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Dear Ms. Patten:

This responds to your March 14, 1997, Freedom of Information Act request. Our March 21, 1997, interim response refers.

The enclosed document is provided as responsive to your request. There are no charges for processing this request in this instance.

Sincerely,

A. H. Passarella
Director
Freedom of Information
and Security Review

Enclosure:
As stated

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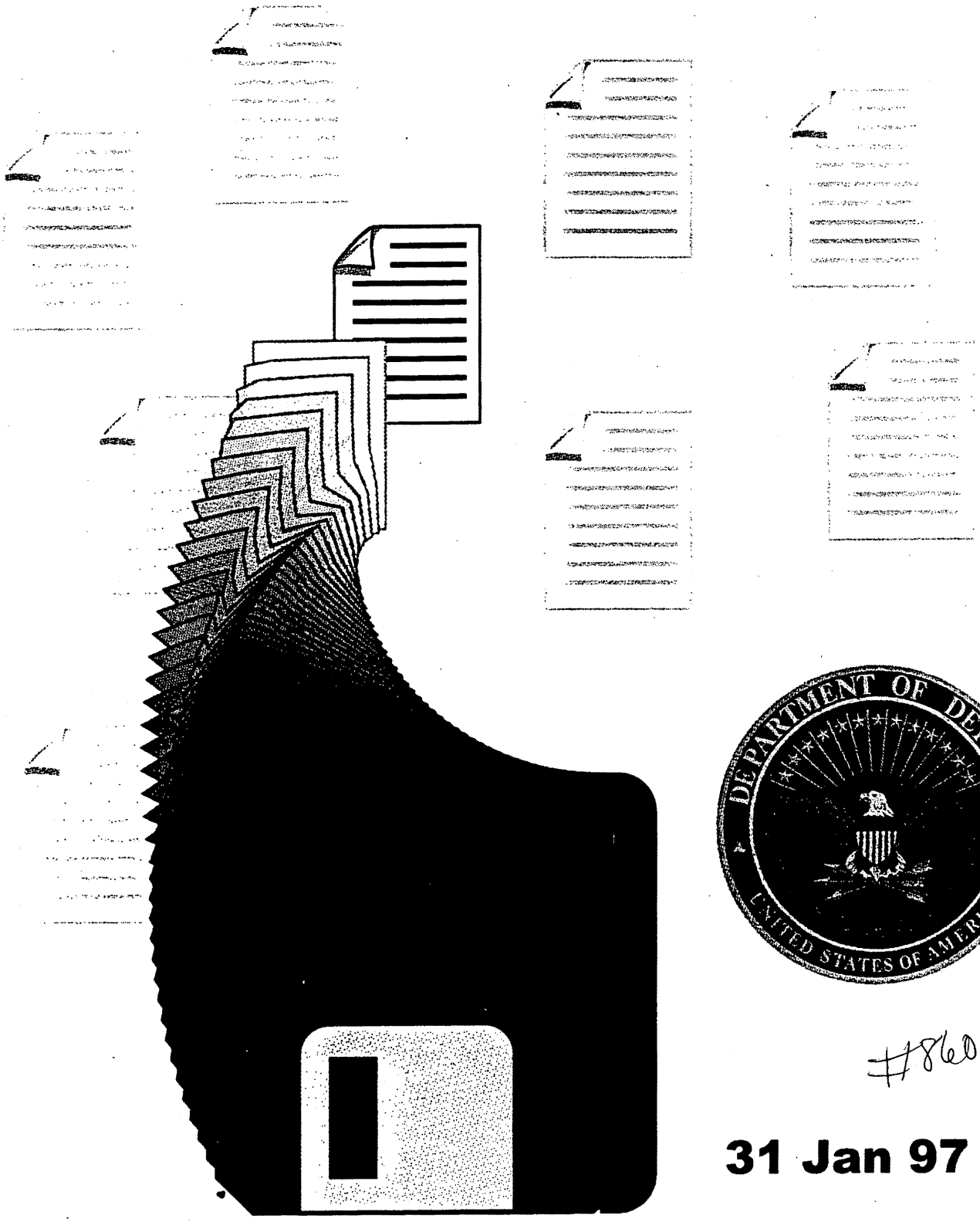
Continuity of Operations Software Evaluation



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This document was prepared by SRA International, Inc., under contract
MDA903-01-D-[illegible] for the Office of Emergency Planning

Executive Summary

The Under Secretary of Defense (Policy) has tasked the Office of Emergency Planning to lead the continuity of operations project. The main goal of this work is to support planning for how the critical principals and staff members prepare for and execute notification, movement, and the resumption of activities at alternate locations in the case of a contingency which makes their primary location untenable. To achieve this goal and minimize the cost of the program, there must be management processes in use throughout the organization, supported by a standard tool set, which optimizes the organization and tracking of data, assists in the deconfliction of plans, minimizes the time required to execute the plan, and supports sustaining operations in the event of a continuity of operations contingency.

OSD has a functional requirement for a management tool that can help the staff meet their goals by serving as a basis for building a mutual understanding, and exchanging information between the varied groups involved in continuity of operations planning. These stakeholders include the professional continuity of operations planners, extra-duty organizational staff planners, principals, the Crisis Coordination Center, and the management and staff responsible for sustaining operations at alternate locations. To meet this requirement, this report documents the functional requirements and critically reviews the leading commercial software. A recommendation on which tool best meets the OSD functional requirements is provided.

There are a number of available, commercial off the shelf, emergency management software products which offer the government the potential to quickly implement a tool to support its needs without funding a major system development effort. Commercial software has the potential to significantly reduce the cost of acquiring and implementing a management tool to support the continuity of operations process. The Defense Finance and Accounting Service (DFAS) recently pursued this approach to select and implement software for its own continuity planning efforts.

This document accomplishes several tasks in preparation for acquisition of a management utility. The issues surrounding implementation and application of the management utility are addressed and bounded in terms of time and resources required. Alternative approaches to these tasks are proposed.

The Strohl Systems product is the best of its class. It meets all established functional requirements, provides a high degree of security, and provides the flexibility required to meet the emerging needs of the continuity of operations planning community. Priced below twenty-five thousand dollars for a local area network application with unlimited client licenses, it meets contracting requirements for a small purchase order.

Introduction

Document Overview

This document identifies and describes the functional requirements for acquiring a continuity of operations software tool. This document is divided into the following areas:

- Section 1 provides an overview of the document and some background on OSD continuity of operations planning and management processes. This section summarizes the objectives for the management processes, and discusses existing procedures. Proposed methods are outlines, emphasizing the systems components and architectures required to achieve OSD goals.

- Section 2 provides a description of the objective management utility—which is a software tool which assists continuity of operations planners and managers organize, track and share their important data and documents. Objectives for the software are detailed, as are existing and proposed business procedures.

- Section 3 describes the detailed characteristics and performance measures for a continuity of operations management utility.

- Section 4 outlines the operating environment for the continuity of operations software tool. It begins with a review of the baseline assumptions and constraints, followed by a summary of the information technology environment which supports continuity of operations planners and managers. Systems requirements are also discussed.

- Section 5 provides the recommended software and discussed application and implementation issues. A general cost estimate is included.

- The appendices contain the evaluation and ratings matrices, and acronyms listing.

Project References

The OSD Continuity of Operations Plan and related efforts, to include this software evaluation study, are guided by the following authorities and publications.

1. Executive Order (EO) 12656, Assignment of Emergency Preparedness Responsibilities.
2. DoD Directive 3020.26, Continuity of Operations (COOP) Policy and Planning, May 1995.

3. DoD Directive 3020.26-P, Office of the Secretary of Defense Continuity of Operations Plan (Vanguard) (U) Interim Plan, 6 December 1996.
4. Pentagon Renovation Program: Technical Report for Pentagon Renovation Telecommunications Architecture, August 1993.
5. OUSD(P) Decision Support Architecture Implementation Plan, 30 Nov 93.
6. "Software Package Selection and Evaluation," David M. Clark, The Handbook of IS Management, 3rd edition, 1991, Auerbach Publishers.

Project Background

In 1986, DoD developed a series of continuity of operations plans that were designed to enable the U.S. Government and Departments to conduct operations during an attack against the Continental United States. In February of 1995, the Assistant to the President for National Security Affairs forwarded a memorandum to the Secretary of Defense revalidating the requirement to provide Continuity of Operations (COOP) for the Federal Departments to be able to respond against the more diverse type of threats currently facing the U.S. Government such as the Oklahoma City federal building and New York City World Trade Center bombings. The memorandum stated it was the policy of the Administration that continuity of operations plans should address all-hazard emergencies such as natural disasters, military attacks, terrorist incidents, and technological emergencies that threaten the national security.

