State University System
Toward an Electronic Journal Article Delivery Service

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State University System

Toward an Electronic Journal Article Delivery Service

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TOWARD AN ELECTRONIC JOURNAL ARTICLE DELIVERY SERVICE

EXECUTIVE SUMMARY

Background

The SUS libraries cannot keep up with the massive increases in the amount and cost of scholarly journal publications. The journal literature increases in two dimensions: in the number of titles published and the price per title. Price increases are due to larger issues (more pages), inflation, the weakened dollar abroad and, sometimes, price gouging. The sum effect has been annual serials price increases between 10% and 30% for the past several years. The recent budget cuts have forced the SUS libraries to reduce the number of serials subscriptions, thus further aggravating the problem of keeping up with the literature. Even when library material budgets improve, it will not be sufficient to allow the libraries to acquire and house locally all the journals that are essential to their academic and research programs.

This document presents a plan to use computer and communications technology as the first step in a ten- to twenty-year process of providing students and faculty with rapid electronic access to journal articles from sources outside the local library. This plan will not only benefit students and faculty in traditional on-campus programs, it will also help the new university as well as off-campus and distance learning programs. The plan envisions making available additional computer databases of journal article citations as well as the electronic delivery of journal articles themselves.

The first step in obtaining journal articles is to perform searches in sources of citations to journal literature. The LUIS system, supported by FCLA and running at NERDC, has several citation databases: Education Resources Information Clearinghouse (ERIC), Expanded Academic Index (EAI), Business Index (BI), Applied Science & Technology Index (ASTI) and Biological and Agricultural Index (BAI). There are dozens of additional citation databases on CD-ROM PCs in the SUS libraries.

Once a relevant journal article has been discovered through searching journal citation databases, if the library does not have the article, electronic delivery can be accomplished by several means:

A. Fax delivery requested through the normal ILL procedures. Photocopies from the printed journal issue, which is often inside a bound volume, are fed into a fax machine with an automatic feed.

B. PC-based scanning systems that utilize a general purpose PC, a flat-bed scanner and a laser printer. As with fax, the source of the article is an issue or bound volume in print form.

C. Commercial rapid delivery services that deliver articles for a fee. The fees include royalties as well as the delivery firm's charges. Fees range from $7.00 to $20.00 depending on the company and the royalties.

D. In-house databases of journal articles in either CD-ROM form for use on a library LAN or on tape for loading into a library's online catalog system.

E. Electronic journals which do not originate in print form. Most are ASCII text files available via the Internet, but some, like The Online Journal of Current Clinical Trials, require a PC, a high resolution monitor and Windows software to view images and navigate the links through the publication.

The five methods of electronic article delivery described above are not mutually exclusive. To the contrary, libraries will rely on all five to provide a complete delivery service, with the fax machine declining over time from being the primary tool for the electronic delivery of articles to that of a lesser used tool of last-resort.
Recommendations -- in priority order

1. Enhance the LUIS search software to make LUIS searching as powerful as the CD-ROM products and the commercial remote systems by adding the following features:

   - search logic improvements - for more precision and relevancy in searching, for example:
   - adjacency - converts word searching into phrase searching, e.g., "higher education".
   - search limits - allows setting search limits such as language, media, date and location.
   - hook-to-holdings - tells the user if the library has the journal issue which contains the cited article.
   - download - allows relevant citations to be copied to a user-provided floppy disk.
   - print - same function as download only the citations are sent to a printer.

2. Provide PCs to replace the current base of LUIS terminals most of which are now seven years old. These terminals and their supporting controllers are no longer manufactured and soon the vendors will no longer provide maintenance. It makes sense to purchase replacements that (1) meet the libraries' needs for the download function, (2) provide a client/server architecture (in which the PC client has the flexibility to search a variety of database servers); and (3) are able to receive, decompress a splay images. Funds for the PCs would be allocated to the SUS libraries. The libraries would own the PCs and be responsible for their inventory.

3. Provide funding to acquire complete electronic articles for approximately 400 popular academic titles covering the humanities, social sciences, and sciences at the undergraduate level. One year later, add articles for 400 business journals. Also purchase PCs and printers capable of handling full page bit-mapped images. The articles would be stored at NERDC and delivered over the FIRN network to designated areas of the libraries for display and printing. FCLA would be responsible for the so store, retrieve and deliver the articles. The PCs would be located in the SUS libraries to receive the articles.

4. Add two or three more citation databases which have SUS-wide applicability to the LUIS system and increase the FCLA budget to cover them. Some of the ones most frequently mentioned are Psychological Abstracts, Current Contents, Compendex Plus and INSP EC.

5. Provide an Electronic Reference Collection which would include an encyclopedia, a dictionary and possibly a gazetteer, almanac and statistical abstract. These items would support the entry-level student as well as the advanced scholar in all nine institutions and their remote learning centers.

6. Improve the gateway from LUIS to the commercial firms which offer rapid article delivery. These services would provide access to more journal citations than can be loaded at NERDC and would provide fast delivery of articles that are not available in the SUS.

Budget

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TOWARD AN ELECTRONIC JOURNAL ARTICLE DELIVERY SERVICE

I. BACKGROUND

The SUS libraries cannot keep up with the massive increases in the amount of scholarly journal publications. The journal literature increases in two dimensions: in the number of titles published and the price per title. Prices have been driven up by larger issues (more pages per issue), inflation, the weakening of the dollar abroad and, in a few cases, price gouging. The sum effect has been annual serials price increases between 10% and 30% for the past several years. The recent state budget cuts have forced the SUS libraries to reduce the number of serials subscriptions, thus further aggravating the problem of keeping up with the literature. Even when funding for library material improves, however, it will not be sufficient to allow the libraries to acquire and house locally all the journals that are essential to their academic and research programs.

In cutting serials subscriptions, the SUS libraries have eliminated the titles that were of least value to the academic programs on their campuses. These relatively esoteric titles are not generally available in electronic form. When articles from these canceled titles are requested by SUS students and faculty, the SUS libraries will have to request copies from other libraries which will supply them from a print version of the journal or from commercial document delivery services. This pattern of high inflation of serials prices, followed by cancellation of the least relevant titles, followed by increased borrowing has been repeated through several cycles in recent years at almost all U.S. academic libraries. This pattern has become so commonplace that it has spurred libraries to become strong supporters of the recently passed High Performance Computing Act proposed by Senator Gore which contains a provision to build a high speed National Research and Education Network (NREN) to move information more quickly throughout the U.S.

The goal of many in the library community is to use the NREN for the rapid delivery of scholarly information such as journal articles and government research reports. The hope is that publishers will eventually distribute articles over the NREN in addition to (or in lieu of) distribution of printed issues. Further, the hope of many librarians is that electronic distribution will be less costly than printed issues and thus libraries will be able to acquire--quickly on demand--the materials their users need.

Such hopes will not be realized overnight, but the process has begun--at least in the U.S. The challenge for America's academic libraries is to work within the current system of scholarly communication to help to bring about change and bring down the cost of scholarly communication. There must be changes to the means of production and distribution of scholarly information. And locally, universities and libraries must develop the technology to participate in a nation-wide system of electronic scholarly communication.

This document presents a plan to use computer and communications technology as a beginning step in what will be a ten to twenty year process toward providing students and faculty with rapid electronic access to journal articles from sources beyond the local library collection. This plan will not only benefit students and faculty in traditional on-campus programs in the long run, but it will also help off-campus and distance learning programs in the more immediate future. The plan envisions making available additional computer databases of journal article citations as well as the electronic delivery of journal articles themselves. In order to accomplish this new service, the SUS libraries must migrate to a client/server computer architecture in which the library workstations can access many different information sources whether they are in the library, on campus, in the SUS or across the country.

Changing to a more rapid electronic form of communication will be a slow process. Our ability to use electronic articles as alternate resources for document delivery may be severely restricted if the U.S. or international copyright laws and data license contracts are construed to discourage electronic delivery. Permissions/contracts and royalty payments may resolve some of those restrictions or conflicts, but at the same time may deprive the researcher of "fair use" privileges. Even if the U.S. makes rapid progress over the next 10 to 20 years, the rest of the world will not be as quick to change. Print on paper will still be the major form of distribution of scholarly communication for several decades. Libraries will...
have to have substantial print collections for the foreseeable future. Until the U.S. system of scholarly journal publication has made significant progress in electronic distribution, U.S. academic libraries will need to collect print journals to the maximum extent that their budgets will allow. Until we have reached the time when we have "virtual libraries," we need to maintain "virtuoso libraries," i.e., libraries with strong collections in all media especially print. To return to the point of this proposal, however, we cannot develop the electronic collections without resources and time to build the technological base. This proposal is a good start on building that base. The service and the resources required to support it are described below.
TOWARD AN ELECTRONIC JOURNAL ARTICLE DELIVERY SERVICE

II. JOURNAL CITATION SEARCHING IN THE SUS

The first step in obtaining journal articles is to perform one or more searches in one or more sources of citations to the journal literature. The libraries have literally hundreds of print indexes and dozens of citation databases on CD-ROM disks attached to PCs located in public areas of the libraries. SUS students and faculty also have online access to several databases of journal article citations on LUIS. These databases cover journal articles in many of the titles held by the SUS libraries to support a wide-spectrum of undergraduate and graduate education. The LUIS system, which is supported by FCLA and runs at NERDC, has the following:

- Education Resources Information Clearinghouse (ERIC) - indexes the journal and report literature in Education.
- Expanded Academic Index (EAI) - covers 1,500 journals in the humanities, social sciences and basic sciences.
- Business Index (BI) - covers 800 journals at the undergraduate level in business.
- Applied Science & Technology Index (ASTI) - covers 375 journals.
- Biological and Agricultural Index (BAI) - covers 240 journals.

