" generates the "(3.6) View Search Results Page [HTML]".

4.1.1 LSN Context Diagram

This diagram shows the overall context of the LSN system modeled herein. All major external inputs and outputs are pictured.

LSN Context Diagram



4.1.1.1 Input

The eleven or more Participant web sites represent the major external input to LSN. This is pictured on the left of the context diagram. All documents and headers reside in these sites. All access to them is via Internet protocols. No LSN software exists on Participant sites, although sites must structure their content so it may be crawled or spidered by LSN software (as will be discussed in DFD 1). This means that each site will have one root page containing hypertext links (`` tags) to other pages that will ultimately link to all documents and headers on that site.

Users submit search requests via their web browsers to LSN. LSN Administrators submit requests for administrative reports and actions to LSN via their browser over a secure connection. This is pictured on the right-hand side of the diagram.

Maintenance personnel adjust operating system components in LSN via a frame relay, *not* accessible from the Internet.

4.1.1.2 Process

LSN is the only system decomposed in this design. The LSN “bubble” will be decomposed into subsystems in the next diagram (LSN Top-Level Decomposition).

4.1.1.3 Output

The first major outputs of LSN are content and metadata (header) search results and other hypertext content delivered via the Internet to each user's browser in response to search requests. LSN does not directly deliver documents to the users. Rather, the search results contain hypertext links to web pages at Participant sites. The Participant site delivers up the requested document. LSN is essentially an extremely detailed, specialized "Yahoo" for Yucca Mountain Licensing documents. The second major output are audit statistics on Participant site performance, Participant site log files, and added/changed/deleted documents and headers.

There are three types of users: Participants, administrators and the public. Participant users and administrators have priority access to LSN (provided via hardware) and have additional functionality. There are additional administrative reports and functions available to LSN Administrator(s) and maintenance personnel. Logically, the LSN is envisioned to contain one or more of the following web pages:

Home Page

The Home Page will be a user's first look at the LSN Web Portal. As such, it will contain the LSN logo and provide users with intuitive access points into LSN data. A clean design, utilizing minimal graphics (to meet performance requirements) and powerful navigational elements are some of the major design factors for the LSN Home Page to be considered during the physical design phase. The Home Page will be reached by using any one of the following links:

<http://www.LSNnet.gov>

<http://www.LSNnet.org>

<http://www.LSNnet.com>

<http://www.LSNnet.net>

The structure and graphics of the Home Page and all subsequent pages will be optimized for download speed.

Privacy & Security Page

A Privacy & Security Page will define how the LSN website gathers and stores information about a user's visit. This information will not identify a user personally, except on pages where a user may OPTIONALLY provide their e-mail address if they wish to receive a response to a comment or request.

Help Page

A Help Page will provide the user with tips about utilizing the search facility.

Frequently Asked Questions

A “Frequently Asked Questions” (FAQ) page may be included as part of the initial LSN release. As users utilize the LSN capabilities, FAQ-type questions will be added to this page.

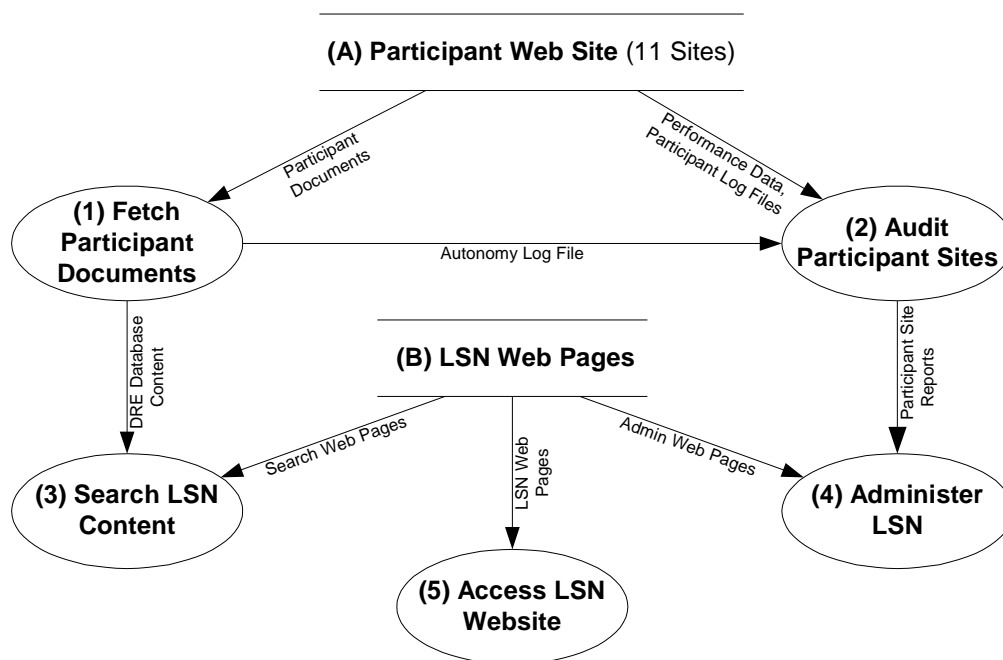
Site Map Page

A Site Map Page will provide an easy navigation mechanism for LSN users. Many of the pages that constitute the LSN website will be available from this page.

4.1.2 LSN Top-Level Decomposition

This diagram focuses on the decomposition of the LSN system into five major subsystems. Each subsystem will be presented in more detail in subsequent diagrams.

LSN Top-Level Decomposition



4.1.2.1 Input

The major external inputs to LSN, as discussed above, are document content, performance data and log files from the eleven or more Participant sites (A). A store of LSN Web pages (B), provides HTML and ASP pages to the more web-centric LSN processes (3-5).

4.1.2.2 Process

The five major subsystems of LSN are:

Fetch Participant Documents and Headers – This process indexes the content of each Participant site.

Audit Participant Sites – This process detects new and changed Participant documents, measures Participant site availability and builds statistical reports from Participant log files.

Search LSN Content – This process provides priority and public users one central location from which to conduct simple and complex searches for documents across all Participant sites.

Administer LSN – This process allows administrative users to view audit reports, maintain password lists, and maintain other LSN functions. It runs across a secure connection (HTTPS).

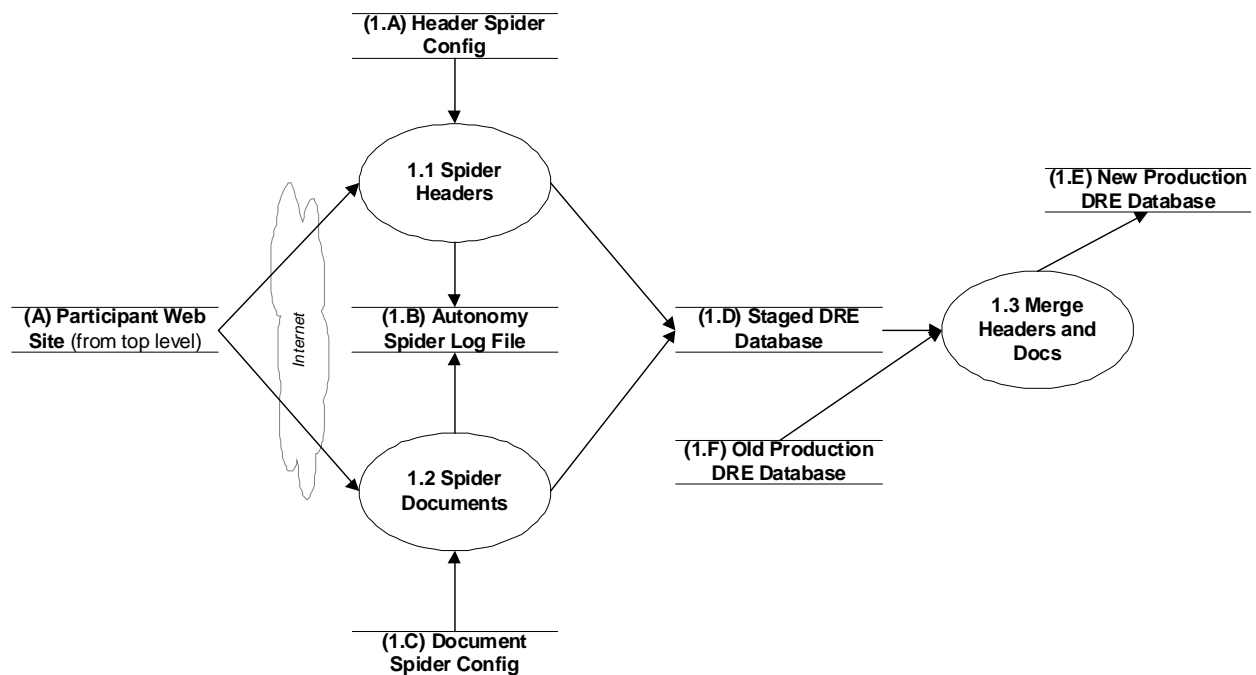
Access LSN Website – This process supplies a logon for priority and administrative users, allows for priority access, and provides a navigation mechanism throughout the site.

