

# Enhancing the Secure Document Repository

## FY 2003 Proposal to the NOAA HPCC Program

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# Enhancing the Secure Document Repository

Proposal for FY 2003 HPCC Funding

Prepared by: Nancy N. Soreide

## **Executive Summary:**

The Secure Document Repository (SDR) was developed under FY01 HPCC support as an important component of OceanShare network collaboration tool. Since that time, the SDR has been presented at professional society meetings, demonstrated to the OAR Technical Committee on Computing Resources, and presented to senior managers in NOAA. In the course of these demonstrations, the SDR has generated significant interest as an administrative tool to support management functions (i.e., secure document distribution and exchange).

We propose to make a limited number of significant enhancements in order to maximize SDR utility for non-technical staff and senior scientists. First, the administrative functions for establishing document ownership, work group privileges, and password changing must be simplified so that it can be managed by secretarial staff. Presently a skilled programmer must perform these functions. The second enhancement is to provide document versioning to allow multiple versions of a document to be retained in the repository. With these modest but significant enhancements, we will work with the OAR CIO (who has already expressed interest) to promote the availability of the SDR as a management tool through the NOAA CIO chain of command. These enhancements will also greatly facilitate the utility of the SDR for use by work groups within the scientific community.

## **Problem Statement:**

**Problem Statement:** Researchers and managers that work together but are geographically separate often need to share electronic documents, both text and graphical, between multiple parties for collaborative authoring of these documents. The files which need to be shared include documents such as tables, spreadsheets, graphical images, animation's, portable document files, and text files, as well as data files (e.g., time series, profile data, drifter observations, satellite observations, etc.) that are in many different file formats and used with various visualization and analysis applications. These files often contain sensitive information or work-in-progress. The content of these documents requires protection from unauthorized viewing, editing, or tampering. Often these documents are mailed, faxed, ftp-ed to co-workers, but these old techniques of collaboration are unwieldy and awkward. These solutions, in the worst cases, can even create barriers to effective collaboration and research.

The Secure Document Repository (SDR) was developed under FY01 HPCC support as an important component of OceanShare network collaboration tool. Within that context it wasn't necessary for the SDR to be easily configured since the expectation was for a limited number of

users of the system from a fairly small community. Since that time, the SDR has been presented at professional society meetings, demonstrated to the OAR Technical Committee on Computing Resources, and presented to senior managers in NOAA. In the course of these demonstrations, the SDR has generated significant interest as an administrative tool to support management functions (i.e., secure document distribution and exchange).

In order for the SDR to meet the needs of NOAA managers and senior scientists, a limited number of none-the-less significant barriers must be overcome. The initial work has been done, adding administration features and packaging for easy transfer to other NOAA organizations is now required. First, the administrative functions for establishing document ownership, work group privileges, and password changing must be performed by a skilled programmer, and can not be managed by secretarial or other non-technical staff. Secondly, users of the SDR require document versioning that will allow multiple versions of a document to be retained in the repository.

**Relationship to NOAA HPCC objectives:** This project addresses HPCC program goal to support projects that *“improve technology for access to critical data, information and unique resources in a manner that increases mission effectiveness and furthers NOAA’s service to the nation.”*. The technology proposed here is a vast improvement in every sense over older document-sharing methods of postal mail, email, fax and ftp, while providing enhanced protection from unauthorized viewing, editing, or tampering.