Except for ERIC, which is created by federal funds and costs a nominal $1,800 per year, the above citation databases are created as proprietary products by commercial firms. These firms then license their databases to libraries. Currently the SUS libraries are splitting the cost of the data licenses and paying for them with Book OCO. For all the databases, the costs are divided based on FTE student enrollment. The total SUS costs are as follows:

- EAI---------$105,000 per year
- BI---------$ 55,000 per year
- ASTI------$ 32,000 per year
- BAI-------$ 36,000 per year

Some libraries also have ERIC and ASTI on CD-ROM because the CD-ROM product has search and print capabilities beyond those currently available in the LUIS system. Many of the CD-ROM products in the libraries support programs unique to an institution or are only available in the CD-ROM medium at this time.

The mix of mainframe, CD-ROM (either standalone or networked), online, and paper indexes currently in the libraries will sort itself out based on need--libraries will continue to have literally dozens of additional citation databases to provide access to the literature. The academic program mix at each institution will guarantee a continuing local need that will not be practical to meet at the SUS level. The plan's emphasis is to license general citation databases and mount them on the mainframe to vastly improve access for thousands of lower and upper division undergraduates to the core liberal arts and sciences journals for the SUS baccalaureate program. The basis for selection should be that most of the SUS libraries can provide access to most of the literature cited in the mainframe databases.
TOWARD AN ELECTRONIC JOURNAL ARTICLE DELIVERY SERVICE

III. CURRENT STATUS OF JOURNAL ARTICLE DELIVERY

Once journal articles relevant to the projects of students or faculty have been discovered through searching journal citation databases, electronic delivery of those journal articles can be accomplished by several means.

A. Fax delivery of articles requested through the normal ILL procedures.

The standard practice is for the article to be photocopied from the printed journal issue, which is often inside a bound volume, and then fed into a fax machine with an automatic feed. This is the most commonly available technology and is routinely used across the U.S. for "rush" requests. Non-rush requests are sent by courier (within the SUS) and UPS or U.S. mail (to other libraries). Articles sent by traditional fax machines are sent over long distance direct dial telephone lines and thus incur standard Suncom long distance phone charges. If the receiving fax uses thermal paper, the article is usually photocopied onto plain paper--an added cost. The latest version of fax technology combines the photocopy machine and the fax machine into one piece of equipment. The photocopy image is transferred directly into the memory buffer of the fax portion of the machine and is ready for transmission. This eliminates a paper step and saves both paper and time, but there is no visual verification that the article was properly and clearly copied during the copy process. The combined copy/fax machine actually contains an embedded PC which has been preprogrammed with the features available on the machine. Several SUS libraries have this more sophisticated device. Transmission is still over normal long distance dial phone lines.

B. PC-based scanning systems.

This technique utilizes a general purpose 386 PC, a flat-bed scanner and a laser printer. As with fax, the source of the article is an issue or bound volume in print form. Articles are scanned and stored on the PC hard disk until an operator sends them out using software specially written for this purpose. Incoming articles can also be stored on the hard disk or can be transmitted directly to the laser printer. This equipment is somewhat similar to the copy/fax machine, but there are several important differences. First, the scanning resolution is superior to fax. Second, gray scale is possible depending on the scanner used. Third, the laser printer quality is superior to most fax machines. The best known product for this type of journal article delivery is the Ariel software developed by the Research Libraries Group. The Ariel software is designed to send the articles over the Internet, thus avoiding the cost of the long distance telnet circuits. A variation of the PC-based fax system is one which can accept input from a standard fax machine as well as a scanner. This system can also deliver the article to a fax machine as well as to a laser printer. The advantage of this system is first that it can deliver articles directly to fax machines in faculty offices. Secondly, it can accept articles from fax machines in branch libraries. This obviates the need to remove the journal from the branch library. Ohio State University has developed this system for use by the CIC schools (Big 10 universities and the University of Chicago). Ariel can route articles to fax machines for printing but cannot accept fax input. Requests for articles may be made through standard ILL procedures, and are thus relatively slow, or they may be made using methods described below.

C. Commercial rapid delivery services.

Several companies promise rapid delivery of articles for a fee. The fees include royalties as well as the delivery firm's charges. Fees range from $7.00 on up depending on the company and the royalties, but most articles will fall in the $7 to $20 range. The major firms offering this service are Faxon, OCLC, UMI, Engineering Index, RLG, CARL, and Dialog. With all of these services, the user must first be connected to a database that shows which articles can be obtained. CARL, for example, maintains a database of journal citations for approximately 11,000 journals. The citation database, called UnCover because it goes under the journal cover to the table of

contents page, is stored on a computer in Denver. CARL offers access to UnCover to libraries for an annual fee. After finding a desired article, a user can enter a command to request the article. The CARL system will prompt the user for relevant information such as the user's name, destination where the article is to be delivered and billing instructions (account number, VISA number). The article will be shipped to a local fax machine within 24 hours.

D. In-house databases of journal articles.

Some firms are beginning to offer electronic versions of journal articles to libraries for local storage and retrieval. The articles are offered in CD-ROM form for use on a library LAN, or are available on tape for loading into a library's online catalog system. The two leading companies are University Microfilms Inc. (UMI) and Information Access Corporation (IAC). IAC offers articles covering business and general academic areas. UMI has three products: business, science and general academic. In order to know what journal articles are available, the library must have the citation database from the same company for the same subject area. If an article is available electronically, its citation will have a special field which indicates to the user that the article is available. If the user requests the article, it is printed on a laser printer nearby in the library. Mainframe versions could print the article in the library or route the article to a faculty office. UMI charges for each article printed. IAC charges a lump sum annual fee in lieu of use fees. UMI and IAC also use different technologies to store their journal articles. UMI scans the pages of printed journals and preserves the entire page image including advertisements and continuation pages where two or three articles may share the same page. Each page is preserved as a bit map image of the original. On its LAN version, UMI can display the article pages on PC monitors. However, such images cannot display on older style terminals, such as the current LUIS terminals, so users would have to request a printout based solely on the citation information. By contrast, IAC converts the text of articles to ASCII characters and leaves only graphs, pictures and other non-text material in bit-mapped image format. Ads and other material that might have been shared a page with the original article are not kept as part of the article. IAC's electronic version of an article thus does not preserve the format and appearance of the original. However, the user can display the text part of an article on older terminals and can use information in the text to decide whether to print the complete article. With either vendor, PCs with high resolution monitors would be required to display the image data.

E. Electronic journals.

A new publication medium is evolving in which articles do not originate in print form, but in electronic or machine-readable form. At the simplest level, these are ASCII text files available via the Internet. A new journal created by OCLC and AAAS, The Online Journal of Current Clinical Trials (OJCCT), is an example of the direction towards which such publications are moving. To take full advantage of the features of OJCCT, users need PCs with high resolution monitors running Windows software that enables viewing images and navigating the links through the publication. Solutions A and B require copyright compliance, but do allow considerable "fair use" privileges. Solutions C and D achieve copyright compliance through contracts and royalty payments with no provision for "fair use" privileges. The jury is still out solution E in this regard. The five methods of article delivery described above are not mutually exclusive. Quite the contrary, libraries will rely on all five to provide a complete delivery service, with the ubiquitous (group 3) fax machine declining over time from its current position of one-and-only tool for the electronic delivery of articles to that of a lesser used tool of last-resort.
TOWARD AN ELECTRONIC JOURNAL ARTICLE DELIVERY SERVICE

IV. RECOMMENDATIONS

To enhance the current level of access to citations and improve the capabilities for delivering articles electronically, the following recommendations are offered in priority order. Costs for each of these recommendations are presented in Section VI.

A. Priority 1:

Enhance the LUIS search software by developing the following functions:

- search logic improvements - provides more precision in searching and helps make the search results more relevant. For example, some key features that need to be added are
- adjacency - allows a user to request that two (or more) words be side by side. Converts word searching into phrase searching. E.g., "higher education".
- search limits - allows a searcher to limit retrieval to citations that meet additional requirements. Examples of such limit features are language (e.g., Spanish only), type of material (e.g., technical report), date of publication (e.g., later than 1990), and location (e.g., Sarasota campus, Law library, reference collection).
- hook-to-holdings - once a journal citation is selected as relevant, this feature would allow the searcher to enter a simple command to learn if the library has the journal issue containing the article.
- download - allows the searcher to copy relevant citations to a user-provided floppy disk to incorporate later into a paper as references or bibliography. This feature requires PCs as LUIS terminals in addition to software development.
- print - same function as download only the citations are sent to a printer instead of to a floppy disk.

Rationale: Adding these features will make LUIS searching as powerful as the CD-ROM products and the commercial remote systems. The SUS libraries have identified these features as a top priority for LUIS development.

B. Priority 2:

Provide PCs as public terminals.

Rationale: Most of the current base of LUIS terminals are now seven years old. These terminals and the controllers needed to support them are no longer manufactured and within the next two or three years, the vendors will no longer provide maintenance. We have to replace this nearly obsolete equipment, and it only makes sense to purchase replacements that meet the libraries' needs. It positions the libraries for the future and reduces dependence on decade-old technology. PCs are necessary to support the download function, to migrate to a client/server architecture, and to receive, decompress and display images as discussed above in section III.D. Funds for the PCs would be allocated to the campuses because the logistics of managing an inventory of PCs which support multiple information access functions warrants delegating the purchasing and inventory-control activities to the libraries.