4.1.2.3 Output

Note that the user inputs and outputs, pictured in the context diagram, are not shown here because they are localized within each process and will be discussed specifically within those processes. Requests for documents (shown in the Context Diagram) are outside the LSN.

4.1.3 DFD 1: Fetch Participant Documents

This subsystem retrieves document content and headers from the Participant sites, and stores them into a working area, the Staged DRE Database. It then merges the staged document content and header together and writes it to the New Production DRE Database.

DFD 1: Fetch Participant Documents and Headers**4.1.3.1 Input**

Participant Web Site Documents and Headers, (A), are the major input to this subsystem. As mentioned earlier, sites must structure their content so it may be crawled or spidered by an Autonomy spider (process 1.1 and 1.2). The Header and Document Spider Configuration file (1.A and 1.C) will point to the root node for each site and will contain scheduling and load information so that spidering doesn't disrupt the Participant site. The previous copy of the Production DRE Database (1.F) is remaining input to the merging process (1.3).

4.1.3.2 Process

Processes 1.1 and 1.2, the Header and Document Spiders, are implemented by Autonomy software. The first fetches all Headers from Participant sites and stores them in a working area, the Staged DRE Database (1.E). The second fetches all Document Content, also storing it in the Staged DRE Database. Both spiders record their actions in a Log file (1.B).

Process 1.3, Merge Headers and Docs, is a custom Visual Basic application that reads Headers from the Staged DRE Database. Using the URL in the Header, it attempts to find matching Autonomy records in the previous, old Production DRE Database (1.F) and today's current Staged DRE Database (1.D) to determine if a document and matching header is new or not. If the document and matching header data is new, LSN assigns a LSN Accession number. If the document and matching header already exist in LSN,

a LSN Accession Number does not need to be assigned. The combined document content and header are then written out to the New Production DRE Database (1.E).

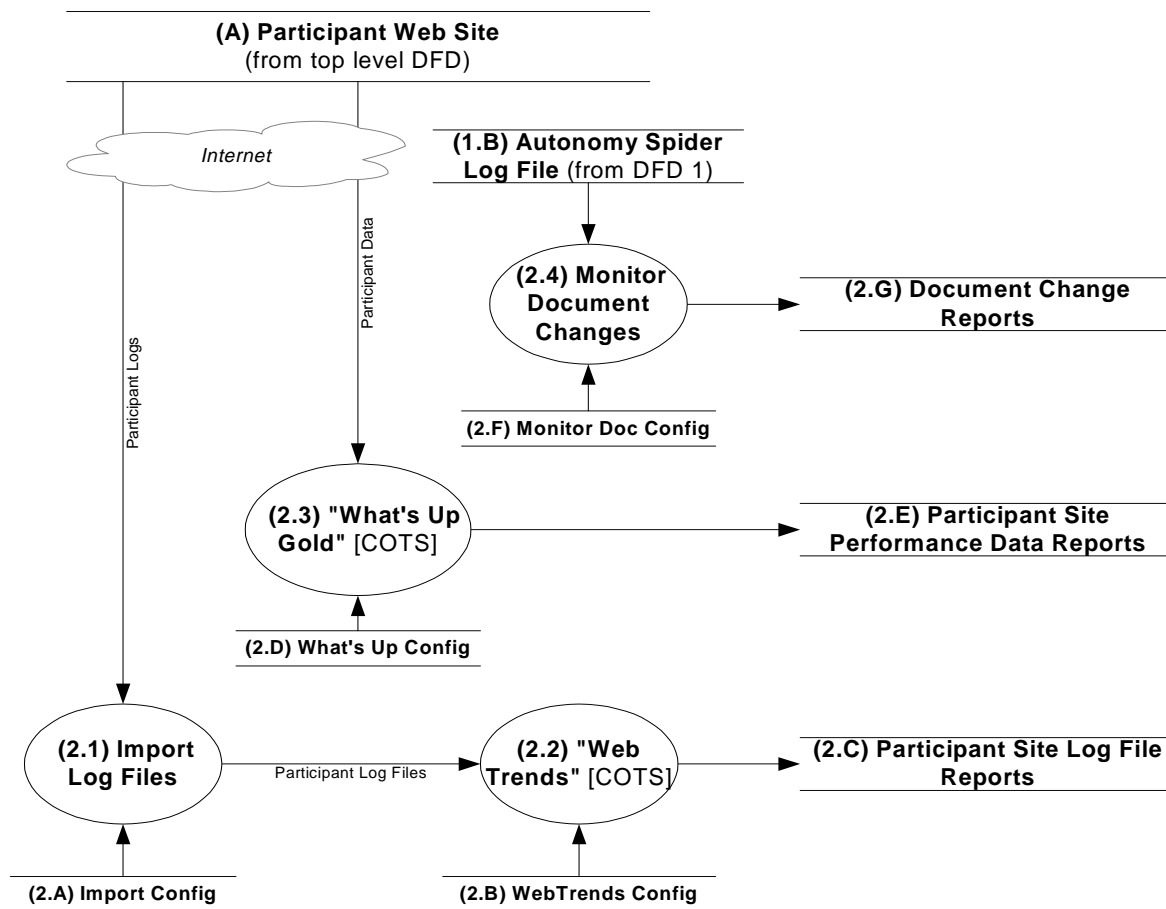
4.1.3.3 Output

The output of this process is new Production DRE Database (1.E) containing headers and document content. This is the database that will be searched by users in DFD Process 3.

4.1.4 DFD 2: Audit Participant Sites

This subsystem consists of three unrelated processes that monitor Participant site usage statistics, Participant site performance statistics and Participant site document changes.

DFD 2: Audit Participant Sites



4.1.4.1 Input

As in process 1, the eleven Participant Web Sites (A) provide the major input to this subsystem. Participant logs are the input to process (2.1). These logs contain statistics on site usage in Common Log Format (CLF). Participant Website response statistics (A) are the input to process (2.3) in the form of HTTP 1.1 responses to HTTP Get requests.

The Autonomy Spider Log File (1B) from DFD 1, is the input to process (2.4). It is in a COTS product-specific format.

Four small configuration files (2.A, 2.B, 2.D, and 2.F), control the operation of these and other processes.

4.1.4.2 Process

The first major audit performed in this subsystem provides statistics Participant site page usage. The Import Log Files process (2.1) transfers Participant log files (A) across the web into the “Web Trends” (2.2) COTS package. A configuration file, (2.A), defines frequency, location and access information (for example, password where required) for the import process. The “Web Trends” COTS product, (2.2), analyzes log file statistics and stores results in a Participant Site Log File Report (2.C). The Web Trends reports are configured in file (2.B).

The second major audit measures Participant site availability. The “What’s Up Gold” COTS process (2.3), periodically monitors key pages on each Participant site to determine if they are available and responding in a timely manner. A proprietary configuration file, (2.D), defines the locations to monitor. The results of this monitoring, (2.C) are stored for reporting in subsystem 4.

The third major audit reports on new and changed documents. Process (2.4) reads the Autonomy Log files (1.B, from DFD 1), detecting and logging new or changed documents in store (2.G).

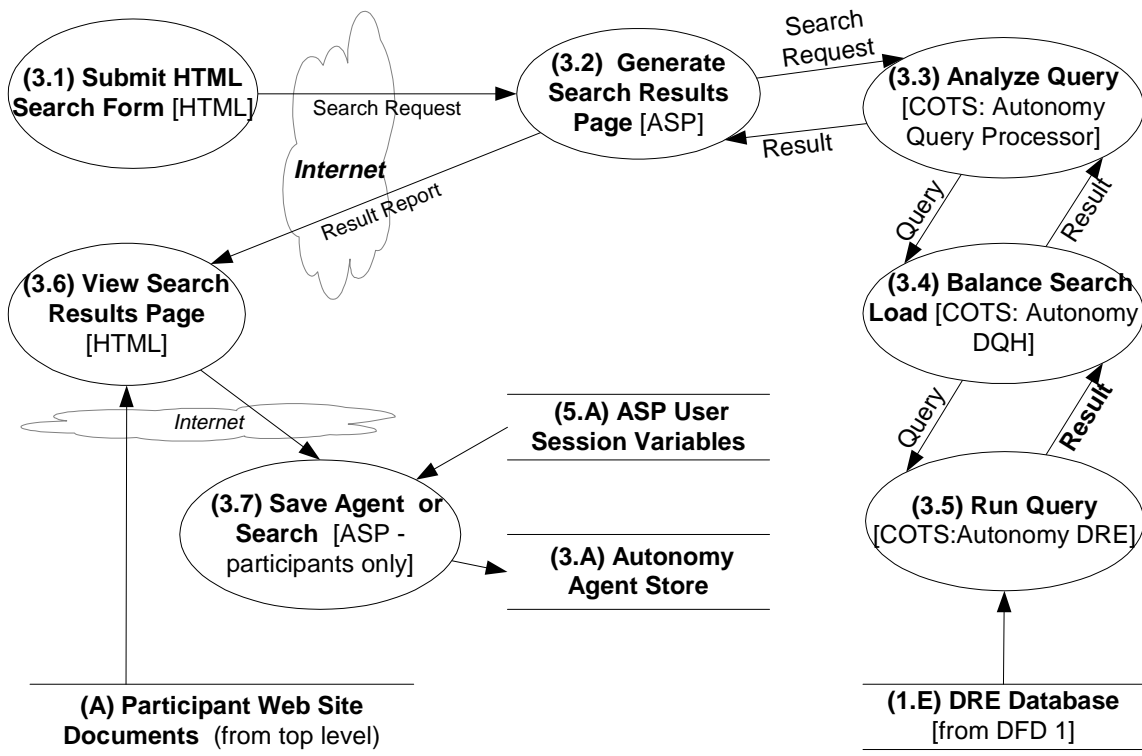
4.1.4.3 Output

The three major outputs of these processes (2.C, 2.E, and 2.G) as discussed above, will be used in subsystem 4, Administer LSN.

