

IMPLEMENTING ELECTRONIC DOCUMENT DELIVERY USING PROSPERO: A CASE STUDY AT THE UNIVERSITY OF CONNECTICUT

Jan E. Heckman
Marine Sciences Liaison

and

Joseph Natale
Document Delivery/Shared Resources Librarian

University of Connecticut Libraries
Storrs, CT. 06340

Abstract: The University of Connecticut began testing an Electronic Document Delivery program in June 2000. EDD was chosen as a library-wide goal and promised to provide users on all six campuses with electronic photocopies in Portable Document Format, which could be accessible anywhere in the world. The test period continued through the Spring 2000 semester with more than 450 participants. This presentation will document, illustrate and highlight the effort made by the Document Delivery/Interlibrary Loan team as it brought together several software applications (including Ariel, Adobe Acrobat, Prospero and others), as well as new hardware technology to make this project a success by Fall 2001.

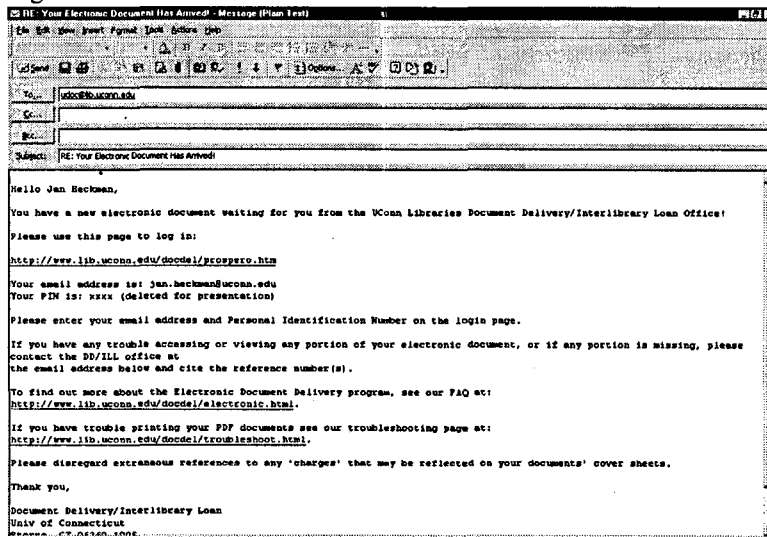
Electronic document delivery (EDD) is one of the latest innovations in libraries. A patron no longer needs to enter the library physically to pick up a document; it can be accessed from any computer that is linked to the Internet. The patron does not have to access an e-mail application in order to receive these documents. Ariel, a software package developed by the Research Libraries Group (RLG) and often described as "Internet fax" has been very useful, but now there is a new development in document delivery that most would say is an improvement on many levels. The generic name for this trend is electronic document delivery (EDD), and the software used as the engine behind this service at the University of Connecticut is Prospero, a publicly licensed open source (PERL) free product. The discussion of Ariel 3.0 and its incorporation of Prospero functions follow an explanation of the capabilities and benefits of Prospero.

One of the benefits of EDD is the overall quality of the document, which can include graphics, charts, grayscale and color images. Another is the convenience of the system, which is probably the most popular aspect of the service. By shifting regular photocopy delivery to EDD, there should also be a reduction in the reliance on paper used by the library. Ariel is used in conjunction with Prospero in that Prospero converts the Ariel TIF to PDF (Portable Document Format), which can be read by an easily downloadable viewer/web browser plugin called Adobe Acrobat Reader. While incoming Ariel files

may not reflect a marked improvement in quality, locally scanned documents can be greatly enhanced. Locally, one can scan documents directly into Adobe Acrobat and preserve most of the original document's overall quality and readability. Also, PDF files cannot be easily edited, thus removing a copyright obstacle that was present with desktop delivery of Ariel documents. Convenience is greatly enhanced and patron feedback has been extremely positive. In a somewhat extreme example, consider that a traveling scientist may access documents from any computer that can access the World Wide Web. Reduction in paper costs for libraries can occur because the library is no longer printing off incoming Ariel transmissions; the patron now absorbs that expense. If outgoing documents are scanned directly into PDF format, they can be sent to the server and no photocopying is necessary, which also improves graphic quality.