C. Priority 3:

Acquire complete electronic articles for approximately 400 popular academic titles covering the humanities, social sciences, and sciences at the undergraduate level and next acquire electronic articles for 400 business journals. Also purchase PCs and printers capable of handling bit-mapped images. The articles would be stored at NERDC and
delivered over the FIRN T1 network to designated areas of the libraries for display and printing. FCLA would be responsible for the software to store, retrieve and deliver the articles. The PCs would be located in the SUS libraries to receive the articles.

Rationale: This would be a significant pilot project to test the usefulness of this form of delivery for instruction and term paper research. Over time, as the costs of computer storage, computer processing and network bandwidth drop, this repository of articles could evolve into a central journals library. This pilot project will not compensate for the journals that the SUS libraries have had to cancel. The libraries have been canceling the least used, most esoteric titles in their collections. The reasons are four reasons that this proposed pilot does not seek to provide the lost esoteric titles: (1) The esoteric titles are, by and large, not available in electronic form. We have to start with what is available, and what is available are the heavily used popular titles that are the core titles in every library collection. (2) The popular titles will be useful to the off-campus academic programs. (3) The popular titles will provide an electronic back-up to their print counterparts. As they are heavily used, issues of popular titles occasionally get misplaced or stolen from the library. Having these articles in electronic form will ensure availability. (4) The titles that have been chosen are the ones that are most relevant to the new tenth university, namely, journals in a broad spectrum of liberal arts and business disciplines.

Since the libraries will be keeping their subscriptions to the printed versions of these popular journals, it will give most of the undergraduates a choice, i.e., the student may choose to go to the shelf or purchase printer-generated copy. Maintaining the printed versions will allow libraries to choose how current the electronic journal database should be, e.g., past five years, or more, or less. In addition, it will ensure the archive while the technology sorts itself out by cost comparisons between various formats: paper, microfilm and electronic. With increasing expertise and improvement of the software, hardware and state-wide telecommunications that store, retrieve and deliver electronic articles, it should be possible to expand the service to the more esoteric journals. Electronic journal article delivery is a major new service. It cannot be mastered all at once. This pilot is an important first step and is the best way to begin.

D. Priority 4:

Add two or three more citation databases to the LUIS system and increase the FCLA budget to cover them.

Rationale: The general agreement among the SUS libraries is that LUIS should provide the databases that have high applicability across the SUS and then each SUS library will supplement LUIS with specialty databases on CD-ROM that are uniquely attuned to the academic programs of a campus. There are a number of citation databases of wide applicability across the SUS that are not in LUIS. Some of the ones most frequently mentioned databases and their coverage are

- Psychological Abstracts - 1,300 journals in all disciplines of psychology.
- Current Contents - 6,500 journals in sciences, social sciences, arts and humanities.
- Compendex Plus - 2,200 journals in all aspects of engineering.
- INSPEC - 5,200 technical journals in physics, computer science and engineering.
- This recommendation seeks to expand the coverage of subject disciplines available on LUIS. The funds requested will not be sufficient to load all the databases of interest but will make a significant advance. Since the availability and prices of products are changing rapidly, the actual selection of databases will be done by SUS reference and collection development specialists when the funds are available. However, we can say now that the databases chosen will be those in highest demand which cover academic disciplines not covered thus far.

E. Priority 5:

Provide an Electronic Reference Collection. Although not strictly related to journal article delivery, LUIS could provide an "electronic reference collection" which would include an encyclopedia and dictionary and possibly a gazetteer, almanac and statistical abstract.

Rationale: These items would support the entry-level student as well as the advanced scholar in all nine institutions. The Florida Community College Center for Library Automation (CCLA) offers Grolier’s Academic American Encyclopedia.
in electronic form, and it is quite popular.

F. Priority 6:

Improve the gateway from LUIS to the commercial firms which offer rapid article delivery.

Rationale: These services, from companies such as CARL, Faxon, OCLC and RLG, would provide access to more journal citations than can be loaded at NERDC. These services provide fast delivery of articles that are not available in the SUS and that would be needed more rapidly than out-of-state ILL could provide. The above recommendations do not include a request for funds for PC-based scanning systems to replace the traditional fax machine. The cost of the new PC-based machines, at $6,000, is such that several of the SUS libraries have already decided that they can afford to purchase and install them with either existing funds or grant funds. Within the next six to twelve months, more than half the SUS libraries will have these systems installed and operational.
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V. OTHER POSSIBILITIES

A. Advanced Technology

The advent of image technology, which will be necessary for electronic journal article delivery, opens new possibilities for the SUS libraries. PC-based page scanners enable a number of applications. Digital cameras present another exciting alternative for rapid very high resolution image capture with gray shades and even color. To mention some applications, the SUS could use image capture PCs for preservation, creating an electronic reserve book room, or maintaining a copy of classics that are out of copyright but used so heavily that replacements are frequently needed. Image capture technology has made such rapid advances over the past few years that microfilming, which is the current leading image capture technology for preservation, will soon be obsolete. UF will soon receive PC hardware and software as a gift from IBM to test scanning as a method of preservation.

This plan does not seek funding for these potentially beneficial applications. Grant sources will be sought to begin projects in these areas. It is important to note, however, that developing expertise with image technology for electronic journal delivery will lay a solid foundation for future image applications.

Another rapidly advancing technology is multimedia. Computer systems have advanced beyond text, numbers and even static images to sound, animation and now full-motion video. The multimedia encyclopedia is an innovative alternative to print, but will only replace a small percentage of the reference materials collected by libraries in the near future. This plan does not propose a systematic program in the area of multimedia. The priority now is to make improvements in journal article delivery. As multimedia advances, it will be used in the classroom and the library. The SUS libraries will assess the role of multimedia, but it is much more likely to be stable and affordable later in this decade or early in the next than it is now.

B. Social/Cultural Issues

Historically, libraries have attempted to acquire all of the materials (books, journals, maps, etc.) that they would need to meet the diverse needs of their clientele (research and teaching faculty; graduate and undergraduate students). As the volume of published information has increased beyond the ability of libraries to acquire it, access to information has risen as a service priority. This phenomenon raises a number of issues related to the role libraries play in their parent organizations. These issues are beyond the scope of this document, but the services proposed here are groundbreaking and therefore are not rewarded in the current systems of evaluation.

1. Accreditation

The strength of a university's library is measured by a variety of organizations for accreditation and membership qualification. Two major criteria for assessing the quality of libraries continue to be the size and quality of the collection. Little emphasis is placed on improving access. As the time comes that libraries can compensate for the loss of serial subscriptions with access to a shared electronic database, the criteria will need to address access rather than ownership.

2. Tenure and Promotion

The T & P criteria heavily depend upon faculty publications. It is the irony of traditional library collection development practices that universities fund faculty to do research and publish articles in journals which the libraries then have to purchase in order for the research to be disseminated. As more and more journals are
acquired by commercial publishing conglomerates, the ownership of the intellectual effort is transferred away from the funding institution via the assignment of copyright of the articles to those publishers. They are then able to impose restrictions and fees on the use of those articles by the institutions' libraries. In the case of electronic versions of printed articles, these restrictions and fees are more severe than the y are for the original print form. To cite the most serious example, "fair use" as previously defined for printed articles is disappearing for electronic articles. Some institutions are beginning to address these pressures through such policy changes su ch limiting the number of publications to be cited for tenure, disallowing faculty from assigning away copyright, and discouraging faculty from serving on editorial boards of journals which have had inordinate price increases (reflecting publisher price gouging rather than true cost increases). U.S. academic libraries will need these kinds of changes for electronic scholarly articles to gain a solid foothold.
TOWARD AN ELECTRONIC JOURNAL ARTICLE DELIVERY SERVICE

VI. BUDGET

A. General Explanation

The spreadsheets in section C. below, identify the budget details for the new projects described in the preceding text. The individual project spreadsheets further delineate the costs by budget category. Summaries by project and budget category are provided at the end of the section. The following general remarks apply to all of the spreadsheets.

The budgets are in the form normally used in the SUS to request new programs, i.e., only new money is shown, and it is shown in the year it is first requested. After that, the money is assumed to be part of the base excluding OCO. Since OCO is not assumed to be part of the base, it is requested each year.

Salaries: Current FCLA staff are allocated to supporting the NOTIS Library Management System which is publicly known as LUIS. To support new programs that substantially expand services to the SUS, FCLA will need additional technical and librarian positions. FCLA has had no staff increase since 1988/89, even though system usage and database size have more than doubled in the interim. The details of the staffing needs are described under each project's budget narrative.

OPS: FCLA's current OPS budget will not cover the increased need for temporary, part-time assistance associated with expanded programs. Such funds would also be used for hiring both outside experts to train FCLA staff in new applications software and consulting services as warranted by the innovative nature of these new projects.

Expense: Expense funds are used for ongoing costs for such items as rent for additional office space for new staff, fees to outside suppliers of goods and services, and equipment maintenance. Details are described under each project.

EDP: This category covers all of the data processing services subcontracted to NERDC. It includes several major items, some of which are difficult to quantify given the lack of precedence for such activity either in the SUS or at other universities. The major items are

Disk storage: Citation files and their associated indexes and the ASCII text and bit-mapped image files for the electronic journals will require significant online storage.