4.1.5 DFD 3: Search LSN Content

This section logically describes how Autonomy searches are performed. Process 3.1, Submit HTML Search Form, is decomposed further in the following set of Data Flow Diagrams.

DFD 3: Search LSN Content



4.1.5.1 Input

The major controlling input comes not from a store, but from the Search Request generated by process (3.1). This is in the form of an HTTP Get or Post issued by the user's browser. (This will be described in more detail in DFD 3.1.) As shown, this happens remotely across the Internet.

To fulfill the search, Autonomy reads its Dynamic Reasoning Engine Database (1.E), a product-specific format containing searchable content and header information.

4.1.5.2 Process

Process (3.1) contains an HTML form containing search criteria. The details of this will be discussed in more detail in DFD 3.1. It posts a request to page (3.2), the Generate Results Page, using standard HTML (for example, `<form action="GenResults.ASP" method="post" ..>`). The Results Page (3.2) interacts with the Autonomy search engine as follows. It creates an instance of the Autonomy object, formulates the query, and calls the appropriate methods on the Autonomy object.

The Autonomy COTS product is packaged as a component using Microsoft's COM (Component Object Model) standard. Page (3.2) calls search methods on this object and receives an array of search results back. The page then formats the results into HTML and returns them in page (3.6) to the user.

Processes (3.3, 3.4, and 3.5) are a black box (internal to the Autonomy object) and are shown here merely to indicate how the product balances the search load to provide responsive performance.

4.1.5.3 Output

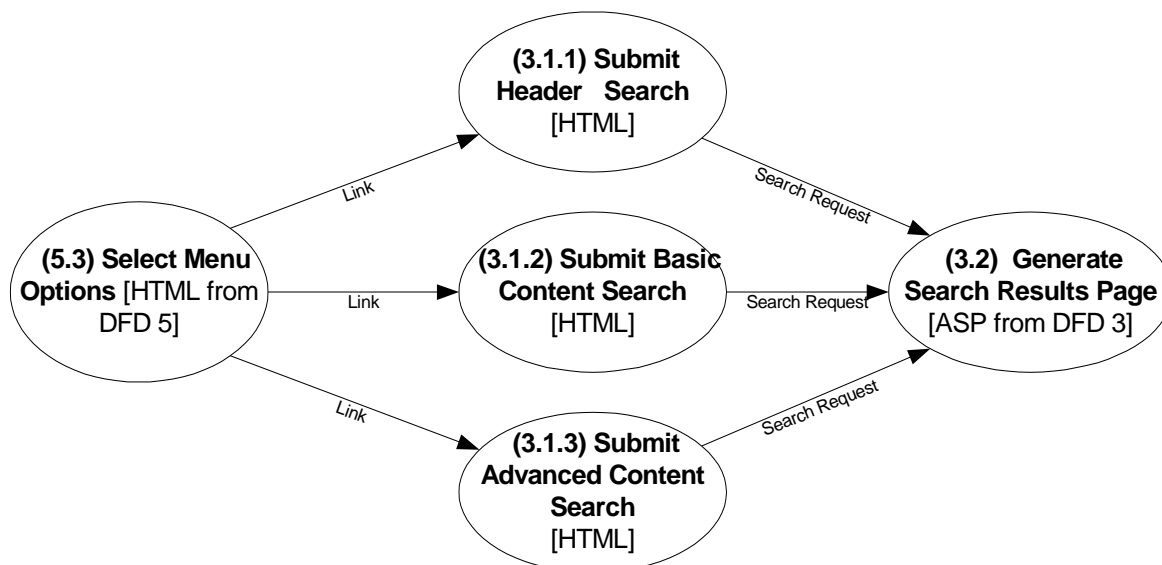
There are no stored outputs from this process. The search results are returned in process (3.6) across the Internet as formatted HTML page or pages containing the following content for each matching document: the document title, a hypertext link to the Participant site, a measure of relevancy, the accession numbers, other appropriate header information, and an abstract of relevant content.

The page will also provide several additional links. One link brings the user to an LSN page that will generate an e-mail request to the Participant site for a hardcopy of the document. (This feature may only be available to Participant users.) Another link lets Participant users save their query for running again. (This is sometimes referred to as Autonomy "agent".)

4.1.6 DFD 3.1: Submit HTML Search Form

This section describes the three types of searches provided by LSN.

DFD 3.1: Submit HTML Search Form



4.1.6.1 Input/Outputs

There are no stores of inputs or outputs in this process. The input flow comes from clicking on one of three menu options on the LSN home page (DFD 5) or any search or search results page. This brings the user to page (3.1.1), (3.1.2) or (3.1.3). The output flow from all three pages is to process (3.2), the Generate Results page, discussed earlier.

There are no outputs in this process. The output flow from all three pages is to process (3.2), the Generate Results page, discussed earlier.

4.1.6.2 Process

Page (3.1.1) provides an HTML search form for searching LSN headers. It will be physically modeled after a library card catalog, letting the user fill in authors, titles, date ranges, etc. that he or she wishes to search for. Search fields not relevant to the search are left blank by the user (accession numbers, for example). The search form is then submitted to process (3.2), as discussed in DFD 3.

Page (3.1.2) provides a simple search form for conducting an Autonomy search of content. As discussed earlier, the form is then submitted to process (3.2).

Page (3.1.3) provides an advanced search form supporting Boolean logic, stemming searches, concept searches, etc. The form is then submitted to process (3.2), discussed earlier.

4.1.6.2.1 Basic Search

The Autonomy COTS package will be used to provide a basic search capability wherein a user enters one or more keywords into the "Search" window.

4.1.6.2.2 Advanced Search

Autonomy will also be used to provide the Advanced Search to the user by clicking on the "Advanced Search" link located on the "Search" window. Various types of Advanced Search will be available including Boolean, fuzzy, type of file, date, and physical location of the file.

4.1.6.2.3 Search Results

The results of each search will be returned to the user on a page that displays:

- a. The number of returned items that satisfy the search criteria.
- b. The title for each document found.
- c. The relevancy (percentage).
- d. The URL of the website.

- e. A short description of the site.
- f. The size (in bytes) of the page.
- g. The date the page was updated.

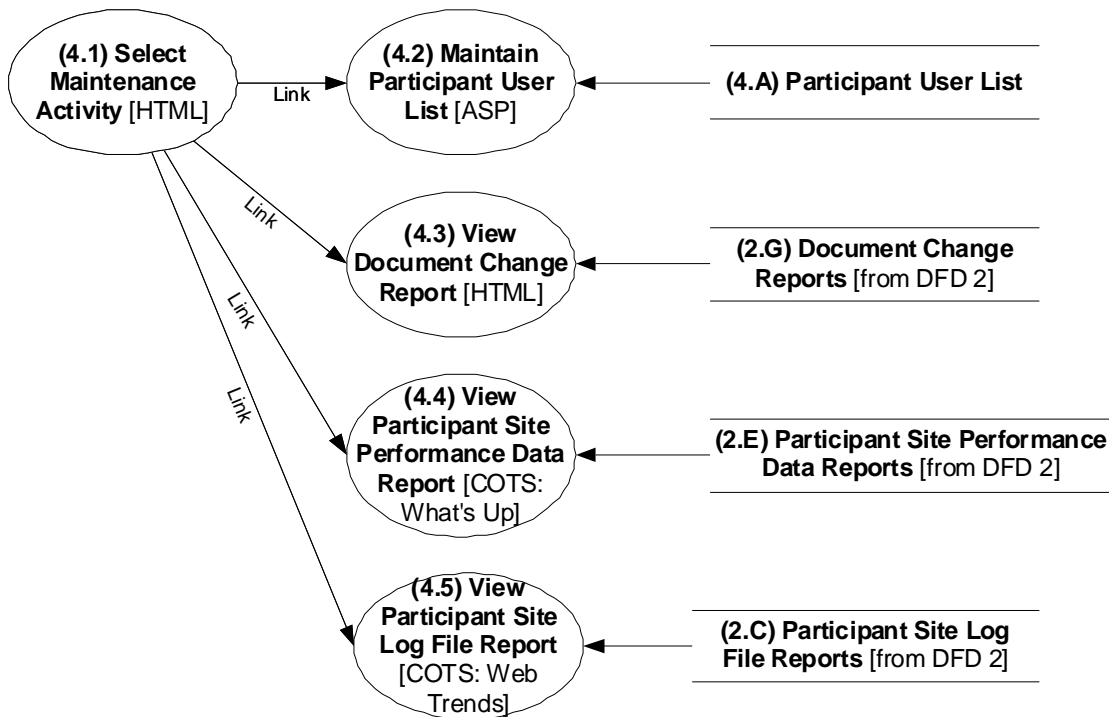
If multiple search results pages are returned, an indicator in the top and bottom right corners shows the user that there are additional search results to be viewed. In addition, a user may use the buttons at the top and bottom of the search results page to:

- a. Revise the search
- b. Begin a new search
- c. Obtain Help

4.1.7 DFD 4: Administer LSN

This is a set of five administrative activities: maintain participant user list; view document change reports; view participant site performance data; view participant log file reports; correct invalid headers.