As a result, OUSD(P) is in the process of updating the 1986 continuity of operations plan for OSD and is working towards ensuring that the Pentagon-based headquarters continuity of operations plans can operate in an integrated fashion to support the Secretary. This effort to evaluate emergency management software directly supports OUSD(P) efforts to develop continuity of operations plans for OSD by providing an effective means to manage continuity of operations data and standardize planning efforts throughout OSD.

Benefits

Automated management processes and tools can help the Office of Emergency Planning to realize a number of benefits. The benefits listed below are general in nature, and result from implementing a standard automation tool. As described in Proposed Methods and Procedures, specific additional functional improvements to the continuity of operations planning process may be developed after the implementation of a tool. As appropriate, these functional improvements will be documented in updates to the governing document, DoD Directive 3020.26-P, Office of the Secretary of Defense Continuity of Operations Plan (Vanguard) (U) Interim Plan, 6 December 1996.

- Improved communication within the COOP community. "Gaps" and conflicts within individual plans will be easier to identify and correct.

- Enhanced and simplified access to COOP plans by all those who are affected, including principals, staffers, support organizations, and the primary and alternate work locations.

- Meets the OSD requirement for community wide continuity of operations plans to enhance interoperability, oversight, and management in the case of an emergency.

- Enhanced access to accurate, reliable, and timely information. Automated processes provide a standardized format with a uniform level of detail and standard data elements.

- Correlation of multiple types of emergency plans against different contingencies.

- Reduced cost to implement and sustain the program, as measured by the number of people required to develop and maintain continuity plans for all affected organizations.

Summary of Functional Requirements

The OSD continuity of operations planning requirements are divided into five groups; three of these groups represent user requirements. The last two groups represent requirements for the system and the operating environment.

- Assist the various OSD components in plan development and management.

- Support components and specific organizations such as the COOP Response Cell in executing the OSD plan.

- Support OUSD(P)PS/EP in meeting its continuity of operations training, exercise, and oversight functions.

- Be interoperable with the major software in use within OSD, including Microsoft Office and Exchange and Lotus Notes. Be capable of cross-platform usage. Provide for electronic mail and enterprise-wide messaging using TCP/IP.

- Be based on an open systems architecture that does not limit future expansion of the system, including developments in software and hardware.

System Summary

Background

It is envisioned that the utility will assist continuity of operations planners to plan for and execute relocation plans during contingencies. It is not the primary tool for OSD components to use to execute their mission essential tasks, such as to develop policy or prosecute war at their relocation sites. Other management systems, office productivity suites, and messaging platforms required to support these tasks need to be available at the relocation sites. However, data stored in the utility may provide indirect support to executing mission essential tasks.

The initial use of the management and planning utility is limited to OSD and its component organizations. Beyond OSD and its alternate sites, a future consideration is to expand implementation of such a software-based system to the Services, Joint Staff, Defense Agencies, and CINCs to support their continuity of operations planning efforts.

Tools developed for use by continuity planners should fit into the longer term strategy that takes advantage of Internet/Intranet technology to integrate the community into a virtual office. As such, the selection of emergency management software should be compatible with network throughout the continuity of operations community.

Objectives

Continuity of operations planners must prepare for a variety of emergency contingencies. Each situation presents a set of challenges which are both common to all contingencies, and unique to the specific challenge. The utility should assist planners in executing those tasks which are common to all contingencies, taking into account the unique requirements of each emergency situation. The utility should assist OSD planners in navigating the requirements and individual decisions of a specific contingency, and accomplishing the following objectives.

- Standardize OSD continuity of operations plans using templates customized to meet the functional requirements and nomenclature.

- Support specific continuity of operations planning. The utility should support implementing and maintaining:

  - Rosters containing key personnel and critical data (such as telephone numbers, skill areas, Military Assistants).
  - SOPs and task lists.
  - Staff augmentation requirements and plans.
  - Key documents inventories and reference material.

- Transportation plans.
- Reception plans at alternate locations, including security accreditation.
- Required logistics and communications support at relocation facilities.
- Security plans.
- Plans for special support requirements.

- Support OSD continuity of operations plan execution by:

  - Providing the capability to merge key data from all OSD plans into a single database to support COOP Response Cell (CRC) activities.
  - Providing a utility to back up critical continuity of operations databases and information repositories.
  - Distributing critical continuity of operations databases and information repositories to relocation sites.
  - Enhancing the telephonic and electronic mail notification systems.
  - Supporting the transportation coordination process.
  - Supporting the security coordination process.
  - Enhancing the ability of the continuity of operations planning staff to provide ongoing support at the relocation sites.

- Support OUSD(P)/PS/EP management and oversight responsibilities through training and exercises designed to validate continuity of operations plans.

- The utility must support the creation of standard and ad hoc reports from both the individual organizations plans, and the merged, OSD-wide plan.

- Support publication of continuity of operations documents that can be published electronically and in paper format.

- Support the continual process of deconflicting OSD continuity of operations plans.

- Enhance the ability of continuity of operations planners to distribute information to specified individuals and organizations throughout all phases of the planning and execution process.

- Ensure the OSD plan includes the continuity of operations plans for all subordinate organizations, including key information such as:

  - Relocation sites.
  - Key personnel and critical contact information.
  - Mission-essential functions.
  - Essential logistics and communications requirements at the relocation sites.
  - Transportation plans to and from the relocation sites.
  - Evacuation procedures.
  - Training and exercise schedules.
  - Alert and notification procedures.

Existing Methods and Procedures

OUSD(P)'s effort to revise the OSD continuity of operations plan comes after a number of years in which diminishing resources and attention towards continuity of operations have had their effect. Many of the old processes and systems used to support the 1986 plan either no longer exist, have atrophied over the years, or become obsolete. As the new program continues to develop and mature, processes and systems that will be required to support continuity of operations planning and execution are only now being identified, designed, and evaluated.

In the few cases where processes have been identified and are being performed (at least to some extent), users currently resort to using tools easily available or familiar to support them in performing their tasks. However, these tools are not necessarily best suited to perform the task. Furthermore, many processes are not yet developed to the point where integration opportunities can be exploited. For example, planners use existing word processing tools to develop textual data such as plans. However, these plans are generally stored at the local user level. Others are unable to view or share this information since networking and communications capabilities are not yet incorporated into the process. Similarly, lists of information that must be maintained, such as a relocation roster, are maintained using tools of the user's preference. The range of formats includes paper lists, database, or spreadsheet applications. Where information must be shared or distributed, such as a roster list, it is generally done via paper copies over fax machines. In some cases, the same information is maintained in various formats in different organizations.

In short, existing methods and procedures are in an evolutionary state. What is known is that users require the capability to write and store textual information, utilize database technology to store and manipulate data elements, and, through computer and communication technology, be able to

integrate people and information across the continuity of operations community. As OSD proceeds with its series of exercises to evaluate the overall plan, the methods and procedures will take further shape. Any software utility considered to support the process must be flexible enough to deal with this changing state.

Proposed Methods and Procedures

Information systems planning is a strategic and disciplined approach to determining the most efficient and effective means of satisfying an organizations information requirements. The traditional approach to this planning is to analyze the mission and function to be performed, determine who performs the function, identify the information and data required to perform the function, and then to define the automated processes needed to structure and display the information.

The methodology used to define the functional requirements for the continuity of operations process follows this discipline, but stops after the mission and functions have been analyzed. Completing this task involves defining what information is necessary, how planners will collect the data, and how they will share that information. This report describes the general benefits expected to be accrued from the use of an automation tool, rather than discreet functional improvements, given the insertion of a specific technology.

Specifically defining how the tool will support the continuity of operations planning process, is a dynamic process that will change as functional improvements are identified and implemented. The implementation of a software tool to assist the planning process and the management of a continuity of operations contingency is one step in the functional improvement process.

Defining improved methods and procedures will be a result of using the tool, not simply the implementation of the automated planning utility. Future exercises where continuity of operations planners use the software tool will result in lessons learned, which can then be applied as process improvements.

Rigorously defining objectives and functional requirements for the software utility will drive the choice of a tool towards an open, flexible system that enhances the opportunities for future process improvements. Most of the vendor products reviewed do not meet these criteria. The vendor selection process used here avoids vendor proprietary solutions which limit future enhancements. This should ensure the continued viability of the system to meet the dynamic information requirements of OSD.

Detailed Characteristics

Approach

The functional requirements that describe the OSD continuity of operations software were developed by combining several different perspectives. This included evaluating market leading software, surveying other federal government implementations of continuity of operations tools, and a literature review. Software vendors demonstrated their tools and/or discussed their business models. This process culminated in the realization that the OSD functional requirements are different DFAS or other, typical users of this type of software. The major differences include:

- OSD focuses on crisis management rather than business recovery. Further, OSD must selectively manage priorities that ensure the ability to achieve continuity of essential functions.