Online searching: Querying the databases, displaying data and requesting data to be downloaded and printed will generate computer use charges.

Development: Each new function has to be programmed and tested. The computer costs to do the programming and testing are placed here.

Batch updates: Large data files require ongoing offline processing for adding new data, recreating/updating indexes, creating back-ups and generating reports and other offline products.

OCO: This category of non-recurring funds contains the budget for the purchase of computer equipment. Most of the OCO requested in this plan is for the development of library LANs which will provide a new technology for telecommunications, the connection of those LANs to a statewide network, and the workstations that will be attached to those LANs. These workstations will vary in capabilities, but minimally will be able to handle the downloading and printing of citations and will have client software that can connect to many database servers.

B. Explanation of Each Project Budget
1. Enhance the LUIS search software

This project will expand upon the service begun in 1991-92 with the implementation of some new search and display functions. Three new positions, two programmers and one librarian, are defined for this project. This is a critical need because the existing citation databases are being supported at the expense of the library management system (LMS) functions of cataloging, circulation, acquisitions, serials control, and the online catalog. The new positions will enable existing personnel to return to deferred LMS projects that will improve: user access to library materials, staff productivity, and the development of management data from the system. The programmers will be assigned to the development of software functions that enhance the searching and use of the LUIS databases by faculty, staff and students. The librarian position will be defined as a specialist in documentation development, particularly in an online format, to support all of the FCLA services.

The EDP costs for disk storage and online searching are directly correlated to the new search functions that will be supported. The new features will require some additional data fields, which will increase disk storage and add to the CPU time to perform searches. The development costs are for CPU resources for the three new positions. The OCO covers workstations, printer, and furnishings for the new position.

2. Provide PCs as public terminals

FCLA purchased approximately 1,300 limited function display devices (i.e., terminals) for access to LUIS by library users and staff. The bulk of these terminals were purchased in the first three years of FCLA operation, 1985-1987. Often referred to as "dumb" terminals, these devices cannot be used to capture data downloaded from the mainframe (e.g., citation data to be used in a bibliography) or to display anything beyond ASCII data (e.g., bit-mapped images from journal articles). The age of these devices, 6-8 years, warrants investment in equipment to replace them which will, at the same time, improve their functionality.

The costs to upgrade from the older to the newer technology are primarily staff, expense and OCO. All of the three new technical positions requested for this project are devoted to the installation of the new equipment. One will be responsible for liaison and coordination of the LAN installations between NERDC and the library and campus telecommunications and physical plant personnel. The other will develop the client software that will enable the PCs to interact with the LUIS server and others supporting new information resources. The client software in the library PCs will be fairly complex. The third position will establish a new supervisory position which will be needed for the increase in technical staff. The supervisor will also be responsible for the design of the PC client software.

Conversion of equipment from simple, single-function, terminals to complex, multi-function workstations will result in an increased need for library staff proficient in the maintenance and support of the hardware and software components of such workstations. The individual library plans and budgets will reflect this need.

The Expense monies would be used to install new wiring and data circuits and to buy LAN software for the workstations and printers. Changes to the telecommunications network will be required to support the new PCs. The old and new networks are shown in schematic diagrams in Appendix B. Once the new PCs are in place, Expense funds will be needed for maintenance of the hardware. The OCO funds will be used for equipment in the libraries, namely the PCs and printers (both PC-attached and centralized high-resolution laser printers) as well as necessary hardware to connect the library to the statewide network (e.g., routers and bridges). If possible, PECO funds will be sought for the wiring installation since this activity is an upgrade to the library building.

The new PCs will be able to request printed copies of electronic journals (when that capability is developed). One of the requirements of the PC hardware and software used to support journal article printing from the electronic article repository is the support of university debit cards or vendacards that allow users to charge the printing costs (equivalent to the copying charges now levied for photocopies) against their card balances. The libraries cannot afford to subsidize these printing costs (e.g., paper, ribbons, toner, etc.) and cost-recovery methods should minimize personnel resources.

The OCO budget for the PCs includes funds for intelligent LAN hubs in all the larger library buildings. An intelligent
hub is simply a device that can monitor the LAN, perform diagnostics and automatically isolate failed cables and PCs so the other PCs on the LAN can continue to operate normally. The intelligent hubs add $325,000 one-time cost to the library LANs over the cost of the installing "dumb" hubs. The intelligent hubs have been put into the budget because they will save hours of library staff time in troubleshooting the LAN when problems appear. The intelligent hubs will also keep the network more stable. Given the heavy use that students will make of the network, we think that intelligent hubs are worth the extra cost.

A new strategy for inventory control of equipment needs to be developed. Since 1985, FCLA OCO funds have been expended centrally by FCLA for SUS library equipment, with the equipment being retained on FCLA’s inventory at UF. This policy has resulted in incredible logistical problems in tracking the location and existence of FCLA-purchased equipment. Over 3,000 pieces of equipment are spread out over 50 library locations in 20 cities. This plan proposes that the OCO and Expense maintenance funds be dispersed to each library via journal transfers accompanied by clear language on the purposes of the funds and technical requirements for the equipment to be purchased. The libraries would buy the equipment and retain it on their inventories. This change in practice is particularly important given the fact that one workstation can contain three separate pieces to be tracked (monitor, CPU, and attached printer) that are interchangeable and subject to being moved as needed. Over time, FCLA proposes transferring much of the existing older equipment to the individual libraries as well.

Having the equipment that is located in the libraries belong to the libraries is also consistent with the client/server architecture. The PCs are the clients that request information from database servers. The dumb terminals are locked into LUIS and can only search LUIS databases or request LUIS for a transfer to another computer. The new PC clients will have the flexibility to connect directly to and search other database servers in addition to LUIS. These PCs will also be able to search CD-ROM databases in their own library, another SUS library, other U.S. libraries, government database machines, and many others. Since these clients will not be limited to FCLA databases, they do not belong on the FCLA inventory. The clients will serve a wide variety of library needs, thus they should belong to the library. On the other hand, the equipment (routers, bridges and CSU/DSUs) that control the dedicated portion of the network and provide the link to FIRN should remain as FCLA property. This will provide continuity of the old and new networks during the transition to the new client/service architecture.

### 3. Journal Article Delivery -- from in-house databases

This is a major new project that will involve considerable new software development. The recommendation is being made that it not begin until the year after the previous two projects described above have begun. The previous two projects are in effect prerequisites to journal article delivery in that they build a foundation of staff and PCs on which to base article delivery. For this reason, costs do not begin until Year 2.

This project requires five new positions over two years. The innovative nature of this project necessitates two new programmer lines in year 2 for the development that will be required to support the centralized storage of electronic data with distributed access and dissemination of the magnitude being anticipated. In addition, two PC/LAN specialists will be needed to help the library staff in installing, configuring, and using the new generation of hardware. In year 3, one librarian will be needed to provide user support and training to the libraries on the new journal article delivery service.

An increase in OPS is budgeted for year 2 to cover temporary/part-time staff to assist with the equipment acquisition and to cover onsite staff training and consulting in new software as needed. The delivery of electronic journal articles will be in the form of printed copies for an indefinite period of time. This will require the libraries to staff print distribution centers. Staffing requests for these centers will be made in individual library budgets.

The Expense funds in Years 2 and 3 are for the annual vendor license fees for the full-text data files. For IAC, these fees cover the cost of acquiring the data, the unlimited online access to the data for all SUS faculty, staff and students, and unlimited printing of articles. Prices are not available from other potential sources at this time. However, we have had several discussions with UMI and prospects are good for either building an interface between LUIS and the UMI journal article server, which is a CD-ROM jukebox, or persuading UMI to provide articles on tape so we can load them into local optical storage. The budget is based on written price quotes from IAC. The journals included in the IAC price quote are attached as Appendices C.1 and C.2. When this project is funded, we will seek bids to determine the best
vendor to supply articles.

The EDP budget for this project is devoted to the storage, loading, indexing and accessing of this data. The development budget is higher than that for the journal citation databases because this project requires all new software and cannot build on existing software.

This project will require OCO for additional PCs and printers beyond those described as needed for public terminals to support the download function. Since articles will contain bit-mapped images in whole or in part, the computer system will transmit these images to the library. At least some PCs and printers must be available at key service points in the library to receive, display and print high resolution images as well as the text. If image technology PC components drop quickly in price, all of the new PCs may be able to display images although the resolution will be less sharp on the less expensive general purpose PCs. At a minimum, the PCs needed for download and those needed for receiving journal articles can be combined into an integrated network at less cost than doing the projects separately. The University of California has summarized the workstation and printer needs and possible solutions in the papers attached as Appendixes D.1. and D.2.

4 Add additional journal citation databases to LUIS

This project will expand upon the services begin in the fall of 1991 with the load of the ERIC database followed by EAI, BI, ASTI and BAI. The Expense costs are for the annual vendor license fees for the data. The EDP costs are for the disk storage, loading, indexing and searching of two to three new databases. No OCO funds are needed.

5. Provide an electronic reference collection

This project requires no new positions and no OCO funds. Expense costs are for the annual data license fees. EDP costs are for the data storage, loading, indexing and searching of the databases.

6. Journal Article Delivery -- from remote sources

There are several commercial organizations that provide access to journal article citations with the added service of providing copies of the article for a fee. The fee usually includes a service charge and the publisher's copyright fee. This proposal assumes that the users will pay the article fees either through individual or academic department accounts. We are not seeking funds to cover these costs. To the extent that students and faculty have to pay for articles that were once held in the library, this represents a cost transfer from an institution-funded to a user-funded article delivery service.