DFD 4: Administer LSN



4.1.7.1 Input/Output

Most of the DFD stores that are input to this subsystem are produced in other parts of LSN. DFD 2, Audit Participant Sites, produces three of them: (2.C) Participant Site Log File Reports, (2.E) Participant Site Performance Data Reports, and (2.G) Document Change Reports. The DRE Database (1.E) in DFD 1 is both an input to and an output of this process.

The Participant User List (4.A) is also an input and an output. It contains the following information for each participant: Name, Organization, e-mail, User ID, Password (stored in an encrypted form) and password expiration date/time.

The Corrected Header Queue, (4.B), contains corrections to headers.

4.1.7.2 Process

This subsystem contains five separate administrative functions. After logging on (see DFD 5), an administrator may select one of these actions from a menu over a secure connection (running HTTPS). This is depicted in process (4.1). The first of the five functions, Maintain Participant User List (DFD 4.2) permits the administrator to add a new user, delete an old user, or modify information on an existing user. This information includes the following: Name, Organization, e-mail, User ID. The administrator may not directly view a user's current password, since it will be stored in encrypted form; however, the administrator may reset a password back to a known value that the participant must change within a specified time frame. This assures the participant's identity and security. Passwords will have a minimum length and structure to improve security.

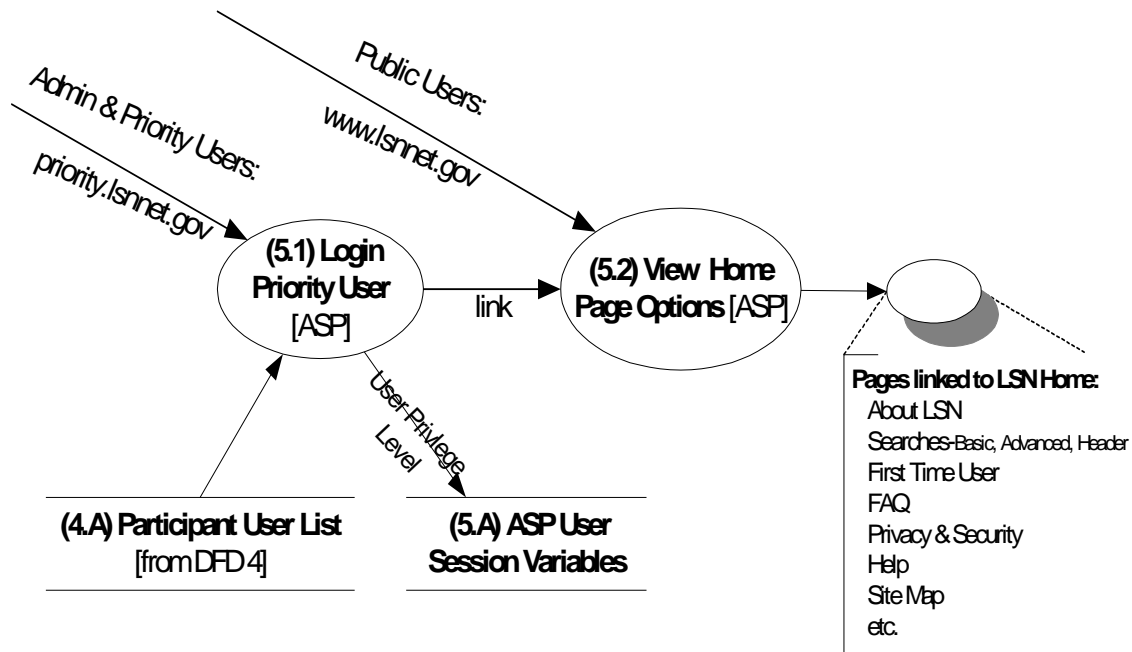
View Document Changes (4.3) lets the administrator view changes, additions and deletions to participant documents and headers. It reads from the Document Change Report (store 2.G), created in DFD 2.

The next two functions are implemented with COTS products. View Participant Site Log Report (4.5) provides administrators with a set of Web Trends statistical reports on participant pages and documents, and on LSN pages. View Participant Site Performance Reports (4.4) provides a report of response times and page availability.

4.1.8 DFD 5: Access LSN Website

This process describes how participants and users gain access to the LSN website. Both participants and administrators must login in order to gain priority access and view restricted pages. Public users go directly to the LSN home page.

DFD5: Access LSN Website



4.1.8.1 Inputs/Outputs

The Participant list (4.A) maintained in DFD 4, is the primary input to this step. The ASP User Session object (5.A), an artifact of the implementation, stores the priority user or administrative user privilege level.

The User Session is an object that stores relevant information about a user (such as privilege level) during the time he or she is actively using LSN. When the user logs off or times out (usually after 20 minutes of inactivity), session information is “forgotten”, and the user must log back on again to regain a privileged status.

4.1.8.2 Process

Priority users enter the LSN website through a different address (physical path through the hardware) to arrive at the login screen. This path permits up to hundreds of concurrent connections, a sufficient number to accommodate all priority users. (Public users enter through a path that permits fewer concurrent connections; however, it is high enough to support any normal load. This public path may even be shut down during intense usage if necessary to assure satisfactory performance for priority users.

The Login Priority User process (5.1), is an ASP page that checks the user ID and password against the list (4.A). It runs over a secure connection (HTTPS). If the password is correct and the login account

still valid, then this page stores the user's privilege level in the Session object (5.A). The user may also change his or her password on this page.

After a successful login, the priority user is redirected to the Home Page Options (5.2). This page and all others may check the Session variable (5.A) to dynamically add any priority user options to the page. From here, the user may select any available LSN option.

4.1.9 Operating System Software

The Microsoft Windows 2000 operating system will be used to satisfy the needs of the LSN. In addition, Internet Information Server (IIS) software will be used on the web servers.

4.1.10 Web-based Software

The technology to be adopted for development and implementation of the LSN is based on the World Wide Web (Internet). Information will be disseminated from the web servers to client computers using HyperText Transport Protocol (HTTP).

4.1.11 Database Management Software

Microsoft SQL Server Version 2000 will be used to provide database management capabilities. Data to be contained in the database includes participant organization identification, participant user information, and document header information. Refer to section 3.2.1 for additional information.

4.1.12 Search and Retrieval Software

Autonomy Version 2.2 will be used to provide indexing, auditing, search and advanced search features for the users and LSNA.

4.1.13 Monitoring Software

WebTrends Enterprise Suite Version 5.0, WhatsUpGold and custom software will be used to provide the LSN Administrator (LSNA) the capability to identify problems experienced by participants with the availability of the LSN website or integrity of the LSN data. The LSNA will also be provided with information on the availability of the participant's websites (requirement LSN DR D-1.1). The aggregate information can then be used by the LSNA to identify any problems regarding LSN availability and determine a resolution of the problem with appropriate government personnel. The LSN and participant systems are required to allow access for the LSNA to monitor various parameters through a monitoring station to be built within the LSN software (requirement D-1.5). Data from the LSN and participant log files, available in Common Log Format or Combined Log Format will be accessed by the COTS and/or custom software.

4.1.14 Security Software

This software is provided as part of the AT&T security activities.

4.2 External Interfaces

There are two types of external interfaces (EI) for the LSN. The first of these are the Participant sites that provide the source documents (see Figure on next page). The second interface, a graphical user interface, will be built to provide the users (Participants and General Public) access to the LSN through standard Web Browsers (i.e., Internet Explorer or Netscape).

Participant Sites

The Participants included in the LSN architecture will be assigned the following 3-letter designator:

PARTICIPANT SITES	DESIGNATOR
State of Nevada	NEV
Churchill County, NV	CHU
Clark County, NV	CLK
Esmeralda County, NV	ESM
Eureka County, NV	EUR
Inyo County, CA	NYA
Lander County, NV	LND
Lincoln County, NV	LNC
Mineral County, NV	MNE
Nye County, NV	NYE
White Pine County, NV	WHP
Nuclear Energy Institute	NEN
National Congress of American Indians	NCA
Department of Energy	DEN
Nuclear Regulatory Commission	NRC

This designator will be used in the generation of a unique LSN accession identifier for each document. Should other Participant sites become required as part of LSN, each site will receive its own unique designator.

4.3 Internal Interfaces

Not applicable.

5. SYSTEM OPERATIONS DESIGN

The LSN is a new system and does not replace or supercede an existing system.