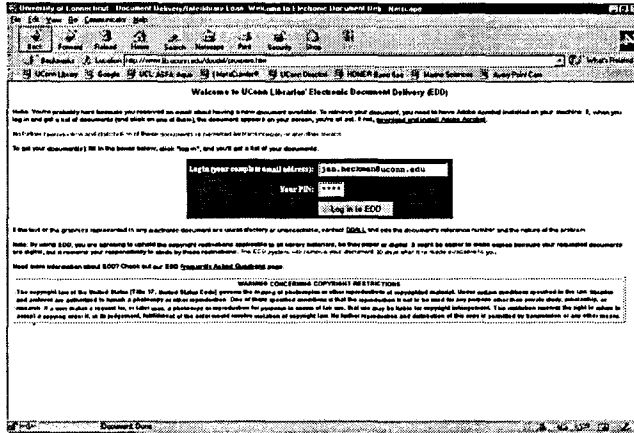
Prospero has two modules. The configurations for the Web server, e-mail function, and local Ariel directory are controlled from these modules. Two flowcharts for the workflow at the University of Connecticut Libraries are attached (*addendum 1&2*). The first module captures and converts Ariel files into PDF and includes a patron database for authentication, which is each patron's e-mail address and an assigned Personal Identification Number (PIN). This module also generates an e-mail message informing the patron of the incoming document and reminding her of the URL of the server and the individual PIN.

Figure 1.



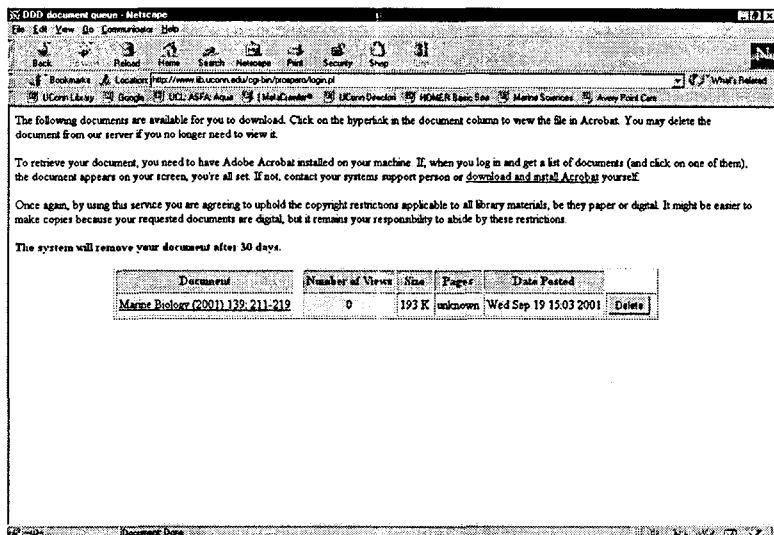
The second module is the Web server interface. When patrons go to the designated URL they see a login screen.

Figure 2.



After logging in, the patron is presented with a listing of the documents that are ready for viewing. The library can customize the individual patron page and information in the document listing. The documents will by default stay on the server for two weeks or after five viewings, whichever occurs first, unless the patron manually deletes the document. The time period and number of viewings can be customized. The advantage of having the documents stay on the server is that even with faulty Internet connections, the desired document is not lost and can be downloaded when the connection is better.

Figure 3.



The details of the Prospero software are that it is publicly licensed (GNU), it is written in PERL (an open source code that can be customized), it is free, and its web server module will work with UNIX, Linux, and Windows. The staff/client module can run on any Windows 2000/NT/98/95 machine. Imbedded into Prospero is the functionality that allows it to convert Ariel TIF files into PDF without additional software, such as Adobe Acrobat Capture.

Hardware and Software:

While it may not be necessary to add hardware or software (besides Prospero) if your library already has Ariel capabilities, there is the need for server space for the World Wide Web delivery of documents. The University of Connecticut Libraries did purchase new hardware and software in order to improve service. The added software was Prospero and Adobe Acrobat (used to edit and crop scanned documents).