No new FCLA positions or OPS and OCO funds are needed for this project. The Expense funds are to pay for the vendor port charges to connect SUS users to the vendors' computers. These charges provide for unlimited searching of the citation databases. The EDP funds are needed to cover incremental NERDC costs for using the Internet for this purpose and for FCLA development costs to modify the LUIS software to support the link.

7. Cost Summaries

These three spreadsheets give the total increase to FCLA's base budget for each of the Years 1 through 5 of the plan, first by project and then by budget category for all six projects, and finally by budget category for the top three priority projects.

Budget Spreadsheets

Priority 1: Enhance LUIS search software
Priority 2: Provide PCs as public terminals
Priority 3: Journal article delivery -- from in-house database
Priority 4: Journal Citation Databases
Priority 5: Electronic Reference Collection
Priority 6: Improve access to commercial firms offering article delivery
Cost Summary
## Priority 1: Enhance LUIS search software

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of positions</strong></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Salaries</strong></td>
<td>$119,040 (1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>OFS</strong></td>
<td>$10,000</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
</tbody>
</table>

### Expense - new positions

<table>
<thead>
<tr>
<th>Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>General office</td>
<td>$5,000 (2)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rent</td>
<td>$5,250 (3)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$10,250</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
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</table>

### EDP - development

<table>
<thead>
<tr>
<th>Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk storage</td>
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<td>0</td>
</tr>
<tr>
<td>Online searching</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Development</td>
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<td>0</td>
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<td><strong>Batch updates</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$100,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| OCO                  | $21,000 (5) | 0 | 0     | 0      | 0      |
| **TOTAL**            | $260,290 | 0 | 0     | 0      | 0      |

(1) New positions as follows. Benefits figured at 24% of salary.
- Librarian quantity 1 at salary of $30,000 = $37,200 with benefits
- Prog/analyst quantity 1 at salary of $27,000 = $33,480 with benefits
- Comp app coordinator quantity 1 at salary of $39,000 = $48,360 with benefits

(2) Supplies, training materials and travel for new positions.

(3) FCLA offices are in a commercial office building in Gainesville.

(4) Includes TSO, e-mail, testing and training for new positions.

(5) Office furniture and PC for each new position.
## Priority 2: Provide PC's as public terminals

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of positions</strong></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Salaries</strong></td>
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<td>0</td>
<td>0</td>
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</tr>
<tr>
<td><strong>Expense</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General office</td>
<td>5,000 (2)</td>
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<td>0</td>
</tr>
<tr>
<td>Rent</td>
<td>5,250 (3)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Building wiring</td>
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<td>0</td>
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<td>0</td>
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<tr>
<td>Data circuits</td>
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<td>15,000 (5)</td>
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<td>0</td>
<td>0</td>
</tr>
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<td>LAN software</td>
<td>0</td>
<td>300,000 (6)</td>
<td>25,000 (6)</td>
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<tr>
<td>Equipment maintenance</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POP via large router &amp; hub</td>
<td>0</td>
<td>88,920 (7)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>POP via small router &amp; hub</td>
<td>0</td>
<td>18,680 (8)</td>
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<td>0</td>
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</tr>
<tr>
<td>POP via bridge</td>
<td>0</td>
<td>4,200 (9)</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>POP via campus LAN</td>
<td>0</td>
<td>1,800 (10)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Token ring 3174 interface</td>
<td>0</td>
<td>2,100 (11)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IBM CSU/DSU</td>
<td>0</td>
<td>497 (12)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IBM token ring hub</td>
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<td>0</td>
<td>40,000 (13)</td>
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<td>0</td>
</tr>
<tr>
<td>Client PC's</td>
<td>0</td>
<td>0</td>
<td>45,000 (14)</td>
<td>45,000 (14)</td>
<td>45,000 (14)</td>
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<tr>
<td>Client printers</td>
<td>0</td>
<td>7,500 (15)</td>
<td>7,500 (15)</td>
<td>7,500 (15)</td>
<td>7,500 (15)</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>525,250</td>
<td>425,197</td>
<td>123,500</td>
<td>52,500</td>
<td>52,000</td>
</tr>
<tr>
<td><strong>EDP - development</strong></td>
<td>25,000 (16)</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>For new positions</td>
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<tr>
<td>Router at HERDC</td>
<td>0</td>
<td>594,100 (7)</td>
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<td>0</td>
</tr>
<tr>
<td>POP via large router &amp; hub</td>
<td>0</td>
<td>132,400 (8)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>POP via bridge</td>
<td>0</td>
<td>147,000 (9)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>POP via campus LAN</td>
<td>0</td>
<td>54,000 (10)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Token ring 3174 interface</td>
<td>0</td>
<td>50,750 (11)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IBM CSU/DSU</td>
<td>0</td>
<td>6,825 (12)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IBM token ring hub</td>
<td>0</td>
<td>240,000 (13)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Client PC's</td>
<td>0</td>
<td>75,000 (14)</td>
<td>75,000 (14)</td>
<td>75,000 (14)</td>
<td>75,000 (14)</td>
</tr>
<tr>
<td>Client printers</td>
<td>0</td>
<td>75,000 (15)</td>
<td>75,000 (15)</td>
<td>75,000 (15)</td>
<td>75,000 (15)</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>835,675</td>
<td>1,266,000</td>
<td>825,000</td>
<td>825,000</td>
<td>825,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$1,550,925</td>
<td>$1,691,197</td>
<td>$948,500</td>
<td>$877,500</td>
<td>$877,500</td>
</tr>
</tbody>
</table>

(1) New positions as follows. Includes benefits at 24% of salary.

- Development manager quantity 1 at salary of $56,000 = $69,440 with benefits
- Telecom specialist quantity 1 at salary of $30,000 = $37,200 with benefits
- Comp app coordinator quantity 1 at salary of $39,000 = $48,360 with benefits

(2) Supplies, training materials and travel for new positions.

(3) FCLA offices are in a commercial office building in Gainesville.

(4) Can be moved to a PECO budget. If it stays in Exp base, it could be used for LAN software.

(5) Installation plus ongoing costs to expand network speed.

(6) Local area network quantity 50 @ unit cost of $6,000 & $500 per year maint.

- Not needed if wiring stays in Exp base.

(7) IBM 6611 & 2 8250's quantity 13 @ unit cost of $45,700 & $6,840 per year maint.

(8) IBM 6611 & 8250 quantity 4 @ unit cost of $33,100 & $4,670 per year maint.

(9) PS/2 token ring bridge quantity 14 @ unit cost of $10,500 & $300 per year maint.

(10) Connect LAN to branch Lib quantity 18 @ unit cost of $3,000 & $100 per year maint.

(11) For FSU, USF, and FAU quantity 7 @ unit cost of $7,250 & $300 per year maint.

(12) For new data circuits quantity 7 @ unit cost of $975 & $71 per year maint.

(13) For new PC LAN's quantity 40 @ unit cost of $6,000 & $1,000 per year maint.

(14) With debit card readers quantity 300 @ unit cost of $2,500 & $150 per year maint.

(15) Printers quantity 150 @ unit cost of $500 & $50 per year maint.

(16) Includes TSO, e-mail, testing and training for new positions.

(17) Office furniture and PC for each new position.
### Priority 3

**Journal Article Delivery-from in-house databases**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of positions</strong></td>
<td>0</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Salaries</strong></td>
<td>$0</td>
<td>$146,320</td>
<td>$37,200</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>OPS</strong></td>
<td>0</td>
<td>8,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Expense

<table>
<thead>
<tr>
<th>Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>General office</td>
<td>0</td>
<td>6,000</td>
<td>1,500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rent</td>
<td>0</td>
<td>7,000</td>
<td>1,750</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Data Licenses</td>
<td>0</td>
<td>100,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Business</td>
<td>0</td>
<td>0</td>
<td>88,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IBM token ring MSAU</td>
<td>0</td>
<td>0</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Image PC’s</td>
<td>0</td>
<td>0</td>
<td>7,500</td>
<td>7,500</td>
<td>7,500</td>
</tr>
<tr>
<td>Image print servers</td>
<td>0</td>
<td>0</td>
<td>7,500</td>
<td>7,500</td>
<td>7,500</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$0</td>
<td>$113,000</td>
<td>$106,330</td>
<td>$15,080</td>
<td>$15,080</td>
</tr>
<tr>
<td><strong>EDP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disk storage</td>
<td>0</td>
<td>200,000</td>
<td>200,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Online searching</td>
<td>0</td>
<td>300,000</td>
<td>400,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Development</td>
<td>0</td>
<td>60,000</td>
<td>15,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Batch updates</td>
<td>0</td>
<td>40,000</td>
<td>40,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>0</td>
<td>600,000</td>
<td>655,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>OCO</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For new positions</td>
<td>0</td>
<td>28,000</td>
<td>7,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IBM token ring MSAU</td>
<td>0</td>
<td>2,120</td>
<td>2,120</td>
<td>2,120</td>
<td>2,120</td>
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<tr>
<td>Image PC’s</td>
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<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
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<tr>
<td>Image print servers</td>
<td>0</td>
<td>125,000</td>
<td>125,000</td>
<td>125,000</td>
<td>125,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$0</td>
<td>255,120</td>
<td>234,120</td>
<td>227,120</td>
<td>227,120</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$0</td>
<td>$1,122,440</td>
<td>$1,032,650</td>
<td>$242,200</td>
<td>$242,200</td>
</tr>
</tbody>
</table>

(1) New positions as follows. Includes benefits at 24% of salary.
   