5.1 Operations Scenarios

5.1.1 Search and Retrieval

The intelligent search capability will significantly assist the licensing process by freeing participants to analyze content, rather than browsing through large volumes of documents. Autonomy performs searches based on the content and context of the searcher's requirements. Searches based on context return only those documents that respond to the searcher's specific requirements instead of all documents that contain a specific key word or words that may be in a document but are not in the context of the searcher's subject at all. This characteristic will reduce the workload on users of the system and at the same time provide more reliable and relevant information to the users. All users will enter through a gateway that will identify the type of user. Priority users will be switched to a specific path into the network that will provide priority processing. All other users will go through another path that will have fewer accesses to the system. If priority users are not utilizing all their access opportunities, some of the access capability can be switched temporarily to the non-priority users. This is a load balancing activity.

5.1.2 Indexing

The Autonomy product provides the indexing of participant sites plus intelligent search and retrieval services.

5.1.3 Auditing

Auditing ensures document integrity and reports various performance metrics. The Autonomy logs provide statistics on document add/change/delete transactions as it "crawls" each site at the byte level. Specifically, Autonomy will detect at the byte level any changes in a document that has been placed in a participant's document library.

The WebTrends and WhatsUp Gold products will provide network performance monitoring. Automated extracts imported from participant's logs provide usage information as described in section 4.1.13.

APPENDIX A. REQUIREMENTS TO DESIGN TRACEABILITY MATRIX

The “LSN Req. No.” and “Description” columns in the tables below correspond to the requirements received in the NRC LSN Statement of Work. The last column contains either the software Component Number or the hardware Configuration Item Name. The five (5) major software components are:

6. Participant Document Fetch
7. Participant Site Audit
8. LSN Search
9. LSN Administration
10. LSN General Web Content (includes Participant Representative Login)

Functional Area 1: General Characteristics of Central LSN Site System

LSN Req. No.	Description	Component / CI
LSN DR B-1 (new)	The LSN shall be configured with hardware sufficient to store and serve all information (e.g., sufficient disk space, RAM (Random Access Memory), processing power, network interfaces, etc.) at estimated usage levels, and to be easily upgradeable, should estimates fail to adequately characterize usage. Concurrent usage is estimated at 150 users during peak periods.	5
LSN DR B-1.1 (new)	The system shall be capable of limiting access to only priority users in the event that spikes in usage occur.	5
LSN DR B-2 (formerly LSN 1.02)	LSN components shall be integrated using modular design techniques and well-documented interfaces that allow individual components of the system to be replaced without significantly impacting other components.	1,2,3,4,5
LSN DR B-3 (new)	The system shall be configured with software, licensed at sufficient levels, to store and serve all documentary and associated materials (e.g., networking-capable operating system), web server software, HTML authoring and site maintenance software, database server, etc.) at anticipated usage levels.	5
LSN DR B-4 (new)	The system shall be designed to maintain the security of the collection and the system itself including the ability to deny unauthorized access or update privileges, detect and defeat compromise attempts, and defend against denial of service attempts.	4,5

LSN Req. No.	Description	Component / CI
LSN DR B-5 (new)	The system shall be designed to maintain the integrity of the collection and provide for timely recovery in the event of a hardware or software failure with complete restoration of the central LSN site within three working days, or earlier if so specified within the parameters of the NRC's disaster recovery plan.	5
LSN DR B-6 (formerly LSN 1.03)	The LSN shall adhere to established Federal Government, international, and/or industry hardware and software standards appropriate to meet the intent of the Rule.	1,2,4,5
LSN DR B-6.1 (formerly LSN 2.03.01)	The standard for network access shall be HTTP/1.1 [http://www.faqs.org/rfcs/rfc2068.html] over TCP (Transmission Control Protocol, [http://www.faqs.org/rfcs/rfc793.html]) over IP (Internet Protocol, [http://www.faqs.org/rfcs/rfc791.html]).	1,2,3,4,5
LSN DR B-6.2 (formerly LSN 2.03.02)	The standard for associating server names with IP addresses shall be the DNS (Domain Name System), [http://www.faqs.org/rfcs/rfc1034.html] and [http://www.faqs.org/rfcs/rfc1035.html].	1,2,3,4,5
LSN DR B-6.3 (formerly LSN 2.03.03)	The standard for web page construction shall be HTML version 4.01 [http://www.w3.org/TR/REC-html40/].	3,4,5
LSN DR B-6.4 (formerly LSN 2.03.04)	The standard for electronic mail (e-mail) exchange between e-mail servers shall be SMTP (Simple Mail Transport Protocol, [http://www.faqs.org/rfcs/rfc821.html]).	5
LSN DR B-6.5 (formerly LSN 2.03.05)	The standard for the format of an electronic mail message shall be per [http://www.faqs.org/rfcs/rfc822.html] optionally extended by MIME (Multimedia Internet Mail Extensions) per [http://www.faqs.org/rfcs/rfc2045.html] to accommodate multimedia e-mail.	5
LSN DR B-7 (formerly LSN 1.04)	The LSN shall provide for electronic exchange of information. This function shall allow users to identify and receive electronic documents (e.g., motions, filings, orders, decisions, etc.).	3
LSN DR B-7.1 (formerly LSN 1.05)	The LSN shall utilize an electronic information exchange function that provides for an electronic acknowledgment that a motions practice document has been transmitted to a requester. The acknowledgment shall include, as a minimum, the name and electronic address of the recipient and the date the document was delivered.	NA
LSN DR B-8 (formerly LSN 1.06)	The LSN shall be capable of electronically storing and retrieving bibliographic headers in the system.	1
LSN DR B-8.1 (formerly LSN 2.06.01)	Bibliographic headers will contain all fields as described in Table A.	1

LSN Req. No.	Description	Component / CI
LSN DR B-8.2 (formerly LSN 2.06.02)	Bibliographic headers will be stored in a manner that they can be retrieved through reference to any field as designated in Table A.	3,4
LSN DR B-8.3 (formerly LSN 2.06.03)	Bibliographic headers will be stored in a manner that the contents of their fields can be searched for specific data.	3,4
LSN DR B-9 (formerly LSN 1.07)	The LSN shall be capable of storing electronic indexes for use in searching and retrieving document texts made available by the participants.	1,3
LSN DR B-10 (formerly LSN 1.08)	The LSN shall allow identification of text through queries of the occurrence of text content through all document texts. Specific query options include the ability to search for the occurrence of a phrase in the full text of documents, perform proximity searching (i.e., search for phrases near each other or near the beginning or end of the document), perform wild card searching, perform root searching, perform frequency searching, and to arbitrarily combine any search strategy through the use of Boolean operators.	3,5
LSN DR B-11 (formerly LSN 1.09)	The LSN shall be capable of storing electronic indexes for use in searching and retrieving digital images of each page of graphic-oriented documentary material made available by the participants.	3,5
LSN DR B-12 (formerly LSN 1.10)	The system shall allow users to easily view (by clicking) and print (by selecting “file/print” from the menu) documents of the following acceptable formats: ASCII, native word processing (Word and WordPerfect versions as requested by participants), PDF Normal, or HTML.	5
LSN DR B-13 (formerly LSN 1.11)	The LSN shall provide tools to assist users in identifying documentary material consistent with the technology.	3,5
LSN DR B-13.1 (new)	Documentation shall be prepared and published on the central LSN site describing how to use the features of the website, specifically the search and retrieval functions.	3,4,5
LSN DR B-13.2 (new)	The system must provide finding aids to users to include online help on use of the site, usage guidelines, and contact information for further assistance.	5
LSN DR B-13.3 (new)	The LSN shall be capable of displaying bibliographic header information from the hit list resulting from a search.	3,5
LSN DR B-13.4 (new)	The system shall default searches based on relevancy ranking. The system shall state that relevancy ranking is machine-generated.	3,5

LSN Req. No.	Description	Component / CI
LSN DR B-14 (formerly LSN 1.12)	The LSN shall provide a user interface compatible with current browser technologies including access using both graphical and text-only browsers to documentary collections.	5
LSN DR B-14.1 (formerly LSN 2.13.02)	The system must be designed to be accessible to Internet users with web browsers currently supporting HTML 4.0 or higher (i.e., not just Netscape or Internet Explorer). The system shall deliver a consistent organization and style (including but not limited to colors, fonts, spacing) throughout the central LSN site independent of the browser used to access the LSN.	3,5
LSN DR B-15 (formerly LSN 1.13)	The LSN shall support non-interactive access to the central LSN by web "crawlers."	1,2
LSN DR B-15.1 (formerly LSN 2.13.01)	Web pages must be authored in compliance with the Web Content Accessibility Guidelines for access by individuals with disabilities [http://www.w3.org/TR/WAI-WEBCONTENT/].	5
LSN DR B-16 (formerly LSN 1.14)	The LSN shall be designed to allow the LSN Administrator to coordinate the availability and the integrity of the information available via the LSN.	4
LSN DR B-16.1 (formerly LSN 1.15)	The system shall provide the LSN Administrator with access to participant collections necessary and sufficient to allow the LSN Administrator to independently verify the integrity of data available via the LSN.	1,2,4
LSN DR B-16.2 (formerly LSN 2.15.01)	The system shall have the capability of non-interactively "crawling" participant LSN websites, and fetching a subset or the entire website for analysis.	1,2
LSN DR B-16.3 (new)	The system shall be able to access an electronic log of all retrievals of documentary material from each participant's LSN website. This log will contain the IP address or DNS host name of the recipient's computer and the date and time of delivery. The log shall be in either the web standard "Common Log Format" or "Combined Log Format."	2,4
LSN DR B-16.4 (formerly LSN 2.14.01)	A monitoring/audit station shall be established to allow the LSNA to obtain, store, and report information on the availability and integrity of LSN information.	4
LSN DR B-16.5 (formerly LSN 2.14.04)	The monitoring/audit station shall have the capability of tracking changes on participant LSN websites, monitoring participant LSN website responsiveness and other performance characteristics, and reporting this information to the LSNA.	4
LSN DR B-16.6 (new)	The LSN shall provide a means for the LSNA to post announcements and notices on the central LSN site.	5