- OSD planning requirements and formats are unique within the continuity of operations community. When a continuity of operations emergency occurs, the OSD principals may be anywhere in the world, the alternate support locations may vary, and the requirements for support may vary. Further, there is no acceptable "down time" in providing OSD support to national defense and security processes. This immediacy of need and degree of variability sets these requirements apart from other organizations.

- Nomenclature and language differences.

- The OSD environment is multi-tiered and multi-organizational. Deconfliction of plans, schedules, and assets is a major task.

- The OSD requires the tool to provide information to support decision making in a fluid and complex environment. This dictates many of the characteristics of a Decision Support Tool (DST), as well as an organized and structured planning tool.

Functional Requirements

This section describes the various continuity of operations management requirements from the user perspective. Users may be continuity planners, individuals covered in the plan, or other stakeholders in the process or involved in the information stored in the utility.

While the management utility must operate with many points of data entry, there are detailed business rules regarding the visibility of data. Organizations may or may not be allowed a view all or part of another organizations plan. Regardless of the status of business rules, changes in

one plan may require corresponding changes in other organization's plan. The utility must allow for this occurrence while maintaining overall security.

The following paragraphs describe the functional requirements of continuity of operations planners.

Information Security

Security is a significant issue throughout the community. The utility must operate in a SECRET-High environment, and meet the C2 requirements established by the National Security Agency.

The OSD organization works on a variety of Departmental LANs, which are all within a closed system, ensuring security. User access is password-protected, with additional security implemented through workgroup membership. Business rules allow or prevent individuals and/or workgroups from accessing different data sets.

Works with existing office productivity software.

Continuity of operations planners function within the general environment of the Office of the Secretary of Defense. Continuity of operations is an additional duty for most planners. A management utility that seamlessly integrates with standard office productivity software is optimal for these individuals. In general, Microsoft Office is the standard suite of desktop software. However, there are areas where Lotus products are used and several pockets of Macintosh users. The utility must also interface with the non-standard office software.

Windows compatible

Most users in OSD are standardized on the Windows interface, and many use Windows 95. However, telecomputing users cannot be expected to have state-of-the-market automation, so the utility must not require system resources greater than a 486 class machine.

In general, OSD users run applications on the desktop machine, while the data resides on the server. The Local Area Network uses TCP/IP, and is migrating from standard, class five cabling to fiber optics. LANs are multi-segmented using routers.

Compatible with existing E-Mail and wide-area data communications capabilities

The utility must be compatible with the various electronic mail packages in use within the Department of Defense. Users have many opportunities to share files and documents from continuity of operations planning, and generally do so by attaching them to E-Mail messages. In addition, planners are required to update their plans and databases regularly when there are changes or updates to other plans. These updates can best be handled by automating the updating process.

In the event of an emergency, these planners must notify a significant number of individuals and locations. This can best be achieved through an automated process that uses data stored in the management utility and access to local and long-distance unclassified telephone lines, electronic-mail, and secure telecommunications.

Flexible database capabilities

Continuity of operations planners must maintain lists of many data items. Examples of the range of data required to be kept are the names, addresses, and phone numbers of all individuals who require notification in the event of a contingency to the logistical status and inventory of items at alternate locations. These data elements must be cross-referenced and sorted using simple to complex filters. Multiple users must be able to view and update these lists. Finally, there are many reports, both tabular and graphic that must be generated from these lists.

Supports project management software

Executing a continuity plan is a multi-step process that involves many individuals and organizations. As such, current workflow concepts and utilities can be used to ensure all users are aware of the status of their and other organizations execution of the continuity plan. Planners often work from standing operating procedures (SOPs), which must be captured in the utility. During the execution of an emergency plan, these SOPs are used to organize the actions taken to achieve the overall goal of continuity of operations. These SOPs are generally templates, which can be shared between organizations.

Supports electronic library capabilities

In addition to the data stored in lists, continuity planners must maintain many documents that pertain to their organizations. These documents range in size from simple, one-page information papers to books

with embedded graphics. Beyond text, there is a requirement to store audio and pictures.

Internet/Intranet capabilities

Several factors drive the requirement that continuity of operations planners be able to function in a virtual office configuration. Telecomputing is increasing throughout the DoD, and there is reason to believe that an emergency contingency will occur during normal-duty hours when planners have access to their desktops. The plan must be executable at any time of day, from any location. This drives a requirement for remote access by planners and anyone that needs the information stored in the utility.

Management and testing

By directive the OUSD(P)/PS/EP has the requirement to oversee the continuity of operations planning system. This is both a policy requirement and an operational requirement. OUSD(P), the Office of Emergency Planning must develop policies and instructions that govern continuity of operations planning, as well as provide the operational capability to execute the process. The management utility must support both these functions. The utility must have the ability to integrate subordinate organizations' plans. This supports oversight since it makes plans inspectable. Further, the management utility must support testing the planning process through actual exercises and simulations.

Environment

Assumptions and Constraints

The set of assumptions that apply to the technical implementation of continuity of operations software are generally consistent with the Pentagon renovation plan. Since the "normal" duty location for most continuity of operations planners and individuals affected by the plans is the Pentagon, the information technology initiatives in the renovation plan will significantly impact on their use of the system. The renovation will cause some temporary disruption due to office relocations, but there are no issues which will require significant changes to continuity of operations planning. The following assumptions from the Pentagon Renovation Plan illustrate this point.

- User access and bandwidth on demand requirements will range from less than 100 Mbps to more than 1 Gbps.
- Secret, Top Secret, and SCI classified communications over individual fiber optic strands can coexist in the same multi-strand fiber optic cable.
- Multi-Level Security (MLS) will mature as a technology and become an integral element of users' future applications systems and networks.
- Value-added applications and services such as the Defense Messaging System (DMS) and office automation servers will evolve in the future to be common user services in the Pentagon.
- Technical control facilities, command centers, and operations centers will be situated in the renovated basement and mezzanine, resulting in high concentrations of classified telecommunications and requirements in these areas.

System Support Organization

Any software tool implemented by OUSD(P)PS/EP will be supported by the OUSD(P)/Policy Support Division. This organization operates the OUSD(P) Network, commonly known as the POLYNET. This is a secure automated information system that provides the enterprise-wide network architecture for the 1,100-plus OUSD(P) staffers.

The POLYNET operates out of the Operations Control Center (OCC), and is staffed by a combination of OUSD(P) military and civilian employees, Pentagon Single Agency Manager employees, and contractor support. This organization provides full interoperability at the workgroup

and enterprise level for all OSD users, regardless of hardware and software configurations.

The POLYNET decision support infrastructure is capable of facilitating electronic communication, both E-Mail and file transfer, fault tolerance, external connectivity, and multiple levels of security. This is the foundation upon which the OSD user and workgroup tools are built to facilitate OUSD(P)'s decision making and support roles.

Equipment

The POLYNET operates a diverse set of hardware to support the range of workgroup and individual user functional requirements. In summary, there are no structural limitations to the choice of a software tool attributable to the on-hand equipment in OUSD(P).

- The POLYNET supports end-uses working on the Intel/Windows PCs, as well as Macintosh and SUN workstations running Unix variants.
- Remote access is achieved through both dial-in using communications servers and LAN-to-LAN access. Secure access is achieved through both STU-III and Motorola Network Encryption Services (NES).
- SIPRNET access is achieved by connection to the secure routers.
- Backbone services are provided by an FDDI ring.
- Optical disk servers provide one type of on-line information repository made up of multiple CD-ROMs.
- A variety of scanners are in use across OUSD(P).

Support Software

The POLYNET operates a diverse set of software to support the range of workgroup and individual user functional requirements. In summary, the selection of COTS software to support continuity of operations planning will be supportable by the POLYNET. At the same time, some individual users, most likely users with SUN workstations, may experience some challenge in using the tool.

- PC-based workgroup LAN connectivity is provided by Novell's Netware 4.1. SUN workgroups use Solaris or the SUN OS. Macintosh workgroups are supported with Appleshare, NFS.
- The most wide-spread end user office productivity suite is Microsoft Office. Unfortunately, not all COTS end-user applications are interoperable at this time. For example, Microsoft's word processor Word is interoperable between the Intel-based and Macintosh platforms. However, Unix users use Aster*X.

- Microsoft Mail is the most common electronic mail product. SMTP is used to manage external mail, and another third party tool is used to manage messages across the various operating systems. TCP/IP is the most common transport protocol.
- Lotus Notes is used for collaborative computing, including a message handing system called the Cable Handling and Retrieval System (CHAIRS).

Communications

Bandwidth considerations within the physical architecture of the OSD do not limit the choice of a software tool. Any organization with a physical port to the classified Pentagon backbone can connect to the continuity of operations tool. Organizations without a physical connection can access the system through a dial-in connection to the POLYNET. Dial-in connectivity also provides access to the database for any user who is temporarily away from their normal duty location. This combination of capabilities resolves all known connectivity issues. It provides feasible solutions to most communications challenges that may arise.