   - comp app coordinator quantity 1 at salary of $39,000 = $48,360 with benefits
   - prog anal/yr qty 1 at salary of $27,000 = $33,480 with benefits
   
   PC LAN specialists quantity 1 at salary of $26,000 = $37,200 with benefits

(2) New positions as follows. Includes benefits at 24% of salary.
   
   - librarian quantity 1 at salary of $30,000 = $37,200 with benefits

(3) For new positions

(4) New databases from IAC. First one contains all articles from 400 core academic journals.
   
   Second one contains all articles from 450 business journals.

(5) Disk will probably be optical.

(6) Partial use in first year; full use in second year.

(7) Includes TSO, e-mail, testing and training for new positions.

(8) for new PC LAN’s quantity 48 unit cost of $530 & $20 per year maint

(9) With large monitors quantity 25@ unit cost of $4.00 & $300 per year maint

(10) PC’s & Laser printers quantity 25@ unit cost of $5,000 & $300 per year maint
## Priority 4
### Journal Citation Databases

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of positions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>OPS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Expense-data licenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PsychInfo</td>
<td>112,000(1)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Contents</td>
<td>60,000 (2)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compendex Plus or Inspec</td>
<td>56,000 (3)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>228,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>EDP (4)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disk storage</td>
<td>60,000 (5)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online searching</td>
<td>200,000 (6)</td>
<td>300,000 (6)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Batch updates</td>
<td>30,000</td>
<td>0</td>
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<tr>
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<td>300,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>OCO</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$518,000</td>
<td>$300,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

1. New database covering latest 4 years of psychology literature.
2. New database covering latest 2 years of all disciplines. Organized as a table of contents page.
3. New database covering latest 4 years of science and engineering literature.
4. Some of this may be on Unix machines rather than the mainframe.
5. Disk estimates in MB 10,000 at $6.00= $60,000 per year.
6. Partial use in start-up year; full use in second year.
## Priority 5
### Electronic Reference Collection

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of positions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$40</td>
</tr>
<tr>
<td>OPS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Expense-data licenses
- **Encyclopedia**
  - Year 2: 40,000 (1)
  - Year 3: 0
- **Dictionary**
  - Year 2: 40,000 (2)
  - Year 3: 0
- **Other**
  - Year 2: 60,000 (3)
  - Year 3: 50,000
  - Subtotal: 140,000

### EDP (4)
- **Disk storage**
  - Year 3: 0 (5)
  - Year 4: 0
- **Online searching**
  - Year 2: 200,000 (6)
  - Year 3: 0
  - Subtotal: 230,000
  - Year 4: 300,000

### OCO
- Year 3: 0
- Year 4: 0
- Year 5: 0

**TOTAL**
- Year 2: $0
- Year 3: $370,000
- Year 4: $300,000
- Year 5: $0

---

1. Grollier’s Academic American or equivalent.
2. OED or equivalent.
3. For most recent year.
4. Some of this may be on Unix machines rather than the mainframe.
5. Disk estimates in MB 8,000 at $6.00 = $48,000 per year.
6. Partial use in start-up year; full use in second year.
## Priority 6:
### Improve access to commercial firms offering article delivery

<table>
<thead>
<tr>
<th>No. of positions</th>
<th>Salaries</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>OPS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Expense**

<table>
<thead>
<tr>
<th>Description</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citation searches-CARL</td>
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<td>0</td>
<td>50,000 (1)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Citation searches-Faxon</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>Citation searches-RLG</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50,000</td>
<td>0</td>
</tr>
<tr>
<td>Article supply</td>
<td>0</td>
<td>0</td>
<td>0 (2)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>0</td>
<td>0</td>
<td>50,000</td>
<td>100,000</td>
<td>0</td>
</tr>
<tr>
<td>EDP</td>
<td>0</td>
<td>0</td>
<td>10,000 (3)</td>
<td>10,000</td>
<td>0</td>
</tr>
<tr>
<td>Gateway</td>
<td>0</td>
<td>0</td>
<td>10,000 (4)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Development</td>
<td>0</td>
<td>0</td>
<td>20,000</td>
<td>10,000</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>0</td>
<td>0</td>
<td>20,000</td>
<td>10,000</td>
<td>0</td>
</tr>
<tr>
<td>OCO</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>0</td>
<td>0</td>
<td>70,000</td>
<td>110,000</td>
<td>0</td>
</tr>
</tbody>
</table>

1. For searching remote computer to determine availability of article.
2. Requestor will pay the supply charges.
3. Minor NERDC costs to connect to the Internet.
4. Includes TSO, e-mail, testing.
## Cost Summary by project

<table>
<thead>
<tr>
<th>Project</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve LUIS</td>
<td>$260,290</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Provide PC's</td>
<td>1,550,925</td>
<td>1,691,197</td>
<td>948,500</td>
<td>877,500</td>
<td>877,500</td>
</tr>
<tr>
<td>Article delivery - in-house</td>
<td>0</td>
<td>1,122,440</td>
<td>1,032,650</td>
<td>242,200</td>
<td>242,200</td>
</tr>
<tr>
<td>Journal citations</td>
<td>518,000</td>
<td>300,000</td>
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<td>0</td>
</tr>
<tr>
<td>Electronic reference</td>
<td>0</td>
<td>0</td>
<td>370,000</td>
<td>300,000</td>
<td>0</td>
</tr>
<tr>
<td>Gateway to commercial</td>
<td>0</td>
<td>0</td>
<td>70,000</td>
<td>110,000</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$2,329,215</strong></td>
<td><strong>$3,113,637</strong></td>
<td><strong>$2,421,150</strong></td>
<td><strong>$1,529,700</strong></td>
<td><strong>$1,119,700</strong></td>
</tr>
</tbody>
</table>

## Cost Summary by budget category -- all 6 priorities

<table>
<thead>
<tr>
<th>Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>$274,040</td>
<td>$146,320</td>
<td>$37,200</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>OPS</td>
<td>20,000</td>
<td>8,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Expense</td>
<td>763,500</td>
<td>538,197</td>
<td>419,830</td>
<td>167,580</td>
<td>67,580</td>
</tr>
<tr>
<td>EDP</td>
<td>415,000</td>
<td>900,000</td>
<td>905,000</td>
<td>310,000</td>
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</tr>
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<td>OCO</td>
<td>856,675</td>
<td>1,521,120</td>
<td>1,059,120</td>
<td>1,052,120</td>
<td>1,052,120</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$2,329,215</strong></td>
<td><strong>$3,113,637</strong></td>
<td><strong>$2,421,150</strong></td>
<td><strong>$1,529,700</strong></td>
<td><strong>$1,119,700</strong></td>
</tr>
</tbody>
</table>

## Cost Summary by budget category -- top 3 priorities

<table>
<thead>
<tr>
<th>Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>$274,000</td>
<td>$146,200</td>
<td>$37,200</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>OPS</td>
<td>20,000</td>
<td>8,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Expense</td>
<td>535,500</td>
<td>538,197</td>
<td>229,830</td>
<td>67,580</td>
<td>67,580</td>
</tr>
<tr>
<td>EDP</td>
<td>125,000</td>
<td>600,000</td>
<td>655,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>OCO</td>
<td>856,675</td>
<td>1,521,197</td>
<td>1,059,120</td>
<td>1,052,120</td>
<td>1,052,120</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$1,811,215</strong></td>
<td><strong>$2,813,637</strong></td>
<td><strong>$1,981,150</strong></td>
<td><strong>$1,119,700</strong></td>
<td><strong>$1,119,700</strong></td>
</tr>
</tbody>
</table>
TOWARD AN ELECTRONIC JOURNAL ARTICLE DELIVERY SERVICE

APPENDIX A: GLOSSARY

- AAAS-American Association of Applied Science
- Ariel-Software developed by RLG to facilitate the transmission of journal articles over the Internet.
- ASCII-American Standard Code for Information Interchange; the standard for machine-readable coding of text data (alpha/numeric and special characters).
- ASTI-H.W. Wilson's Applied Science and Technology Index; journal article citation database
- BAI-H.W. Wilson's Biological and Agricultural Index; journal article citation database
- BI-Information Access Corporation's Business Index; journal article citation database.
- bit-mapped-The technique for digitizing print information as pictures rather than as machine-readable image character data. Bit-mapped data cannot be indexed or displayed on text-oriented terminals.
- CARL-Colorado Alliance of Research Libraries; for-profit organization that creates and markets journal article citation and abstracting databases.
- client/server-Structuring of software so that programs that interact with the user are separate from architecture the programs responsible for managing the data; the two types of programs communicate through a standard interface.
- CD-ROM-Compact Disk-Read Only Memory; medium which is used by many information vendors for data storage and indexing; usually accompanied by vendor's proprietary user interface and access software. Requires a PC to access.
- Dialog-For-profit company that provides online search access to hundreds of commercial citation and information databases on a charge per connect-hour basis.
- EAI-Information Access Corporation's Expanded Academic Index; journal article citation database
- ERIC-Educational Resources Information Clearinghouse; indexes to the journal and report literature in education.
- FAXON-For-profit organization that creates and markets journal article citation and abstracting databases, and provides other services related to serials acquisitions and management.
- FCLA-Florida Center for Library Automation; SUS agency charged with supporting SUS-wide library automation needs.
- FIRN-Florida Information Resources Network; an agency of the Florida Dept. of Education which supports a telecommunications network accessing a variety of K-12, Community College and SUS information resources.
- IAC-Information Access Corporation; for-profit organization that creates and markets journal article citation and abstracting databases; also markets full-text article databases. ILL Inter-Library Loan; the policies and procedures through which libraries borrow and lend books and photocopies of journal articles. Requires compliance with the copyright laws; can have fees associated with process; is feasible only for relatively low-
demand items since the fees, staff resources and delivery time can inhibit access for heavily used reference and undergraduate-oriented materials.