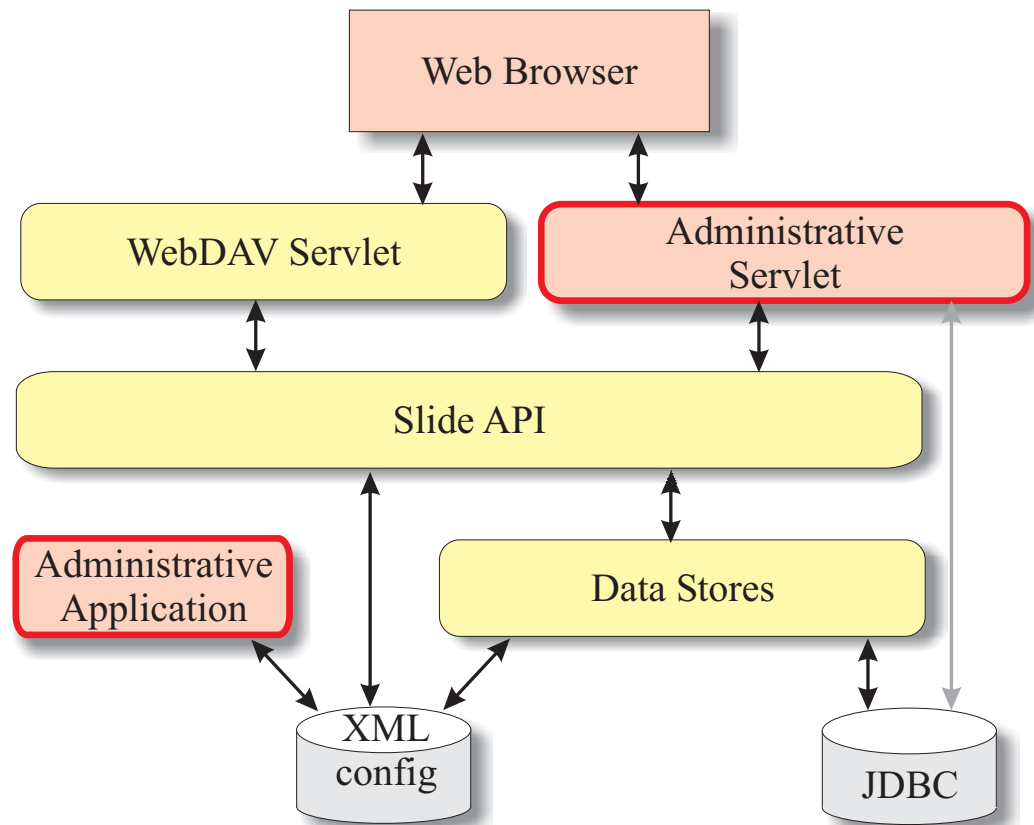
## **Proposed Solution:**

**Synopsis:** We propose to make a limited number of significant enhancements to the SDR in order to maximize its utility for management, senior scientists and non-technical staff. First, the administrative functions for establishing document ownership, work group privileges, and password changing must be simplified so that they can be managed by secretarial staff. Presently a skilled programmer must perform these functions. The second enhancement is to provide document versioning to allow multiple versions of a document to be retained in the repository.

**Technology:** The SDR was developed using the Jakarta-Slide server (version 1.0.16). Jakarta-Slide provides a Web-based Distributed Authoring and Versioning (WebDAV) compliant server that supports the DAV Access Control List (ACL) extension (Internet Engineering Task Force (IETF) RFC 2518). WebDAV was chosen to implement the SDR server because of the readily available commercial clients. The commercial clients, however, do not include support for DAV ACL, therefore, a Java client was developed to enable users to create and edit permissions for their directories and files in the SDR.

Features that are currently being developed for inclusion in Jakarta-Slide (version 2.x) include WebDAV/DeltaV a version control system using the IETF RFC 3253 protocol and DASL the DAV Searching and Locating protocol. It will greatly extend the functionality of the SDR to include these features when they become available. These new features are being designed such that clients that don’t implement them will still function properly, thus insuring upward compatibility between the SDR server and clients.

The SDR used in conjunction with a commercial application like Adobe Acrobat would enable a group to easily share documents (in pdf format), mark-up the document, add comments, notes, even append other documents. The SDR provides a convenient location that can be accessed by others. Using the SDR client, a document can be locked so that no other user can write. This protects the document from being corrupted by two or more users trying to write to it at once!