Failure Contingencies

The POLYNET has a robust Uninterruptable Power Supply (UPS) capability, which will provide temporary power to maintain information technology capabilities in case of a power outage within the Pentagon. All COTS under consideration have strong data back-up procedures built into the systems.

As the continuity of operations tool develops, the database will be replicated at an alternate site location, which will have many, if not all of the communications capabilities of the primary site. Inherently, continuity of operations software will have a robust failure contingency plan and back-up procedures.

Security

The POLYNET operates as a Department of Defense SECRET-High network. All users of the continuity of operations tool must work within the constraints imposed by this level of security. This includes, but is not limited to, security clearances for all users of the system and proper storage of all data storage media.

Commercial Off The Shelf (COTS) Software Vendors and Products

The fundamental task of this project is to review the market-leading COTS software available to manage continuity of operations planning and contingencies to determine which best meets the OSD functional requirements. The selection of vendors and products has been a two step process, initial screening and detailed investigation. The initial screening included a wide variety of vendors and products well known to the disaster recovery community. The professional journals for this community include Disaster Recovery Journal and Contingency Planning and Management. These journals, the vendor corporate internet sites, and the DFAS software evaluation provided the basis for the initial screening.

A product of the initial screening was to cut down the list of potential vendors to a manageable few, whose probability of meeting OSD functional requirements was high. A primary decision variable in this screening was the focus of the vendor. Many vendors provide sophisticated tools to evaluate business risk, back-up automated information systems, or track insurance information. These business issues are considered "Business Analysis" issues in the disaster recovery community, but are not one of OSD's functional requirements. This focus eliminated many potential vendors and products.

The detailed investigation, including establishment of a relationship with the vendor was limited to the four products cited below. The Strohl Systems product is in use at DFAS, so it was a logical choice for review. An earlier version of REXSYS was also evaluated for DFAS, but it did not perform as well as Strohl. The other two vendors were not reviewed by DFAS; however, their extensive customer lists and strong market acceptance qualified them as candidates for the initial screening. Each software tool listed below provides a capability to plan for, and manage continuity of operations contingencies. Contact was made with the sales and training departments, and software was acquired for evaluation against OSD's functional requirements.

- Strohl Systems' LRDPS, v8.0.4
- SunGard's CBR, v2.0
- Recovery Management's REXSYS, v4.2
- COMDISCO's ComPAS, v3.2.0

Summary Of Evaluation Comparison

The flexibility of the software tool to meet dynamic requirements has emerged as the most important, user-oriented functional requirement for the tool. The clear leader in this area is the Strohl Systems product. Their product supports generating ad hoc, user-defined reports, changing field names, and adding fields in a simple and direct manner. No other product comes close to their flexibility. It is important to note that Strohl's lead in this area is a result of their work with DFAS, where there was a similar requirement.

DFAS selected the Strohl software to manage their continuity of operations plan, and then paid Strohl and EDS to heavily modify the product to meet their specific needs. Strohl has leveraged the work done for DFAS into their product, providing all users the capability to easily modify the database field names and reports. Other vendors are working on this flexibility, but none can currently match Strohl's capabilities.

Some vendors, such as COMDISCO, must migrate from a proprietary database to a more open system to support flexibility. Others, such as REXSYS have a limited database capability, and do not consider the flexibility issue as great a priority as Strohl.

Another functional requirement, information security, is not as high a user priority as the flexibility of the database. However, this is a practical requirement for a network that functions in a SECRET-High environment, such as the POLYNET. Again, Strohl is the market leader. While all vendors meet basic security requirements, Strohl provides the ability to control the capabilities based on the user's identification. This additional capability again sets them apart from the other vendors.

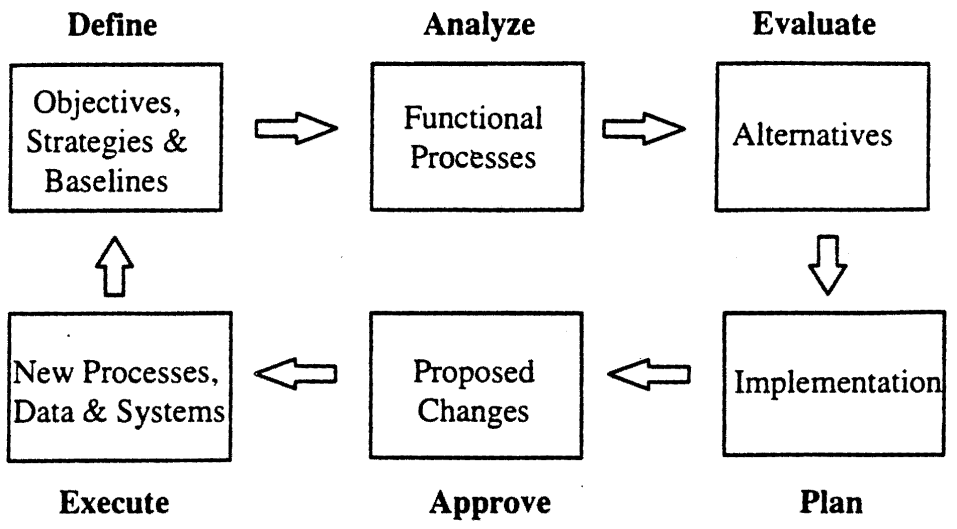
The ability of a user to access the capabilities of the database is based on rights and privileges defined for the user by the system administrator. This capability provides the OUSD(P)/PS/EP administrators the ability to establish or support the business rules inherent in their processes. For example, if a business rule is that the continuity of operations manager for one organization can view only that organization's plans, this can be supported from within the Strohl environment. In other vendor packages, the system administrator cannot limit a user's access to data stored within the system.

Functional Requirements Matrix

The functional requirements matrix is contained at Appendix A. This is a section of tables which compares how the four leading software vendors have implemented OSD's functional requirements. As appropriate, the methodologies used in this evaluation are described.

Application Issues

The traditional functional process improvement cycle, as defined by DoD Instruction 8020.1, Functional Process Improvement is depicted below.



Given the existing methods and procedures in continuity of operations planning community, the implementation of a software tool that automates a great deal of the information gathering and maintenance tasks is appropriate. The steps already taken towards this goal include:

- The definition phase has been completed.
- Functional requirements have been analyzed, but work processes have not been described.
- The proposed methodology to improve continuity of operations planning is to provide a planning and decision support tool. Alternatives to the proposed methodology have been considered and rejected.
- The remaining steps, developing an implementation plan, approving proposed changes to business processes, and implementing those changes have yet to be completed. Some examples of issues or business rules that should be addressed to define the application, and how it is used to meet OSD goals and objectives are:
  - How will OSD combine subordinate organizations continuity of operations plans? Will they exist as independent plans, or

will they be combined to support execution control by the CRC?

- How often is the continuity of operations plan published in document format? How much of the plan is published, versus retained in electronic form?
- What specific documents are retained in the "electronic library?" Theoretically, the library is a repository of continuity of operations knowledge, and should contain issues such as lessons learned from past exercises, various plans, some DoD Directives and Instructions. What other documents should be accessible through the electronic library? Should it be a link to databases or file servers for the OSD organizations which deploy to alternative sites to perform continuity of operations functions?
- What reports must be generated by the software tool to meet OSD's oversight requirements?

The incomplete steps are important to a successful implementation. They should be completed, or at least addressed, prior to implementation. However, there is no reason to delay the insertion of a technology that meets the defined functional requirements. A tool that is flexible, and is based on an open systems architecture has a high probability of achieving the benefits described earlier. An application development process that takes this fact into account, and provides for flexibility in the development process is appropriate. In this environment, an application development process that provides additional capabilities in a staged manner is appropriate.

In applications development, capabilities can be defined as stand-alone modules which are valuable to the end-users. These capabilities can then be prioritized by the functional leaders of the project, and sequentially developed and put into use for the users. In this manner, enhanced capabilities are quickly put to work by the users. This supports a dynamic "discovery" of the correct application of the tool by a joint team of developers and users. In addition, as applications for the tool are defined, these lessons are captured, and business processes can be modified. If the ultimate objective of the application changes as a result of the lessons learned during the application development process, the flexible nature of the tool and the development process accommodates these changes.

The range of issues surrounding how this continuity of operations software tool is applied in OSD can be bounded in terms of time, manpower, and resources. The next section, implementation issues, addresses this area.

Overall, a general implementation scheme would follow some variation on the steps listed below. The available courses of action vary in amount of resources allocated to each phase of the implementation plan. Emphasis varies depending on the amount of time and resources available, and the focus of management.