Added hardware:

HP Digital Sender 9100C

- Supports color scanning to PDF and TIF formats
- Sends to any e-mail address
- Sends to any other IP
- Will scan and copy to any HP printer on a network

Dell Dimension XPS B1000 PC

- A powerful workstation (1 Ghz) to handle all aspects of EDD
- Receives incoming Ariel documents
- Manages documents scanned by Digital Sender

- Processes all electronic documents via Prospero
 - Edits PDF documents with Adobe Acrobat
- Minolta Microform Digital Scanner MS2000
- Converts microform images to PDF or TIF
- Ricoh Digital Copier/Scanner
- Scans black and white document to PDF and TIF
 - The majority of documents are scanned using the Ricoh copier/scanner
 - Scanned documents placed on staff server then retrieved and processed using Prospero

The Future:

One of the fantastic things about open source computer programs is that non-profit organizations, like libraries, can offer very useful products that are not cost prohibitive. The Research Libraries Group, a non-profit organization, developed Ariel. The source code for Ariel is not open source, but RLG has recently released Ariel 3.01, which incorporates the many of the functions of Prospero. Version 3.0 was released earlier in 2001 with many problems, but those who ordered 3.0 will receive, at no charge, the debugged 3.01 version. The following are the features of Ariel 3.01 as taken from the RLG website.

- Support for 24-bit color scanning and printing
- Support for 8-bit grayscale scanning and printing
- Support for TWAIN as well as ISIS drivers for scanners—see www.rlg.org/ariel/ariscan.html for the latest list of Ariel-supported scanners
- Support for scanners that use either the USB or the SCSI interface
- Support for higher resolution (up to 600 dpi) scanning
- Support for scanning and printing up to 11"x17" (ledger) or A3 paper—if supported by your scanner and printer
- Ability, while sending a document, to add an address to the address book "on the fly"
- Ability to add, delete, or replace a page or pages in a scanned document
- Ability to view thumbnails of all pages in a document
- Use of Windows Printing management for printing a single page or range of pages from a document
- Ability to send documents to patrons in PDF or TIFF format
- Ability to send documents in PDF or TIFF to a Web server and schedule their maintenance
- Ability to set the subject line for e-mailed documents
- Control of the patron database for document delivery to patrons with a link to RLG's ILL Manager patron database
- Support for firewalls by using Net Address Translation or by restricting the data port range

- Improved log viewer messages for tracking and diagnostic

References:

Prospero site: <http://bones.med.ohio-state.edu/prospero/>

“RLG’s Ariel – Home Page” <http://www.rlg.org/ariel/index.html>. Aug. 24, 2001

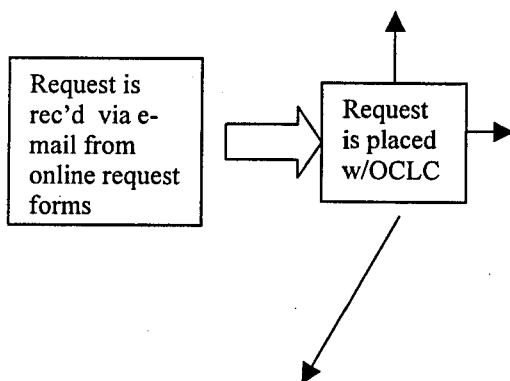
Schnell, Eric H. 1999, Freeing Ariel: The Prospero Electronic Document Delivery Project. *Journal of Interlibrary Loan, Document Delivery & Information Supply*, v. 10(2), 89-100

Keywords: Electronic Document Delivery, EDD, Prospero, Ariel

Addendum:

Addendum 1. (Heckman, Natale)

Flow chart for Electronic Document Delivery at the University of Connecticut



Item rec'd via Ariel, converted to PDF, processed by Prospero

Item is rec'd via fax or mail, graphic quality checked, scanned into PDF, processed by Prospero

Item rec'd as PDF e-mail attachment,
Processed by Prospero

Addendum 2. (Heckman, Natale)

Flowchart for processing Electronic Document Delivery using Prospero at University of Connecticut