LSN Req. No.	Description	Component / CI
LSN DR B-17 (new)	The LSN shall not use “persistent cookies” (i.e., ongoing capture of data that tracks a user’s pattern of use and preferences) without the approval of the Chairman of the NRC.	5

Functional Area 2: LSN Administrator (LSNA) Related Requirements

LSN Req. No.	Description	Component / CI
LSN DR C-1 (formerly LSN 2.14.01)	The LSNA shall obtain, store, and report information on the availability and integrity of LSN information.	2,4
LSN DR C-1.1 (new)	The LSNA shall identify any problems experienced by participants regarding LSN availability, including the availability of individual participant's data, and provide a recommendation to resolve any such problems to the participant(s) and the Pre-License Application Presiding Officer relative to the resolution of any disputes regarding LSN availability, including disputes on the availability of an individual participant's data.	4
LSN DR C-1.2 (new)	The LSNA shall post announcements on the central LSN site about the overall LSN program, items of interest (hour of availability, scheduled outages, etc.), and procedures for a user to acquire authenticated image copies from a participant.	5
LSN DR C-1.3 (new)	The LSNA shall identify any problems regarding the integrity of documentary material certified in accordance with the LSN Rule by the participants to be in the LSN, and provide a recommendation to resolve any such problems to the participant(s) and the Pre-License Application Presiding Officer relative to the resolution of any disputes regarding the integrity of documentary material.	4
LSN DR C-1.4 (new)	The LSNA shall post notices that contain listings of changes, if any, to each participant's collection, identified by LSN accession number, with a description of what the change was and why it was necessary.	5
LSN DR C-2 (new)	The LSNA shall review all participant LSN website designs to ensure that they meet the design standards.	NA
LSN DR C-2.1 (new)	The LSNA shall have the authority to allow variances from the design standards to accommodate changes in technology or problems identified during initial operability testing of the individual participant LSN websites or the central LSN site.	NA
LSN DR C-2.2 (new)	The LSNA may develop and issue guidance for LSN participants on how best to incorporate the LSN standards in their system.	NA

Functional Area 3: General Capabilities of Participant LSN Site Systems

LSN Req. No.	Description	Component / CI
LSN DR D-1 (formerly LSN 1.20)	Each LSN participant must obtain the computer system necessary to comply with the requirements for document production and service.	NA
LSN DR D-1.1 (formerly LSN 2.20.01)	The participant's system must provide the function of HTTP service. HTTP service may be provided by a dedicated computer, a virtual server (dedicated computer hosting multiple web sites), or be provided by a commercial web hosting service (that can comply with requirements).	NA
LSN DR D-1.2 (formerly LSN 2.20.02)	The participant's system must be configured with hardware sufficient to store and serve all documentary and associated materials (e.g., sufficient disk storage, RAM (Random Access Memory), processing power, network interface, etc.) at estimated usage levels and to be easily upgradeable should estimates fail to adequately characterize usage.	NA
LSN DR D-1.3 (formerly LSN 2.20.03)	The participant's system must be configured with software, licensed at sufficient levels, to store and serve all documentary and associated materials (e.g., networking-capable operating system, web server software, HTML authoring and site maintenance software, database server, etc.) at anticipated usage levels	NA
LSN DR D-1.4 (formerly LSN 2.20.04)	The participant's system must be designed to maintain the integrity of the participant's discovery collection documentary material and provide for timely recovery in the event of hardware or software failure with complete restoration of the participant LSN website within three working days, or earlier if so specified within the parameters of the participant's disaster recovery plan.	NA
LSN DR D-1.5 (formerly LSN 2.14.02)	The participant's system shall allow monitoring of various parameters by a monitoring station established by the LSNA to track changes on the participant LSN website, website responsiveness, and other performance characteristics. Specific access shall include SNMP monitoring of network utilization and ICMP access for determination of certain performance characteristics as well as access to the normal web distribution facility.	2,4
LSN DR D-1.6 (formerly LSN 2.14.03)	The participant's system shall allow LSNA access to their logs of electronic transactions in raw and summary formats to enable tracking of site usage.	2,4

LSN Req. No.	Description	Component / CI
LSN DR D-1.7 (formerly LSN 2.20.05)	The participant's system must be designed to maintain the security of the participant's discovery collection documentary material and the system itself including the ability to deny unauthorized access or update privileges, detect and defeat compromise attempts, and defend against denial of service attempts	4,5
LSN DR D-1.8 (formerly LSN 2.20.06)	The participant's system must be connected to the Internet with the capability of being accessed by any Internet user. The participant's system will allow Internet users the ability to retrieve documentary material from the participant's LSN website without utilizing a proxy from the LSN server. This connection shall be sufficient to provide reasonable responsiveness during periods of normal usage.	NA
LSN DR D-1.9 (formerly LSN 2.20.07)	Participants shall make textual (or, where non-text, image) versions of their discovery collection documents available on an Internet accessible server which is able to be canvassed by web indexing software (i.e., a "robot," "spider," "crawler") and the participant's system must make both data files and log files accessible to this software.	1,2
LSN DR D-1.10 (formerly LSN 2.20.08)	Non-LSN-related information may be maintained on the same participant website as LSN-related material, but must be kept logically separate. All LSN materials on a participant's site must be maintained together within a single hypertext sub-tree. The entire LSN-related sub-tree must be able to be navigated under a single URL (Uniform Resource Locator) reference. If a participant LSN website contains site navigation links on its LSN-related pages (e.g., a "home" button, or the result of a search), these links must point exclusively within the LSN-related sub-tree and not to another part of the World Wide Web site or off site.	5
LSN DR D-2 (formerly LSN 1.29)	Each LSN participant must design and implement their web facility to ensure acceptable access and responsiveness consistent with performance specifications.	2
LSN DR D-2.1 (formerly LSN 2.29.01)	Sites must be provisioned to be able to satisfy not less than 500 web page requests per minute.	5
LSN DR D-2.2 (formerly LSN 2.29.02)	Sites must be provisioned to be able to deliver a web page or image page on average in not more than five seconds to a web browser located on the same LAN segment.	5
LSN DR D-2.3 (formerly LSN 2.29.03)	Communications between the server and the Internet must be provisioned to be able to deliver interactive response.	5

LSN Req. No.	Description	Component / CI
LSN DR D-3 (new)	To facilitate data exchange, the participant's system shall adhere to established hardware and software standards appropriate to meet the intent of the LSN Rule.	NA
LSN DR D-3.1 (new)	The standard for network access shall be HTTP/1.1 [http://www.faqs.org/rfcs/rfc2068.html] over TCP (Transmission Control Protocol, [http://www.faqs.org/rfcs/rfc793.html]) over IP (Internet Protocol, [http://www.faqs.org/rfcs/rfc791.html]).	NA
LSN DR B-3.2 (new)	The standard for associating server names with IP addresses shall be the DNS (Domain Name System), [http://www.faqs.org/rfcs/rfc1034.html] and [http://www.faqs.org/rfcs/rfc1035.html].	NA
LSN DR B-3.3 (new)	The standard for web page construction shall be HTML version 4.01 [http://www.w3.org/TR/REC-html40/].	NA
LSN DR B-3.4 (new)	The standard for electronic mail (e-mail) exchange between e-mail servers shall be SMTP (Simple Mail Transport Protocol, [http://www.faqs.org/rfcs/rfc821.html]).	NA
LSN DR B-3.5 (new)	The standard for the format of an electronic mail message shall be per [http://www.faqs.org/rfcs/rfc822.html] optionally extended by MIME (Multimedia Internet Mail Extensions) per [http://www.faqs.org/rfcs/rfc2045.html] to accommodate multimedia e-mail.	NA
LSN DR D-4 (formerly LSN 1.17)	Each LSN participant must establish its own procedures to make its own documentary material available.	NA
LSN DR D-4.1 (formerly LSN 2.17.01)	Procedures shall cover all aspects of the production and web publication process including (as applicable on a per-document basis) authorship, content guidelines, stylistic guidelines, distribution guidelines, maintenance and revision guidelines, format conversion, quality assurance, uploading to the web server, accessing documentary material, and removal from the web server.	NA
LSN DR D-5 (formerly LSN 1.18)	Each LSN participant must train its own staff on how to make its documentary material available	NA
LSN DR D-5.1 (formerly LSN 2.18.01)	Staff shall be trained in document production, conversion, and web publication in compliance with acceptable procedures.	NA
LSN DR D-5.2 (formerly LSN 2.18.02)	Staff shall be trained in operation and maintenance of the web server system.	NA
LSN DR D-5.3 (formerly LSN 2.18.03)	Staff shall be trained in operation and maintenance of the participant LSN website.	NA