- **Determine application development strategy and scope of applications.** In this step, application issues and business rules are integrated into the implementation plan. How users will use the tool is specifically described. Any issues left unresolved from the functional requirements definition or application development phases must be resolved. In addition, issues such as the following are decided:

  - Will all user communities receive the tool at one time, or will it be deployed one organization at a time? Since OSD is a diverse organization, the "marketing" function is completed here, to gain support and acceptance of the tool throughout the community.
  - How will the dial-in capability be implemented? Will it be part of initial deployment, or will it be a capability to be added later?
  - How will initial data entry be accomplished? There are many data sources, such as personnel lists and security rosters, which are available throughout OSD and can limit the amount of work required to populate the database. How will these sources be accessed: is there any coordination required with the data set owner; can the data be imported directly from the source, or is there a requirement to migrate the data from one source to another?
  - How will the system administrator function be accomplished?

- **Model activities and data.** The objective of the modeling phase is to build an understanding of the business processes, how people work within the processes, and how data requirements are met. Analysts interview users, or groups of users, and graphically depict the business processes and data requirements and flows. The output of this phase is a detailed description of the business processes which technicians use to customize the program and data requirements.

- **Acquire software and work technical implementation issues.** Technical issues such as implementing the server database on the POLYNET, implementing dial-in and remote connectivity

options, and distributing information to users are resolved in this phase. Since technical requirements are reflections of functional requirements, the challenge in this phase is to implement, not decide on the validity of the requirement. Once the functional decision has been made, it is up to the technicians to implement.

- **Customize software**. Again, this is a technical issue and few decisions are required. The software will be customized to meet the functional requirements. The amount of customization, and how the customization is technically described are outputs of decisions made in the implementation phase. Changes must be made to the software to meet OSD's functional requirements. The list below is for example, not all inclusive.

  - Design ad hoc reports.
  - Add or delete fields in databases.
  - Change the names of fields in databases.
  - Write an OSD-specific users manual that details the software changes, and how they are used to meet the functional requirements.
  - Develop a customized training program for OSD users.

- **Select and train a systems administrator**. While the server database will reside within the POLYNET environment, actual supervision of the database will reside with the office with functional responsibility for the continuity of operations plans. This individual will administrate user availability to the system, maintain the database and all the data, and provide day-to-day sustainment of the software. In addition, end-user training is often an extra duty for the systems administrator. This individual must be highly trained in the software, understand the remote access, LAN and WAN environments, and be knowledgeable of the continuity of operations business process. Over the long term, this position may or may not require full time manning. This depends on the overall success of the program.

- **Brief selected end-users on the software tool**. The process of getting end-users to use the software is essentially a marketing task. The focus can be on the fact that users are directed to use the tool by management, or on how the tool will help users accomplish their work in more effective and efficient means.

- **Test the tool with selected end-users**. Testing the tool prior to general release is a requirement of quality software development.

The objective of this testing is to ensure the customization satisfies the general user community. Results of the testing period are incorporated in the ongoing customization. Software quality engineering uses a "test as you develop" approach, rather than a separate time period for testing at the conclusion of the development process.

- **Train users and begin selected implementation of the tool.** Training strategies can vary along the same variables as implementation; time and user involvement. This can be accomplished by a dedicated training period at an off-site location to deskside training by an accomplished user.

- **Capture lessons learned** throughout the process to facilitate development of additional functional capabilities.

Course of Action #1, Rapid Fielding

A quick implementation phase can be accomplished with little or no modeling and customization. The focus of the implementation can be on training end-users so management can get the tool into use. This approach assumes that the application of the tool, the way it will be used, is best determined through an on-the-job-training approach, and that users are the best judges of the viability of the software. Users judge the output of the system, and provide feedback to technicians who change the system. Users are not required to understand how the system works, just how to work the system, and understand the system outputs.

Techniques which enhance the probability of success for this type of approach are strong help desks to answer user questions at the beginning of the implementation phase, and frequent user group meetings to discuss or exchange strengths and weaknesses of the system. A drawback to this approach is its heavy reliance on the technicians who customize the software. They must work closely with users to understand how to customize the software so users are satisfied with the outputs.

Course of Action #2, Model-Based Development

An opposite approach, which reflects a management bias towards a controlled, incremental change is to focus the up front effort on modeling continuity of operations activities and data, and customizing the software prior to large scale, user involvement. This approach follows the model-based development theory, which believes that quality implementation of software depends on how accurately or completely the developers understand the environment.

A technique which enhances the probability of success of this approach is that changes to the software are made at the design level, rather

than the output level. In this manner, users or functional experts involved in the implementation process can exert greater control over the software, since their influence is focused on the design, rather than the technical implementation of the software. Functional experts influence the use of the tool at the model level, rather than at the output level. This reduces the reliance on the technicians to build system outputs rich in information content. A drawback of this approach is that it requires more analysis time up front, before a tool is generally available to users.

Additional Courses of Action

Additional courses of action can be constructed, placing emphasis and allotting time to different phases of the implementation. Successful implementations have been achieved with either approach. In summary, the basic differences between the two implementation courses of action are:

- User involvement. Can management afford a high or low degree of user involvement early in the development process? The fast approach requires a great deal of interaction between the users and the development team. This implies commitment, as well as the sacrifice of time. In the model-based approach, initial user involvement is limited to a few process experts, who help build the model. Additional users are added as part-time members of the development team when it is time to test the customized software. Overall, there is a lower commitment of users time in the model-based approach.

- Speed of implementation. Do the benefits of immediate fielding of uncustomized, software outweigh the time required to model requirements and customize the utility? If immediate fielding is important, development can be iterative, customizing the tool to respond to recognized needs. The major disadvantage to this approach is that it makes version control very complicated. It is very difficult to control customization in this approach. Users throughout the organization will often have utilities that differ in minor, or major ways, depending on how uniform the customization process has been applied.

- The products of the implementation phase.

  - In the rapid implementation approach, speed of deployment to users is more important than documenting the development. The "product" of this approach is placing the tool in the users hands. The speed of this approach increases reliance on the technicians, since they are the only ones who really know

how the system works.

- A product of the model-based approach is an appropriate level of system documentation. This documentation reduces the reliance on the technicians, since a description of how the application functions has been prepared.

Recommendations

The Strohl Systems product, LRDPS, is the clear leader in the evaluation of COTS software for continuity of operations planning. The recent changes this company made to their product as a result of lessons learned in the DFAS fielding meet the OSD functional requirements. Enhancements programmed for release in the next year, such as Open Database Connectivity (ODBC) to enterprise-scale databases like Oracle, and direct Internet access indicate that Strohl is moving in the same future direction as OSD.

The functional requirements evaluation matrix (Appendix B) shows that Strohl is the clear choice. Strohl scored 67.8% on the evaluation, while its closest competitor, REXSYS, scored 43%. Using a weighted evaluation scale with possible scores from 1 to 10, Strohl scored a 10 twenty-eight times. REXSYS scored a 10 only eighteen times. Perhaps most telling, of the forty-six items in the functional requirements matrix in Appendix A, the Strohl product met all requirements, with only three footnotes indicating a "less than perfect fit." All three other systems were footnoted regularly, and at times were found to be less than satisfactory.

Strohl was the only product that met all information security requirements. The other three systems were not able to establish security levels for each menu item. Strohl was able to meet other critical functional requirements, such as the ability to modify field names, length, and field type in the database without vendor support. The other three products either planned to add these capabilities in the future, or had no plans.

The next section details the cost of acquiring the Strohl system, its hardware and sustainment costs, and the range of application and implementation costs.

The model-based development approach is recommended, since it implements the planning tool and focuses on the planning and management processes. Since existing methods are in an evolutionary state, the model-based approach adds value by reviewing processes before automating them. This supports attaining the oversight goal for continuity of operations software, and provides the best approach for attaining the expected benefits of automating the planning process. Benefits such as "improved

communication" and "reduced cost to sustain the program" can be achieved by studying and then improving the business processes, rather than simply automating them.

Cost Analysis

- Hardware — no cost
- Software — $23,990
- Configuration — 21 man months
- Testing and training — included in configuration

Hardware costs. The initial implementation of the software utility will reside leveraged on current automation assets. No additional hardware is required. In place computers on OSD staffers desktops will support the client application. The server database will reside on the POLYNET database servers. The details will be worked out during implementation planning. There are no anticipated hardware shortfalls or conflicts.

Software costs. Purchase of the Strohl Systems LAN version will cost $23,990. This provides the server database and unlimited client licenses.

Configuration costs. The cost to model the activities and data that make up the continuity of operations business process, the customization of the actual software and the scope of the initial operating capability can vary.

- Modeling costs. These costs can vary from nothing in rapid fielding, to a maximum of four man months in the model-based approach.

- Customization costs. Rapid fielding implies that the software is continually refined to meet user requirements. This requires one to two programmers throughout the life of the project. A six month implementation project would then require twelve man months. In the model-based approach, customization is estimated to require two and one half man months. (Note: Off setting this savings is the time spent modeling the activities and data.)