- Internet-A network of networks connecting academic and research institutions nationally and internationally.
- LMS-Library Management System; components of a library automation system that support the traditional functional areas of a library: public catalog, cataloging, acquisitions, and circulation.
- LUIS-Library User Information Service; the public access component of the services provided by FCLA to the SUS libraries.
- NERDC-Northeast Regional Data Center (Gainesville); the SUS agency that provides mainframe and network support services to FCLA.
- OCLC-Online Computer Library Center; a membership organization of 15,000 libraries which has built large bibliographic databases of library holdings and journal citations.
- RLG-Research Libraries Group; a library membership organization which has built large bibliographic databases of library holdings and journal citations.
- T1-Trunk group 1; bundling of telephone wires that collectively transmit up to 1.54 megabits of data per second (as compared to 9.6 or 56 kilobits in traditional lines).
- UMI-University Microfilms Inc.; for-profit organization that creates and markets journal article citation and abstracting databases; also markets bit-mapped image article databases and various microform products and services.
APPENDIX B: TELECOMMUNICATIONS NETWORK

The current FCLA Telecommunications network runs on dedicated circuits which link the 50 SUS library sites to the computer at NERDC. Those 50 sites are listed in Appendix B:1. The network uses standard IBM SNA/SDLC telecommunications protocol. IBM control units of various capacities are located at each site to support multiple unintelligent terminals.

Appendix B:2 illustrates the new network configuration proposed in this plan. In this new configuration, each of the SUS campuses would have one or more sets of hardware installed that would support intra-building and intra-campus networks. This hardware would include either large or small routers depending upon the size and location of the sites. Remote sites will require PC-based bridges that will link them to their home libraries and their networks while the remaining smaller on-campus sites will need connectivity into the campus LANs from which connectivity to NERDC will be made.

Appendix B:3 gives a detailed budget for the routers, bridges and PC connections needed to connect all the sites to NERDC. It does not include the figures for the PCs themselves and their attendant software and printers.
APPENDIX C: JOURNAL TITLES PROVIDED ELECTRONICALLY BY IAC

The two lists that follow:

Appendix C:1 Expanded Academic Index ASAP
Appendix C:2 Business ASAP

contain of periodical titles which are available in machine-readable form at this time. These two lists represent the offerings of one source of journal articles in electronic form and are provided for illustrative purposes. As more publishers make their publications available in this medium, the number and nature of these products will change.
APPENDIX D: UNIVERSITY OF CALIFORNIA PLANNING DOCUMENTS

The following documents, while written for the UC system, are excellent summaries of the technical and economic issues being faced by academic libraries and their parent institutions as they try to address provision of electronic library services.

Appendix D:1 Workstations, Library Automation and Access to Information: A Prospectus
Appendix D:2 Remote Printing and the MELVYL System
Appendix C:1
Expanded Academic Index ASAP Preliminary Journal List

Administrative Science Quarterly
Adolescence
Adweek's Marketing Week
Africa Report
Agricultural Research
Alcohol Health & Research World
American Artist
American Behavioral Scientist
American Business Law Journal
American Family Physician
American Forests
American Heritage
American Indian Quarterly
American Journal of Community Psychology
American Journal of Economics and Sociology
American Journal of Law & Medicine
American Journal of Psychology
American Music
American Photo
American Poetry
American Political Science Review
American Spectator
American Visions
Americas
Annual Review of Psychology
Annual Review of Sociology
Applied Economics
Archives of Sexual Behavior
Argumentation and Advocacy
Art Bulletin
Art Journal
Arts International Magazine
Arts Magazine
Asian Affairs (London)
Asian Folklore Studies
Astronomy
Audubon
Automation
Automotive Engineering
Billboard Magazine
BioScience
Black Collegian
Black Enterprise
Brookings Review
Bulletin of the Atomic Scientists
Business and Society Review
Canadian Historical Review
Canadian Journal of Criminology
Canadian Journal of History
CD-ROM Professional
Challenge
Change
Chicago Review
Children Today
Christian Century
Christianity and Crisis
Christianity Today
Clearing House
Clio
College Literature
Columbia Journalism Review
Commentary
Common Cause
Commonweal
Communications of the ACM
Compute!
Computer Languages
Computers in Libraries
Consumers Research Magazine
Contemporary Drug Problems
Contemporary Literature
Contemporary Policy Issues
Corrections Today
CPI Detailed Report
Criminal Justice Ethics
Criticism: A Quarterly for Literature and the Arts
Critique (Washington, DC)
Current (Washington, DC)
Current Health 2
Current History
Daedalus
Database
Direct Marketing
Ebony
Economic Geography
Economic Indicators
Economic Inquiry
Economic Journal
Economic Perspectives (Federal Reserve Bank of Chicago)
Economic Record
Economic Review (Federal Reserve Bank of Cleveland)
Economic Review (Federal Reserve Bank of Dallas)
Economic Review (Federal Reserve Bank of Kansas City)
Economist, The (UK)
Editor & Publisher
Education
Electronic Design
Electronic News
Electronics
Employment & Earnings
English Historical Review, The
Environment
Environmental Law
EPA Journal
Esquire
Essays in Literature
Ethnology
Exceptional Children
Explicator, 'The
FDA Consumer
Federal Reserve Bank of New York Quarterly Review
Federal Reserve Bank of St. Louis Review
Federal Reserve Bulletin
Finance & Development
Folio: the Magazine for Magazine Management
Food Review
Foreign Affairs
Foreign Policy
Forest Industries
Fortune
Futurist
Geographical Review
Germanic Review
H R Focus
Harper's Magazine
Harvard Theological Review
Hastings Center Report
Health Care Financing Review
Historian
History and Theory
History Today
Horn Book
Horticulture
Hospitals
Human Biology
Human Ecology
Human Relations
Humanist, The
Hypatia
Industrial and Labor Relations Review
Industrial Engineering
Industrial Relations (US)
International Bulletin of Missionary Research
International Journal of Advertising
International Monetary Fund Staff Papers
Issues in Science and Technology
JAMA: Journal of the American Medical Association
JEI: Journal of Economic Issues
Journal of Abnormal Child Psychology
Journal of Advertising
Journal of African History, The
Journal of Business
Journal of Business Ethics
Journal of Common Market Studies
Journal of Community Health
Journal of Development Studies

http://www.fcla.edu/FCLAinfo/plan/92_97/appc1.htm
Nation, The
National Forum: Phi Kappa Phi Journal
National Parks
National Review
National Tax Journal
NF-A Today
New Leader
New Perspectives Quarterly (NPQ)
New Republic, The
New Scientist
New Statesman & Society
New York Magazine
North American Review
Nutrition Today
Oceania
Occupational Outlook Quarterly
Oceanus
OECD Observer
Oil & Gas Journal
Omni
Online
Opera News
Pacific Affairs
Parabola
Parents' Magazine
Patient Care
PC Magazine
Personnel Journal
Perspectives of New Music
PHI Delta Kappan
PLL- Papers on Language & Literature
Poetry
Policy Studies Journal
Political Science Quarterly
Popular Photography
Population Reports
Problems of Communism
Proceedings of the Academy of Political Science
Producer Price Indexes
Progressive Architecture
Psychological Record, The
Psychology Today
Public Administration (UK)
Public Health Reports
Public Interest, The
Public Relations Journal
Public Relations Quarterly
Public Relations Review
Quarterly Review of Economics and Business
Renascence
Research in African Literatures
Review of Black Political Economy
Review of Metaphysics
RN
Appendicies-SUS 5 YR PLAN (C:1)

Romanic Review
Russian Review, The
Salamagundi
Saturday Evening Post
School Arts
Science News
Sea Frontiers
Sex Roles
Sierra
Sky & Telescope
Social Forces
Social Security Bulletin
Social Studies, The
Society
Southern Economic Journal
Southern Review, The
Southwest Review
Sport
Sports Illustrated
Stereo Review
Studies in American Fiction
Studies in English Literature, 1500-1900
Studies in Short Fiction
Survey of Current Business
Technology & Learning
Technology Review
Theological Studies
Tikkun
Time
Transportation Journal
Tufts University Diet and Nutrition Newsletter
Twentieth Century Literature
U.S. Department of State Dispatch
U.S. News & World Report
UN Chronicle
UNESCO Courier
University of California, Berkeley Wellness Letter
USA Today Magazine
Victorian Studies
Weatherwise
Western European Politics
Whole Earth Review
Wilderness
Women's Sports and Fitness
Women's Studies
Working Woman
World Affairs
World Press Review
Yale Journal of Criticism
Appendix C:2
Business ASAP
Journal coverage includes full text beginning with 1990 data unless otherwise indicated.