LSN Req. No.	Description	Component / CI
LSN DR D-5.4 (formerly LSN 2.18.04)	Staff shall be trained in performing the user assistance or help desk function, if applicable.	NA
LSN DR D-6 (formerly LSN 1.22)	DOE must provide electronic access to the central LSN site at DOE Headquarters and at all DOE Local Public Document Rooms (LPDRs) in the vicinity of the proposed site for a geologic repository, including Las Vegas, Reno, Carson City, Nye County and Lincoln County.	NA
LSN DR D-6.1 (new)	Access must be provided no later than eight months in advance of submitting its license application to receive and possess high-level radioactive waste at a geologic repository operations area.	NA
LSN DR D-6.2 (formerly LSN 2.22.01)	Access to the central LSN site is to be provided to the public on computers equipped with a web browser.	NA
LSN DR D-6.3 (formerly LSN 2.22.02)	Access to the central LSN site is to be provided to visually impaired and otherwise disabled individuals as needed through appropriate hardware and software or by provision of user assistance.	NA
LSN DR D-7 (new)	The NRC must provide electronic access to the central LSN site at the NRC Public Document Room no later than eight months in advance of DOE's submitting its license application to receive and possess high-level radioactive waste at a geologic repository operations area.	NA
LSN DR D-7.1 (new)	Access to the central LSN site is to be provided to the public on computers equipped with a web browser.	NA
LSN DR D-7.2 (new)	Access to the central LSN site is to be provided to visually impaired and otherwise disabled individuals as needed through appropriate hardware and software or by provision of user assistance.	NA
LSN DR D-8 (new)	Participants should provide items of interest about their LSN website (hours of availability, scheduled outages, etc.) to the LSNA to post on the central LSN site. These items may also be posted on the participant's LSN website.	NA

Functional Area 4: Document Production and Service

LSN Req. No.	Description	Component / CI
LSN DR E-1 (formerly LSN 1.16)	Each LSN participant must designate an official who is responsible for the administration of making its documentary material available.	NA
LSN DR E-1.1 (formerly LSN 2.16.01)	Each designated official must provide contact information to the LSNA including a telephone number, e-mail address, and postal address.	NA
LSN DR E-1.2 (formerly LSN 1.19)	Each LSN participant must have the designated official certify to the Pre-License Application Presiding Officer, in accordance with §2.1009, that procedures have been implemented and that documentary material has been made electronically available, or as otherwise indicated in the LSN Rule.	NA
LSN DR E-2 (formerly LSN 1.23)	Each LSN participant must prepare and publish its documentary collections in a manner that allows access by Internet users who have access to the LSN search and retrieval capabilities.	NA
LSN DR E-2.1 (formerly 2.23.01)	All participating entities must provision their web server with enough storage to accommodate all headers plus text and/or images of their entire collection of relevant documents as specified in the LSN Rule	NA
LSN DR E-2.2 (formerly LSN 2.23.02)	All participating entities shall ensure access to their documentary collection through electronic means. Participant capabilities should be such that any Internet user using a web browser and the LSN search and retrieval capabilities will be able to locate, identify, and retrieve documents of interest in relevant formats (header, text, and/or image).	1,2,5
LSN DR E-2.3 (formerly LSN 2.23.03)	Each participant must provide documents in a format that allows their presentation through a web server, including a header plus text and/or image portion.	NA
LSN DR E-2.4 (formerly LSN 2.23.04)	All participating entities must provide the LSN with access to its full text or image files as required by the LSN Rule.	NA
LSN DR E-2.5 (formerly LSN 2.23.05)	Documents presented on a participant web server must be an accurate representation of the source document.	NA
LSN DR E-2.6 (formerly LSN 2.23.06)	All participating entities must store each TIFF document image in a page per file format.	NA
LSN DR E-2.7 (formerly LSN 2.23.07)	All participating entities must provide the capability to retrieve and deliver documents identified through searching or browsing performed at the LSN portal site.	NA

LSN Req. No.	Description	Component / CI
LSN DR E-3 (formerly LSN 1.24)	LSN participant must ensure that each document on their system has a unique ID (Participant Accession Number).	1
LSN DR E-3.1 (formerly LSN 2.24.01)	Each representation of a document (text and/or image) must be index-accessible through its Participant Accession Number. Participants shall programmatically link the bibliographic header record with the text and/or image file it represents to provide for file delivery and display from participant machines using the central LSN site. The bibliographic header must contain fielded data identifying its associated object (text and/or image).	NA
LSN DR E-3.2 (formerly LSN 2.24.02)	It must be possible to retrieve a document by providing its Participant Accession Number.	3,5
LSN DR E-3.3 (formerly LSN 2.24.03)	It must be possible to retrieve an individual document which is part of a compound document (package) by providing each individual Participant Accession Number.	3,5
LSN DR E-4 (formerly LSN 1.25)	Each LSN participant must follow data format standards to facilitate electronic exchange and transfer.	NA
LSN DR E-4.1 (formerly LSN 2.25.02)	Textual material shall be formatted to comply with the ISO/IEC 8859-1 character set and be in one of the following acceptable formats: ASCII, native word processing (Word and WordPerfect versions as requested by participants), PDF Normal, or HTML. As a goal, textual documents should be accurately represented with an overall error rate of no more than 0.5% based on character accuracy and a per page error rate of no more than 1.5%. Documents converted through means other than OCR should have an error rate of less than 0.05%.	NA
LSN DR E-4.2 (formerly LSN 2.25.03)	Image file format shall be TIFF CCITT G4 for bi-tonal images or PNG (Portable Network Graphics) per [http://www.w3.org/TR/REC-png-multi.html] format for grey scale or color images, or PDF (Portable Document Format). TIFF, PDF, or PNG images will be stored at 300 dpi (dots per inch) or greater, grey scale images at 150 dpi or greater with eight bits of tonal depth, and color images at 150 dpi with 24 bits of color depth. Images shall be stored as single image-per-page to facilitate retrieval of no more than a single page. Alternatively, images may be stored in a page-per-document format if software is incorporated in the web server that allows single-page representation and delivery.	NA

LSN Req. No.	Description	Component / CI
LSN DR E-5 (formerly LSN 1.26)	Each LSN participant must provide a bibliographic header with each document and with other material submitted (e.g., videotape or photograph). This includes submissions for which no text or image is available (e.g., rock sample) and for privileged, confidential, safeguards and other types of limited access documentary material as specifically identified.	NA
LSN DR E-5.1 (formerly LSN 2.25.01)	Bibliographic header data shall be available in an HTTP accessible, ODBC (Open Database Connectivity) and SQL (Structured Query Language)-compliant (ANSI IX3.135-1992/ISO 9075-1992) database management system (DBMS). Alternatively, the structured data containing the bibliographic header may be made available in a standard database readable (e.g., XML Extensible Markup Language http://www.w3.org/xml/), comma delimited, or comma separated value (.csv) file.	1
LSN DR E-5.2 (new)	Bibliographic headers shall contain all fields as described in Table A, as applicable to participants (i.e., all fields except the LSN Accession Number which is generated by the LSN).	NA
LSN DR E-5.3 (formerly LSN 2.26.01)	Headers for limited access documentary material will be as those for full access documentary material.	NA
LSN DR E-5.4 (formerly LSN 2.26.02)	Headers for limited access documentary material shall be logically organized on the participant LSN website in a list, index, or table of contents separate from documentary material that is publically accessible, with user instructions for reviewing the limited access material.	NA
LSN DR E-6 (new)	Participants may correct or revise documentary already made available on their LSN websites.	NA
LSN DR E-6.1 (new)	Changes to documentary material previously provided are permitted if (1) a corrected or updated version is noted as superseding a previously provided version; and (2) the previous version is not removed.	NA
LSN DR E-6.2 (new)	The participant must notify the LSNA of the change, identified by LSN Accession Number, with a description of what the change was and why it was necessary, so it can be posted on the central LSN site. Notification may also be posted on the participant's LSN website.	NA
LSN DR E-7 (formerly LSN 1.27)	NRC, DOE, and each other potential party, interested governmental participant or party shall provide a statement that indicates where an authenticated image copy of the document can be obtained for those where an image is not required to be made available online.	NA

LSN Req. No.	Description	Component / CI
LSN DR E-7.1 (formerly LSN 2.27.01)	Documents for which the electronic image is not available on the participant LSN website may be made available by means of authenticated image copy distribution. The website shall contain the document's header record and its text representation.	NA
LSN DR E-7.2 (formerly LSN 2.27.03 and LSN 2.27.04)	Requests and delivery for an authenticated image copy will be via procedures and processes established and operated by the participants.	NA
LSN DR E-7.3 (formerly LSN 2.27.02)	Each participant's procedures and processes for a user to acquire images shall be submitted to the LSNA for posting on the LSN home page.	5
LSN DR E-8 (formerly LSN 1.21)	All documentary material not provided to other participants in electronic form (i.e., not included in the LSN) must be identified in an electronic notice. Any item requested from that list must be provided to the requestor within five business days.	NA
LSN DR E-8.1 (formerly LSN 2.21.01)	Notice of availability may be achieved by publication on the relevant participant LSN website.	NA