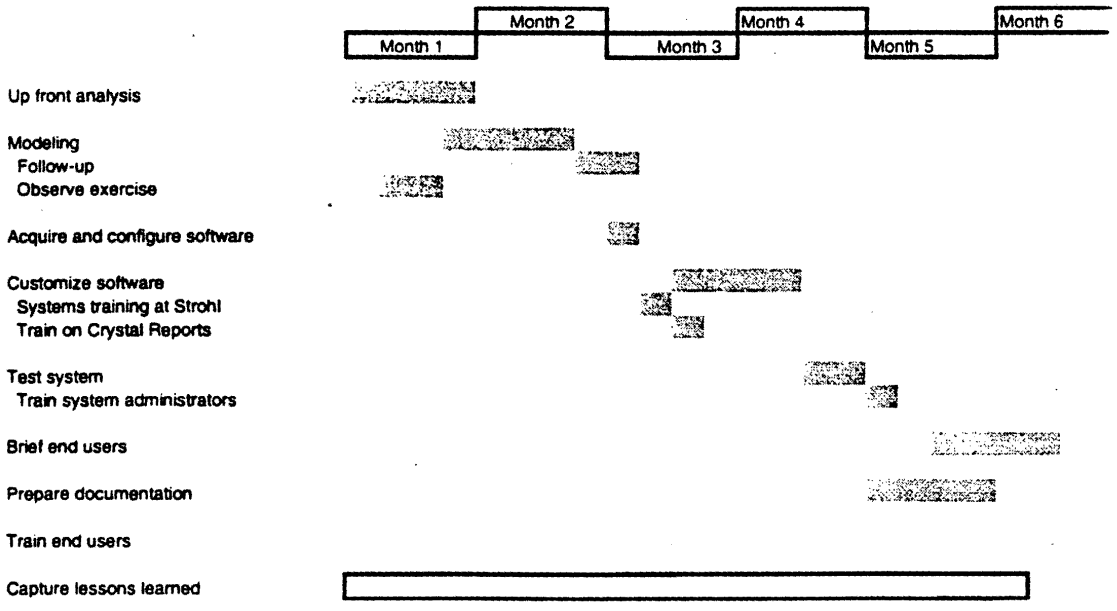
- Configuration management. This cost represents the work accomplished to get the management utility loaded with data and running in the hands of the users. This task includes importing data from existing systems, and data migrating from legacy systems. A single man month is required to accomplish this task in either course of action.

Testing the system. The rapid fielding option does not include a specific period for testing the system. Testing is accomplished as changes are made to the system. The model-based approach allots a one week period for two people to test the system. This adds a half a man month. In addition, professional standards for software development require that developers test as they build, so system testing would not be limited to a formal period under either course of action.

Training users. Both development options must include time for user training. This should include a week for actual training, as well as time to prepare and time to write documentation. This task requires two people full time for a month, resulting in a two man month commitment. The model-based approach requires only one specific period of user training, since changes to the system are released in a controlled manner. In rapid fielding, since the system is changed on a regular basis, the programmers will be required to conduct ad hoc user training on a recurring basis. This requirement would be part of their full time duties.

Documentation is included in the model based approach. This approach provides OSD with a specialized users manual and systems documentation. Writing these materials requires about a man month of effort. The systems engineering documentation that is a result of the modeling effort is included in that cost. Rapid fielding does not provide systems engineering documentation, and does not write a users manual since the software is constantly changing.

A sample project schedule is included.



Appendix A: Functional Requirements Matrix

Information Security	Strohl	ComPAS	SunGard	REXSYS
1. Contains multiple levels of security.	Y	no groups defined by user	Y[1]	Y[2]
2. Contains user ID and password capability.	Y	Y	Y	Y
3. Encrypts passwords.	Y	Y	No	Y
4. Provides a minimum length of six characters in the password field.	Y	No	No	Y
5. Provides the capability to establish security levels for each menu item.	Y	No	No	No
6. Provides password security and protection controlled by the Systems Manager, and allows users to change their own passwords.	Y	No	Y[3]	No

Works with existing office productivity software	Strohl	ComPAS	SunGard	REXSYS
7. Provides context sensitive help screens.	Y	No	Y[4]	Y[5]
8. Is flexible and easy to use.	Y	No	No	No[6]
9. PC based and menu driven.	Y	Y	Y	Y
10. Utilizes Query By Example (QBE)	Y	No	Y[7]	No[8]
11. Provides a comprehensive Operations Manual.	Y	Poor Ops, no SA	Poor	Poor
12. Uses word processing software for customization of text files to meet OSD requirements.	Y	Y[9]	Y[10]	Y
13. Allows reports to be recorded in ASCII format for input into word processing or other software packages.	Y	Y	Y	Y
14. Contains a comprehensive user report writer to allow for customized reports.	Y	Y Skribe	Y	Y Word
15. Allows the user to select from a variety of reports and report sequences.	Y	Y	Y	Y

[1] Defined by plan access and read/write, read only permissions.
[2] Defined by plan, department and team access.
[3] Does not prompt users to change own password.
[4] Poor.
[5] Poor.
[6] New, more flexible version is in development.
[7] Via Edit/Find.
[8] Use SQL syntax.
[9] If text files are attached to a task as a reference.
[10] Poor.

Works with existing office productivity software	Strohl	ComPAS	SunGard	REXSYS
16. Allows reports to be printed or viewed on the screen.	Y	View only from Skribe	Y	Y
17. Provides for the following functions when reports are viewed on the screen: -Scrolling line-by-line -Scrolling screen-by-screen -Panning left and right	Y	Y	Y	Y
18. Includes a project management system.	Exports to	Exports to[11]	Limited	Exports to
19. Store, view, and edit key documents in their native format (i.e., Word, Power Point, Excel, etc.).	Y	Y	Y	Y

Windows compatible	Strohl	ComPAS	SunGard	REXSYS
20. Operates using standard OSD office equipment.	Y	Y	Y	Y
21. Is fully LAN compatible including: -Supports multiple concurrent users -Provides record locking -Includes user specific printer assignments	Y	Y	Y	Y
22. Includes backup and restore procedures.	Y	No	No	Y[12]

Compatible with existing e-mail and wide-area data communications	Strohl	ComPAS	SunGard	REXSYS
23. Share and transmit information to OSD COOP planners throughout the OSD community (import/export).	Y	Y	Y	Y
24. Contains data gathering forms that tie to the detailed exhibits within the Plan.	Y	Y[13]	Y[14]	Y[15]
25. Communicate and transfer data to senior leadership at OSD relocation sites as well as other key government agencies.	Y	Y	Y	Y
26. Link relocation roster data (name and phone numbers) to call notification systems used to notify relocatees of COOP plan execution.	Y	No Other systems are not compatible with RAMA	Y	Y

[11] To use with MS Project, additional info must be entered before exporting.
[12] Uses PKZIP.
[13] Hardcopy only, not electronically.
[14] Hardcopy only, not electronically.
[15] Must purchase REX Collect to automate data collection process.

Flexible database capabilities	Strohl	ComPAS	SunGard	REXSYS
27. Modify field names without vendor support	Y	Limited	Y	Limited
28. Modify field length without vendor support	Y	No	No	No
29. Add and/or delete fields without vendor support.	Y	No	No	No
30. Ability to mark fields as "required".	Y	No	No[16]	No
31. Provides database management capabilities for information best presented in a list format (i.e., equipment inventories, personnel lists, vendor lists, etc.).	Y	No	Y	In development
32. Uses "drop down" screen for selection of key fields to provide data input efficiency and data integrity.	Y	Limited	Limited	Limited
33. Provides multi-key access to database information and reports.	Y	No	Y	Y
34. Provides "memo" fields for certain database records allowing over 200 lines of text to be added per field.	No[17]	Y	Y	Y
35. Allows for a multi-tiered organization.	Y	Y[18]	Y[19]	Y[20]
36. Allows the user to find specific database records or browse the contents of all records in table format.	Y	No	Y	Y
37. Allows the user to change the sort sequence of records within the database files.	Y	No	Y[21]	No[22]

[16] Required fields are preset by vendor.
[17] Limited to 200 characters. Can insert object (doc) to desired record.
[18] Limited.
[19] Limited.
[20] Limited.
[21] Ascending/Descending option only.
[22] Only in custom made DIS buttons.