ABA Banking Journal
Academy of Mgmt. Journal '92
Academy of Mgmt. Review '92
Accounting and Finance '92
Across the Board
Administration & Society '92
Administration Science Quarterly
ADWEEK Eastern Edition
ADWEEK Western Advertising News
Adweek's Marketing Week
Agency Sales Magazine
Airconditioning, Heating & Refrigeration News
Air Transport World
American Business Law Journal
American C4 & County
American Economist '92
American Forests
American Metal Market
American Paint & Coatings Journal '92
American Printer
American Review of Public Administration
American Salesman
American Shipper
Amusement Business
Antitrust Bulletin '92
Antitrust Law Journal '92
Appliance Manufacturer
Applied Economics 02
Appraisal Journal '92
Arizona Business
Arkansas Business and Economic Review '92
Association Management
Atlantic Economic Journal
Au Courant 11
Audio-Visual Communications (Now AVC)
Automation (Now: Controls & Systems)
Automotive Engineering
Automotive Industries
Automotive Marketing
AVC (Formerly: Audio Visual Communications 7/91)
Back Stage
Bakery Production and Marketing
Bank Management
Bank Marketing
Bankers Monthly
Best's Review - Life-Health Insurance Edition
Best's Review - Property-Casualty Insurance
Edition
Beverage World
Billboard Magazine
Black Enterprises '92
Boating Industry
Bottomline '92
Brookings Review '92
Builder '92
Buildings
Bulletin of Economic Research '92
The Bureaucrat 02
Business America
Business and Society Review '92
Business Credit '92
Business Economics
Business History '921
Business History Review
Business Horizons
Business Lawyer '92
Business Perspectives
Business Quarterly
California Management Review '92
Canadian Banker '92
Canadian Business Review
Canadian Labour
Canadian Manager
Chain Store Age Executive
Challenge '92
Chemical Marketing Reporter
Chemical Week
Chief Executive '92
China Business Review, The
CMA - The Management Accounting Magazine '92
Colorado Business Magazine
Columbia Journal of World Business
Communication World
Communication News
Compensations and Benefits Review
Computer Industry Report '92
Computer Pictures
Construction Review
Consultant
Controls & Systems '92 (Formerly Automation 1/92)
Cornell Hotel & Restaurant Administration Quarterly
Corporate Board
Corporate Cashflow
CPA Journal, The
Credit '92
Credit Union Executive
Custom Builder '92
Daily News Record
Dairy Foods
Dallas Business Journal
Defense Electronics
Diesel Progress Engines & Drives
Direct Marketing
Discount Store News
Distribution
Do-it-Yourself Retailing
Drug Topics
E-MJ - Engineering
Economic Geography '92
Economic Indicators
Economic Inquiry
Economic Journal '22
Economic Review (Pakistan Edition)
Economist, The
Editor & Publisher
EFTA Bulletin 1/1/92
Electric Light & Power
Electronic Design
Electronic News
Electronics
Employee Relations Law Journal
Employment Relations Today '92
Energy Journal, The
Energy User News
Engineering Economist '92
Entrepreneurship: Theory and Practice
Executive Female
Federal Reserve Bank of New York Quarterly Review
Federal Reserve Bank of St. Lewis Review '92
Federal Reserve Bulletin
Finance & Development
Financial Executive
Financial Management '92
Financial Market Trends
The Financial Review
Florida Trend
Folio: The Magazine for Magazine Management
Food Review (Formerly National Food Review 1,91)
Footwear News
Footwear News Magazine '92
Forest Industries
Fortune 91
Foundry Management & Technology
Fund Raising Management
Futures: Magazine of Commodities & Options
FW
Gifts & Decorative Accessories
Global Trade
Government Finance Review
Group & Organization Studies
Hardware Age
Hawaii Business
Health Care Management Review 22
Health Service Research '92

Healthcare Financial Management
HFD-The Weekly Home Furnishings Newspaper
Hospital & Health Service Administration
Hospitals
HR Focus (Formerly: Personnel 11/91) '91
HR Magazine 22
Human Relations '92
Human Resource Planning '92
Hydraulics & Pneumatics
Illinois Business Review
Implement & Tractor
Inc.
Industrial and Labor Relations Review
Industrial Engineering
Industrial Finishing
Industrial Management
Industrial Relations (Canadian) '92
Industrial Relations Journal 91
Industry Week
Information Executive '92
Insiders' Chronicle, The '92
Institutional Distribution
Institutional Investor
Internal Auditor
International Journal of Advertising
International Journal of Retailing & Distribution
Management '92
International Management
International Monetary Fund Staff Papers '92
International Studies of Management & Organization '92
International Trade Forum
Iron Age (Metals Producer Edition)
Issues in Bank Regulation '92
Jewelers Circular Keystone
Journal of Accountancy
Journal of Advertising
Journal of American insurance '92
Journal of Business, The '92
Journal of Business Ethics '92
Journal of Commercial Lending '92 (Formerly: Journal of Commercial Bank Lending 1/92)
Journal of Common Market Studies '92
Journal of Consumer Affairs
Journal of Consumer policy '92
Journal of Consumer Research
Journal of Development Studies '92
Journal of Finance 22
Journal of Human Resources 91
Journal of Industrial Economics '92
Journal of International Business Studies
Journal of Management '92
Journal of Management Studies '92
Journal of Marketing Research
Journal of Money, Credit & Banking
Journal of Occupational and Organizational Psychology (Formerly: Journal of Occupational Psychology 1/92) 11
Journal of Operations Management '92
Journal of Portfolio Management '92
Journal of Post Keynesian Economics 11
Journal of Property Management '92
Journal of Retailing
Journal of Risk and Insurance
Journal of Small Business Management
Journal of Systems Management
Journal of the Academy of Marketing Science
Journal of the American Planning Association '92
Journal of the American Real Estate & Urban Economics Association '92 (AKA AREUEA Journal)
Journal of the Market Research Society
Labor Studies Journal '92
Land Economics
Law and Policy in International Business
Lloyd's Bank Annual Review '92
Lodging Hospitality
Logistics and Transportation Review Machine Design, The
Manage
Management Accounting (USA) '92
Management International Review
Management Quarterly '92
Management Review
Management Solutions (Formerly: Supervisory Management)
Management Today
Management World '92
Managers Magazine '92
Marketing
Marketing News
Mass Transit
McKinsey Quarterly, The '92
Metropolitan Life Insurance Statistical Bulletin
Michigan CPA '92
Mid-Atlantic Journal of Business
Milbank Quarterly, The
Modern Machine Shop
Modern Office Technology
Modern Power Systems
Money 'u
Monthly Labor Review
Monthly Review
Mortgage Banking
Motor Age
National Institute Economic Review
National Petroleum News
National Productivity Review
National Public Accountant The
National Real Estate Investor
National Tax Journal, '92
National Underwriter Life & Health - Financial Services Edition
National Underwriter Property & Casualty-Risk & Benefits Management
Nation's Business
Nation's Restaurant News
NBER Reporter
Nursing Homes and Senior Citizen Care (Now Nursing Homes Long Term Care Management 11/91)
Nursing Homes Long Term Care Management
Formerly: Nursing Homes and Senior Citizen Care 1/91
Occupational Hazards
Occupational Outlook Quarterly
OECD Economic Outlook
OECD Observer
Offshore Incorporating The Oilman
Oil and Gas Journal, The
Oil Daily, The
Optimum '92
Organizational Studies '22
Organizational Dynamics Outlook
Oxford Bulletin of Economics & Statistics '92
Packaging Digest '92
PC Magazine (The Independent Guide to IBM Personal Computers)
PC Week
Pension World
Personnel Journal '92
Personnel Management '92
Planning '92
Planning Review (a publication of the Planning Forum)
Playthings
Prepared Foods
Production
Profit-Building Strategies for Business Owners
Progressive Architects
Progressive Grocer
PSA Journal
Public Administration '92
Public Finance Quarterly
Public Personnel Management '92
Public Relations Journal
Public Relations Quarterly 22
Public Relations Review
Public Utilities Fortnightly
Public Works '92
Pulp & Paper
Quarterly Journal of Business and Economics
Quarterly Review of Economics and Business
Quick Frozen Foods International
R & O Management '92
Railway Age
Real Estate Today
Records Management Quarterly
Restaurant Business Magazine
Restaurant Hospitality
Restaurant-Hotel Design International
Review of Black Political Economy, The
Review of Business
Review of Business & Economic Research '92
Review of Social Economy '92
Risk Management
Rubber World
Sales & Marketing Management
SAM Advanced Management Journal '92
Savings Institutions
Security Management
Shooting Industry
Sloan Management Review '92
Small Business Reports '92
Soap-Cosmetics-Chemical Specialties
Social Security Bulletin
South Dakota Business Review
Southern Economic Journal 91
Southwest Journal of Business & Economics
Special Libraries
Successful Farming (Region 13 Edition West)w
Supermarket Business Magazine
Supermarket News
Supervision
Survey of Current Business
Tax Advisor, The
Tax Executive
Technical Communications
Technology Review (English Edition)
Telecommunications (North American Edition)
Telephony
Television Digest
Texas Business Review
Textile World
Time '92I
Tooling & Production
Topics in Health Care Financing '92
Training (Formerly: Training : The Magazine of Human Resources Development 5/91)
Training & Development (Formerly: Training & Development Journal 5/91)
Transportation & Distribution
Transportation Journal '92
Trusts & Estates '92
U.S. Distribution Journal
U.S. News & World Report '92
United States Banker
Women's Wear Daily
Wood & Wood Products
Working Woman
World Oil