Functional Area 5: Timeliness

LSN Req. No.	Description	Component / CI
LSN DR F-1 (formerly LSN 1.28)	DOE must make its documentary material available no later than eight months before submitting its license application. The NRC must make their documentary material available 30 days after the DOE initial certification of compliance in accordance with §2.1009. All other participants must make their documentary material available 90 days after the DOE initial certification of compliance.	NA
LSN DR F-1.1 (formerly LSN 2.28.01)	The computer system providing document production and service must be designed, specified, acquired, integrated and installed sufficiently in advance of the specified date to meet the availability criteria. Customary funding and procurement lead times must be considered when scheduling these actions.	NA
LSN DR F-1.2 (formerly LSN 2.28.02)	Document conversion and participant LSN website page authoring and document collection population must be begun sufficiently in advance of the specified date to meet the availability criteria. Collection size and resource availability must be considered when scheduling these actions.	NA
LSN DR F-1.3 (formerly LSN 2.28.03)	Each participating entity must ensure their site availability and integrate it into the overall LSN sufficiently in advance of the specified date to meet the availability criteria. The availability of other participant staff must be considered when scheduling these actions.	2,4
LSN DR F-1.4 (formerly LSN 2.28.04)	Each participating entity must complete site and LSN integration testing acceptable to the LSNA sufficiently in advance of the specified date to meet the availability criteria.	1,2,3,4,5
LSN DR F-1.5 (formerly LSN 1.19)	The responsible official shall make the initial certification to the Pre-License Application Presiding Officer in accordance with §2.1009.	NA
LSN DR F-1.6 (formerly LSN 1.19)	The responsible official for the DOE shall also update this certification at the time of submission of the license application.	NA
LSN DR F-1.7 (new)	Documentary material created after the initial certification of compliance must be made available reasonably contemporaneous with its creation, so participants may have timely access to this material in order to prepare for the licensing proceedings.	NA

Functional Area 6: Docket Related Requirements

LSN Req. No.	Description	Component / CI
LSN DR G-1 (formerly LSN 1.30)	The NRC must provide an electronic docket that receives, stores, distributes, and maintains docket material no later than at the time of the docketing of the DOE license application to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to 10 C.F.R. Part 60.	NA
LSN DR G-1.1 (formerly LSN 1.33)	The NRC, in its management of the electronic docket, must provide the computer system necessary to comply with service requirements.	NA
LSN DR G-1.2 (formerly LSN 1.35)	The NRC must provide an electronic docket that contains a list of all exhibits, showing where in the transcript each was marked for identification and where it was received into evidence or rejected.	NA
LSN DR G-1.3 (formerly LSN 1.40)	The NRC must identify a means by which the unavailability of the electronic docket for more than four hours in any day is communicated to the Presiding Officer so that the day is not counted in the computation of time.	NA
LSN DR G-2 (formerly LSN 1.49)	DOE must submit the license application to the docket in electronic form using the same header, text, and image standards and formats as for evidentiary collection materials	NA
LSN DR G-3 (formerly LSN 1.31)	The NRC must provide a Protective Order File.	NA
LSN DR G-4 (formerly LSN 1.32)	The NRC must deliver all pleadings, orders, and decisions per §2.1013(c) (e.g., electronically, using secured process).	NA
LSN DR G-5 (formerly LSN 1.34)	The NRC must maintain the docket.	NA
LSN DR G-5.1 (formerly LSN 1.36)	The NRC must enter hearing transcripts into the docket on a daily basis in order to provide next-day availability at the hearing.	NA
LSN DR G-6 (formerly LSN 1.37)	The NRC must establish a mechanism whereby all filings are able to be submitted/received electronically and to require a password security code for transmission of these documents.	NA
LSN DR G-7 (formerly LSN 1.38)	The NRC, in its management of the electronic docket, must provide a mechanism by which all Presiding Officer and Commission issuances and orders are transmitted electronically.	NA

LSN Req. No.	Description	Component / CI
LSN DR G-8 (formerly LSN 1.39)	The NRC must provide a mechanism by which the Presiding Officer and all counsel of all parties have access to the electronic docket (including Protective Order File) during the hearing.	NA
LSN DR G-9 (formerly LSN 1.41)	The NRC must provide a mechanism to receive electronically transmitted depositions (including questions, cross-questions, and answers) and enter them into the docket file	NA
LSN DR G-10 (formerly LSN 1.42)	The NRC, in its management of the electronic docket, must identify a means by which only a part or parts of a deposition may be offered into evidence.	NA
LSN DR G-10.1 (new)	The NRC must be able to deliver from the docket a single image from a multi-page document.	NA
LSN DR G-11 (formerly LSN 1.43)	Each LSN participant must demonstrate substantial and timely compliance with §2.1003 in order to be granted party status.	NA
LSN DR G-12 (formerly LSN 1.44)	Absent good cause, each LSN participant must ensure that any exhibit is available before the commencement of that portion of the hearing where it will be offered.	NA
LSN DR G-13 (formerly LSN 1.45)	For parties and interested governmental participants, service is completed when the sender receives electronic acknowledgment ("delivery receipt") that the electronic submission has been placed in the recipient's electronic mailbox.	NA
LSN DR G-13.1 (formerly LSN 2.45.01)	All participating entities shall ensure that they can receive and reply to Internet-standard electronic mail by arbitrary Internet users using Internet standard e-mail MUAs (Mail User Agents) and MTAs (Mail Transfer Agents).	NA
LSN DR G-13.2 (formerly LSN 2.45.02)	All participating entities shall maintain an electronic log of all deliveries of LSN documents to their EIE or Internet mail server. This log will contain the IP address or DNS host name of the recipient's computer and the date and time of delivery. The log shall be in either the web standard "Common Log Format" or "Combined Log Format."	2
LSN DR G-13.3 (formerly LSN 2.45.03)	All participating entities shall maintain an electronic log of all motions practice-related electronic mail transactions. This log will contain the IP address or DNS host name of the recipient's computer, the sender and recipient's user names, and the date and time of exchange.	NA
LSN DR G-13.4 (formerly LSN 2.45.04)	All participating entities shall maintain a log of all non-electronic LSN-related deliveries. This log will contain recipient identification, date of delivery, and method of delivery.	NA

LSN Req. No.	Description	Component / CI
LSN DR G-13.5 (formerly LSN 1.46)	Each LSN participant may utilize an electronic acknowledgment ("delivery receipt") as proof of service.	NA
LSN DR G-14 (formerly LSN 1.47)	Deponents must submit an electronic index of all documentary material in his/her possession relevant to the subject matter of the deposition to all parties and interested government participants, identifying which were already made available electronically, ten days before the scheduled date of the deposition.	NA
LSN DR G-14.1 (formerly LSN 1.48)	Deponents must bring to the deposition a paper copy of all documents that are included in the electronic index that the deposing party or interested governmental participant requests that have not already been provided electronically.	NA
LSN DR G-14.2 (new)	Parties may request that any or all documents on the index that have not already been provided electronically be made electronically available by the deponent.	NA

Functional Area 7: Electronic Information Exchange (EIE) Related Capabilities

LSN Req. No.	Description	Component / CI
LSN DR H-1 (formerly LSN 1.50)	During the pre-license application phase, each LSN participant must use the procedures specified in §2.1013(c) for service of all pleadings, answers, orders, and decisions.	NA
LSN DR H-2 (formerly LSN 1.51)	During the licensing proceeding, each LSN participant must use the procedures specified in §2.1013(c) for service of all pleadings, answers, orders, and decisions.	NA
LSN DR H-3 (formerly LSN 1.52)	Absent good cause, parties and interested government participants must submit all filings electronically using a secure transaction process for transmission of documents to the electronic docket.	NA
LSN DR H-4 (formerly LSN 1.53)	Parties and interested government participants must transmit depositions to NRC's Secretary (SECY) in electronic form for entry into the docket.	NA

APPENDIX B. ACRONYMS

ACRONYM	DEFINITION
ADAMS	Agencywide Documents Access Management System
ASP	Active Server Page
AT&T	American Telephone and Telegraph
CA	California
C.F.R.	Code of Federal Regulations
COM	Component Object Model
COTS	Commercial-off-the-shelf
DFD	Data Flow Diagram
DM	Data Management
DOE	Department of Energy
EI	External Interface
GRCI	GRC International, Inc.
GUI	Graphical User Interface
HTML	Hyper Text Markup Language
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
LSN	Licensing Support Network
LSNA	Licensing Support Network Administrator
NCAI	National Congress of American Indians
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NV	Nevada
NWPA	Nuclear Waste Policy Act
PDAD	Project Definition and Analysis Document
SDLCM	System Development Life-Cycle Management
SOW	Statement of Work
SQL	Structured Query Language
URL	Uniform Resource Locator
VA	Virginia