Flexible database capabilities	Strohl	ComPAS	SunGard	REXSYS
38. Contains a relational database management system that support the generation of many user defined reports. Examples of these report include: -OSD Component file -Critical functions file -Personnel file -Security data file -Transportation file -Manifest (JEEP) file -Relocation staff file -Alternate relocation site -Alternate site equipment/supply requirements file -Emergency Procedures file -Training file -Crisis action procedures file -SOP file -Successor file -Coordination file -Special medical file -Critical documents file -Communication systems file	Y	No[23]	No[24]	No

Supports project management software	Strohl	ComPAS	SunGard	REXSYS
39. Provides a time and events schedule (i.e., Project Management System) that describes the various activities necessary to complete the planning process, allowing input of responsible party, start date, targeted completion date and applicable section of the Plan.	Y Export hook to any project management software	Y Export to MS Project	Y Export to MS Project	Y

Supports electronic library capabilities	Strohl	ComPAS	SunGard	REXSYS
40. Maintains an electronic library of key documents	Y	Y Docs are attached to individual plans	Y Docs are attached to individual plans	Y

[23] Database does not have the depth required to support these requirements.
[24] Ibid

Internet/Intranet	Strohl	ComPAS	SunGard	REXSYS
41. Ability to link to an Intranet/HTML format	In development	Preparing prototype for Corp mgt.	No	In development

Management and testing	Strohl	ComPAS	SunGard	REXSYS
42. Provides a flexible approach to developing an effective OSD plan.	Y	No Proprietary DB limits flexibility	No[25]	Y
43. Can be expanded to develop an organization-wide disaster recovery plan.	Y	No	No[26]	Limited
44. Contains exercise schedules.	Y[27]	No	No[28]	Y[29]
45. Includes testing methods and procedures for: -Structured Walk-Through Testing -Checklist Testing -Simulation Testing -Integrated Testing -Parallel Testing -Tactical Testing	Y[30]	No	No[31]	No[32]
46. Contains techniques for evaluation results.	Y[33]	No	No	Y[34]

- Completely meet the requirement in all respects (10 points).
- Satisfies all but the most minor aspects of the requirement (8 to 9 points).
- Generally satisfies the requirement but with some important aspects omitted (5 to 7 points).
- Fails to meet most major aspects of the requirement (1 to 4 points).
- Does not meet the requirement at all; that is, the process or data structure is completely missing.

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[25] Can export to Access to get required flexibility, but you lose the capabilities of the program when you do this.
[26] Database may limit flexibility.
[27] Provides guidelines.
[28] Discusses the importance of this in the Help files, but does not provide schedules/tests.
[29] Covered in the Online Methodology.
[30] Provides guidelines.
[31] Discusses the importance of this in the Help files, but does not provide schedules/tests.
[32] Ibid.
[33] Provides guidelines.
[34] Ibid.

Appendix B: Rating Scales

Strohl Systems - LDRPS, v8.0.4

Item	Description	Weight	x	Evaluation	=	Score
1	Contains multiple levels of security.	10		10		100
2	Contains user ID and password capability.	10		10		100
3	Encrypts passwords.	10		10		100
4	Provides a minimum length of six characters in the password field.	9		9		81
5	Provides the capability to establish security levels for each menu item.	10		10		100
6	Provides password security and protection controlled by the Systems Manager, and allows users to change their own passwords.	4		4		16
7	Provides context sensitive help screens.	1		1		1
8	Is flexible and easy to use.	1		1		1
9	PC based and menu driven.	1		1		1
10	Utilizes Query By Example (QBE)	9		9		81
11	Provides a comprehensive Operations Manual.	10		10		100
12	Uses word processing software for customization of text files to meet OSD requirements.	10		8		80
13	Allows reports to be recorded in ASCII format for input into word processing or other software packages.	10		8		80
14	Contains a comprehensive user report writer to allow for customized reports.	10		10		100
15	Allows the user to select from a variety of reports and report sequences.	10		10		100
16	Allows reports to by printed or viewed on the screen.	4		10		40
17	Provides for the following functions when reports are viewed on the screen: -Scrolling line-by-line -Scrolling screen-by-screen	1		1		1
18	Includes a project management system.	2		0		0
19	Store, view and edit key documents in their native format (i.e., Word, Power Point, Excel, etc.)	10		10		100
20	Operates using standard OSD office equipment.	10		10		100
21	Is fully LAN compatible -Supports multiple concurrent users -Provides record locking - Includes user specific printer assignments	9		9		81

Item	Description	Weight	x	Evaluation	=	Score
22	Includes backup and restore procedures.	4		4		16
23	Share and transmit information to OSD COOP planners throughout the OSD community (import/export).	10		10		100
24	Contains data gathering forms that tie to the detailed exhibits within the Plan.	6		10		60
25	Communicate and transfer data to senior leadership at OSD relocation sites as well as other key government agencies.	10		10		100
26	Link relocation roster data (name and phone numbers) to call notification systems used to notify relocatees of COOP plan execution.	8		10		80
27	Modify field names without vendor support	10		10		100
28	Modify field length without vendor support	10		10		100
29	Add and/or delete fields without vendor support.	10		10		100
30	Ability to mark fields as "required".	10		10		100
31	Provides database management capabilities for information best presented in a list format (i.e., equipment inventories, personnel lists, vendor lists, etc.).	10		10		100
32	Uses "drop down" screen for selection of key fields to provide data input efficiency and data integrity.	10		10		100
33	Provides multi-key access to database information and reports.	8		10		80
34	Provides "memo" fields for certain database records allowing over 200 lines of text to be added per field.	4		0		0
35	Allows for a multi-tiered organization.	10		10		100
36	Allows the user to find specific database records or browse the contents of all records in table format.	8		10		80
37	Allows the user to change the sort sequence of records within the database files.	10		10		100
38	Contains a relational database management system that support the generation of many user defined reports.	10		10		100
39	Provides a time and events schedule (i.e., Project Management System).	2		2		4
40	Maintains an electronic library of key documents.	10		10		100
41	Ability to link to an Intranet/HTML format	1		0		0

Item	Description	Weight	x	Evaluation	=	Score
42	Provides a flexible approach to developing an effective OSD plan.	10		10		100
43	Can be expanded to develop an organization-wide disaster recovery plan.	9		10		90
44	Contains exercise schedules.	3		5		15
45	Includes testing methods and procedures	3		5		15
46	Contains techniques for evaluation results.	3		5		15
	Total					3,118

COMDISCO - ComPAS, v3.2.0

Item	Description	Weight	x	Evaluation	=	Score
1	Contains multiple levels of security.	10		7		70
2	Contains user ID and password capability.	10		10		100
3	Encrypts passwords.	10		10		100
4	Provides a minimum length of six characters in the password field.	9		0		0
5	Provides the capability to establish security levels for each menu item.	10		0		0
6	Provides password security and protection controlled by the Systems Manager, and allows users to change their own passwords.	4		0		0
7	Provides context sensitive help screens.	1		0		0
8	Is flexible and easy to use.	1		0		0
9	PC based and menu driven.	1		1		1
10	Utilizes Query By Example (QBE)	9		0		0
11	Provides a comprehensive Operations Manual.	10		5		50
12	Uses word processing software for customization of text files to meet OSD requirements.	10		8		80
13	Allows reports to be recorded in ASCII format for input into word processing or other software packages.	10		8		80
14	Contains a comprehensive user report writer to allow for customized reports.	10		10		100
15	Allows the user to select from a variety of reports and report sequences.	10		10		100
16	Allows reports to by printed or viewed on the screen.	4		8		32
17	Provides for the following functions when reports are viewed on the screen: -Scrolling line-by-line -Scrolling screen-by-screen - Panning left and right	1		1		1
18	Includes a project management system.	2		0		0
19	Store, view and edit key documents in their native format (i.e., Word, Power Point, Excel, etc.)	10		7		70

Item	Description	Weight	x	Evaluation	=	Score
20	Operates using standard OSD office equipment.	10		10		100
21	Is fully LAN compatible -Supports multiple concurrent users -Provides record locking - Includes user specific printer assignments	9		9		81
22	Includes backup and restore procedures.	4		0		0
23	Share and transmit information to OSD COOP planners throughout the OSD community (import/export).	10		10		100
24	Contains data gathering forms that tie to the detailed exhibits within the Plan.	6		6		36
25	Communicate and transfer data to senior leadership at OSD relocation sites as well as other key government agencies.	10		10		100
26	Link relocation roster data (name and phone numbers) to call notification systems used to notify relocatees of COOP plan execution.	8		0		0
27	Modify field names without vendor support	10		3		30
28	Modify field length without vendor support	10		0		0
29	Add and/or delete fields without vendor support.	10		0		0
30	Ability to mark fields as "required".	10		0		0
31	Provides database management capabilities for information best presented in a list format (i.e., equipment inventories, personnel lists, vendor lists, etc.).	10		0		0
32	Uses "drop down" screen for selection of key fields to provide data input efficiency and data integrity.	10		3		30
33	Provides multi-key access to database information and reports.	8		0		0
34	Provides "memo" fields for certain database records allowing over 200 lines of text to be added per field.	4		10		40
35	Allows for a multi-tiered organization.	10		2		20
36	Allows the user to find specific database records or browse the contents of all records in table format.	8		0		0
37	Allows the user to change the sort sequence of records within the database files.	10		0		0
38	Contains a relational database management system that support the generation of many user defined reports.	10		0		0