**Figure 1.** Proposed enhancements to the Secure Document Repository (outlined in red).

**Implementation:** The Secure Document Repository will be enhanced by:

- *Simplify configuration of the Jakarta-Slide server.* Presently configuration of the WebDAV server is accomplished by hand editing XML configuration files. We will create a Java Application that can be used by a SDR administrator to configure the server. Configuration options will include port number, administrator name and password, and initial directory structure and permissions.
- *Enhance the administrator web page.* Presently, Jakarta-Slide has a crude Servlet based web-page to add new users and set their passwords. Any other changes require the SDR administrator to hand modify the Slide Database, not a good practice. A Servlet driven

web page using Secure Sockets (SSL) needs to be created that will give the SDR administrator access to additional functions (new user creation, password setup, basic configuration, etc).

- *Create an account web page.* Presently "root" permission is required to modify user passwords. Thus, users are unable to change their own passwords. A Servlet driven web page using Secure Sockets (SSL) needs to be created that will enable allow the user to change their password and edit file and directory access permissions.
- *Implement external database.* Jakarta-Slide by default is configured to use an embedded database to keep track of the documents, versions, and user information. An embedded database cannot be modified while the repository is running. By configuring Slide to use an external database (such as MySQL) it would be possible to change the database while running. This would make adding new users, changing passwords, altering file permissions, etc, much easier.

**Leveraging:** The Secure Document Repository enhancements leverages from the on-going work by the Jakarta-Slide project team and the development of the Secure Document Repository software created as part of the HPCC project Fisheries Oceanography Collaboration Software (FY01).

**Scope:** The SDR is already attracting interest in science communities outside the Fisheries-Oceanography community for which it was developed (e.g. GFDL), as well as in NOAA management. The proposed enhancements will greatly facilitate the utility of the SDR for use by a wide range of scientific and management work groups. The principal investigator, who is the PMEL CIO and also a member of the OAR IT Board, will work with the OAR CIO (who has already expressed interest) to promote the availability of the SDR as a management tool through the NOAA CIO chain of command.

**Matching Funds:** PMEL is supplying document repository hardware at no cost, and PI salary at no cost.

### **Analysis:**

The Secure Document Repository, based on the WebDAV protocol, is being enhanced to provide secure and convenient collaborative document storage and interchange. Commercial vendors are regularly announcing WebDAV compliant software and the Jakarta-Slide project is actively enhancing their WebDAV server. Microsoft provides WebDAV compatibility by the Office Suite (Word, PowerPoint, etc) and Adobe has recently released FrameMaker v7.0 a WebDAV compliant document production program. Both Microsoft and Apple have provided WebDAV access from their latest operating systems.

The combination of the Jakarta-Slide server and custom client and web software provide a good match to the requirements for a Secure Document Repository. Future Jakarta-Slide enhancements will include documents versioning and the ability to search and locate documents in a repository. Both these features are important to the SDR user community. Because Jakarta-Slide is the reference WebDAV implementation for these new features, they should be available soon. The custom client and web software will continue to be needed to access these new

features (historically the commercial software has been several years behind in the implementation of new protocol features).

The proposed solution has the benefit of both providing a Secure Document Repository that many commercial applications can access and provide the necessary tools to manage and use those features that the commercial software can't presently access.

### **Performance Measures:**

The following milestones reflect an iterative software design process where the requirements-design-development cycle may be repeated many times.

### **Milestones**

- Month 1 – Collect requirements for SDR administrative functions.
- Month 3 – Design SDR enhancements.
- Month 6 – Initial release of SDR enhancements
- Month 7 – User/Administrator feedback on SDR changes.
- Month 8 – Modify SDR enhancement design.
- Month 12 – Final release of SDR enhancements
- Month 12 – Present results at NOAATech and promote availability within management and scientific workgroups inside and outside NOAA.

### **Deliverables**

- Web-based administration of user SDR files and account.
- Web-based administration of the SDR system.
- Application for SDR configuration.
- Version control implemented in the SDR.