Item	Description	Weight	x	Evaluation	=	Score
39	Provides a time and events schedule (i.e., Project Management System)	2		2		4
40	Maintains an electronic library of key documents	10		7		70
41	Ability to link to an Intranet/HTML format	1		0		0
42	Provides a flexible approach to developing an effective OSD plan.	10		2		20
43	Can be expanded to develop an organization-wide disaster recovery plan.	9		0		0
44	Contains exercise schedules.	3		0		0
45	Includes testing methods and procedures	3		0		0
46	Contains techniques for evaluation results.	3		0		0
	Total					1,415

SunGard - CBR, v2.0

Item	Description	Weight	x	Evaluation	=	Score
1	Contains multiple levels of security.	10		7		70
2	Contains user ID and password capability.	10		10		100
3	Encrypts passwords.	10		0		0
4	Provides a minimum length of six characters in the password field.	9		0		0
5	Provides the capability to establish security levels for each menu item.	10		0		0
6	Provides password security and protection controlled by the Systems Manager, and allows users to change their own passwords.	4		2		8
7	Provides context sensitive help screens.	1		1		1
8	Is flexible and easy to use.	1		0		0
9	PC based and menu driven.	1		10		10
10	Utilizes Query By Example (QBE)	9		5		45
11	Provides a comprehensive Operations Manual.	10		5		50
12	Uses word processing software for customization of text files to meet OSD requirements.	10		5		50
13	Allows reports to be recorded in ASCII format for input into word processing or other software packages.	10		8		80
14	Contains a comprehensive user report writer to allow for customized reports.	10		10		100
15	Allows the user to select from a variety of reports and report sequences.	10		10		100
16	Allows reports to by printed or viewed on the screen.	4		10		40
17	Provides for the following functions when reports are viewed on the screen: -Scrolling line-by-line -Scrolling screen-by-screen - Panning left and right	1		10		10
18	Includes a project management system.	2		0		0
19	Store, view and edit key documents in their native format (i.e., Word, Power Point, Excel, etc.)	10		7		70
20	Operates using standard OSD office equipment.	10		10		100
21	Is fully LAN compatible -Supports multiple concurrent users -Provides record locking - Includes user specific printer assignments	9		10		90
22	Includes backup and restore procedures.	4		0		0

Item	Description	Weight	x	Evaluation	=	Score
23	Share and transmit information to OSD COOP planners throughout the OSD community (import/export).	10		10		100
24	Contains data gathering forms that tie to the detailed exhibits within the Plan.	6		6		36
25	Communicate and transfer data to senior leadership at OSD relocation sites as well as other key government agencies.	10		10		100
26	Link relocation roster data (name and phone numbers) to call notification systems used to notify relocatees of COOP plan execution.	8		8		64
27	Modify field names without vendor support	10		10		100
28	Modify field length without vendor support	10		0		0
29	Add and/or delete fields without vendor support.	10		0		0
30	Ability to mark fields as "required".	10		0		0
31	Provides database management capabilities for information best presented in a list format (i.e., equipment inventories, personnel lists, vendor lists, etc.).	10		10		100
32	Uses "drop down" screen for selection of key fields to provide data input efficiency and data integrity.	10		3		30
33	Provides multi-key access to database information and reports.	8		8		64
34	Provides "memo" fields for certain database records allowing over 200 lines of text to be added per field.	4		10		40
35	Allows for a multi-tiered organization.	10		4		40
36	Allows the user to find specific database records or browse the contents of all records in table format.	8		10		80
37	Allows the user to change the sort sequence of records within the database files.	10		6		60
38	Contains a relational database management system that support the generation of many user defined reports.	10		0		0
39	Provides a time and events schedule (i.e., Project Management System)	2		2		4
40	Maintains an electronic library of key documents	10		7		70
41	Ability to link to an Intranet/HTML format	1		0		0

Item	Description	Weight	x	Evaluation	=	Score
42	Provides a flexible approach to developing an effective OSD plan.	10		0		0
43	Can be expanded to develop an organization-wide disaster recovery plan.	9		0		0
44	Contains exercise schedules.	3		0		0
45	Includes testing methods and procedures	3		0		0
46	Contains techniques for evaluation results.	3		0		0
	Total					1,812

Recovery Management, Inc. - REXSYS, v4.2

Item	Description	Weight	Evaluation	Score
1	Contains multiple levels of security.	10	7	70
2	Contains user ID and password capability.	10	10	100
3	Encrypts passwords.	10	10	100
4	Provides a minimum length of six characters in the password field.	9	10	100
5	Provides the capability to establish security levels for each menu item.	10	0	0
6	Provides password security and protection controlled by the Systems Manager, and allows users to change their own passwords.	4	0	0
7	Provides context sensitive help screens.	1	1	1
8	Is flexible and easy to use.	1	0	0
9	PC based and menu driven.	1	10	10
10	Utilizes Query By Example (QBE)	9	5	45
11	Provides a comprehensive Operations Manual.	10	4	40
12	Uses word processing software for customization of text files to meet OSD requirements.	10	10	100
13	Allows reports to be recorded in ASCII format for input into word processing or other software packages.	10	10	100
14	Contains a comprehensive user report writer to allow for customized reports.	10	10	100
15	Allows the user to select from a variety of reports and report sequences.	10	10	100
16	Allows reports to by printed or viewed on the screen.	4	10	40
17	Provides for the following functions when reports are viewed on the screen: -Scrolling line-by-line -Scrolling screen-by-screen - Panning left and right	1	10	10
18	Includes a project management system.	2	10	20
19	Store, view and edit key documents in their native format (i.e., Word, Power Point, Excel, etc.)	10	7	70
20	Operates using standard OSD office equipment.	10	10	100
21	Is fully LAN compatible -Supports multiple concurrent users -Provides record locking - Includes user specific printer assignments	9	10	90
22	Includes backup and restore procedures.	4	5	20

Item	Description	Weight	Evaluation	Score
23	Share and transmit information to OSD COOP planners throughout the OSD community (import/export).	10	10	100
24	Contains data gathering forms that tie to the detailed exhibits within the Plan.	6	0	0
25	Communicate and transfer data to senior leadership at OSD relocation sites as well as other key government agencies.	10	10	100
26	Link relocation roster data (name and phone numbers) to call notification systems used to notify relocatees of COOP plan execution.	8	9	72
27	Modify field names without vendor support	10	6	60
28	Modify field length without vendor support	10	0	0
29	Add and/or delete fields without vendor support.	10	0	0
30	Ability to mark fields as "required".	10	0	0
31	Provides database management capabilities for information best presented in a list format (i.e., equipment inventories, personnel lists, vendor lists, etc.).	10	0	0
32	Uses "drop down" screen for selection of key fields to provide data input efficiency and data integrity.	10	3	30
33	Provides multi-key access to database information and reports.	8	8	64
34	Provides "memo" fields for certain database records allowing over 200 lines of text to be added per field.	4	10	40
35	Allows for a multi-tiered organization.	10	4	40
36	Allows the user to find specific database records or browse the contents of all records in table format.	8	10	80
37	Allows the user to change the sort sequence of records within the database files.	10	2	20
38	Contains a relational database management system that support the generation of many user defined reports.	10	0	0
39	Provides a time and events schedule (i.e., Project Management System)	2	10	20
40	Maintains an electronic library of key documents	10	7	70
41	Ability to link to an Intranet/HTML format	1	0	0
42	Provides a flexible approach to developing an effective OSD plan.	10	3	30

Item	Description	Weight	Evaluation	Score
43	Can be expanded to develop an organization-wide disaster recovery plan.	9	2	18
44	Contains exercise schedules.	3	7	21
45	Includes testing methods and procedures	3	0	0
46	Contains techniques for evaluation results.	3	2	6
	Total			1,977

Appendix C: Acronyms

CHAIRS	Cable Handling and Retrieval System
COOP	Continuity of Operations
COTS	Commercial off the shelf
CRC	COOP Response Cell
DFAS	Defense Finance and Accounting Service
DMS	Defense Messaging Service
DoD	Department of Defense
DST	Decision Support Tool
EO	Executive Orders
FDDI	Fiber Optic Backbone
LAN	Local Area Network
NES	Network Encryption Services
OCC	Operations Control Center
OSD	Office of the Secretary of Defense
OUSD(P)	Office of the Undersecretary of Defense (Policy)
POLYNET	Policy LAN Network
SMTP	Simple Mail Transfer Protocol
SOP	Standing Operating Procedure
TCP/IP	Transmission Control Protocol/Internet Protocol
UPS	Uninterruptable Power Supply