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ABSTRACT

The PICKLE Consortium of independent college libraries (Nebraska) has acquired the ARIEL system of hardware and compression software designed to transfer print materials via File Transfer Protocol (FTP) over the Internet. This development follows on the heels of a 1989 fax grant which was used to cooperatively develop the libraries' journal collections and to deliver articles via telefacsimile. The aging fax machines use telephone lines, heat-transfer paper, and require a copy to be made and then discarded after transmission. ARIEL allows for a superior quality of copy at the receiving end and the speed of the Internet, resulting in lowered costs per article transmitted. The copy is scanned directly from the document to be sent, thus eliminating the costs of copying and paper. The workstation consists of a personal computer, scanner, laser printer, and the ARIEL software. The paper provides detailed ARIEL system requirements and includes a list of PICKLE consortium members, addresses, and telephone numbers. (Author/SWC)

ARIEL (tm)

Peggy Brooks Smith (for the PICKLE Consortium)

Doane College

A Presentation to the Nebraska Library Association
College and University Section Spring Meeting
Concordia College
Seward, NE
May 17, 1996

ABSTRACT: The PICKLE Consortium of independent college libraries has acquired the *ARIEL*$_{(tm)}$ system of hardware and compression software designed to transmit print materials via FTP over the Internet. This development follows on the heels of a 1989 fax grant which has been used to cooperatively develop the libraries' journals collections and to deliver articles via telefacsimile. The aging fax machines use telephone lines, heat-transfer paper and require a copy to be made and then to be discarded. *ARIEL*$_{(tm)}$ allows for a superior quality of copy at the receiving end and the speed of the Internet resulting in lowered costs per article transmitted. Copy is scanned directly from the document to be sent thus eliminating the costs of copying and paper. The workstation consists of a personal computer, scanner, laser printer and the *ARIEL*$_{(tm)}$ software. Full details will be presented along with a list of addresses where the actual workstations may be viewed.

It had been my intention to bring a demonstration of the *ARIEL*$_{(tm)}$ workstation and software and some analysis of what kinds of time savings we might be getting, savings in costs, increase in quality, etc., that the Consortium has experienced since we began using the system. As our 'best-laid-plans' have not been realized to have everyone installed by 1 April,--we really are not, even now, all installed--and most of us are still on the steepest gradient of the learning curve, I shall substitute some description, bibliography and an invitation to give you the the same information.

The PICKLE libraries do invite you to call for an appointment to view the system in action. Addresses and phone numbers are added here as an addendum. Concordia Staff, though they are very busy with hosting this conference, have invited you to visit their workroom today. Please realize that not all of us have planned for an additional five feet of technology to be installed in our crowded workrooms. The elements of

the workstation on Doane's campus take up approximately five feet of table work space, and *just* allows for space to stack materials which are to be scanned. So the area for viewing, in some cases, will be limited. Also, what I *will* attempt to do is to point out the particu-larly nice features of the system and leave you with a bibliography which points to a lot of further specifics you may wish to consult. This will *not* be a training session, as I am not qualified to do that and those things don't "take" anyway unless you have hands-on.

There were several reasons to replace the aging tele-facsimile machines purchased in 1989 by the Consortium: we were throwing away paper copies of materials once they had been faxed; incoming copy was received on horrendous heat-transfer flimsy paper; transmission was over telephone lines; and service calls were getting too frequent to make the machines fiscally viable.

PICKLE had been awarded Title IID HEA money to cooperatively develop their increasingly pricey journals collections and eliminate unnecessary duplicate subscriptions. It worked well. However, as we began to look for a replacement machine we found no currently-marketed substitute for the 8 MB memory which allowed us to store articles during the day and then have the fax sort and send in the wee hours of the night/morning when phone rates are at their lowest. The no-longer-so-invisible college had put me in touch with Peggie Partello of Keene State College Library in New Hampshire. We have spoken several times since 1990 when they also were awarded HEA IID funds. Her reply was, "Oh. What you need is *ARIEL*!" "What is that??"

The Association for Research Libraries has developed the use of data compression software for fast, quality transmission of copies directly scanned from the book or journal. No photocopies are made and discarded; the copy is received on a laser printer on plain paper; and delivery is via the Internet--and *fast*! Mary Nash and Lynn Schneiderman in the Spring, 1996 "Creighton

Cornerstone" had the best explanation of the "Ariel" term:

> 'It is aptly named after the spirit in Shakespeare's *The Tempest*, who proclaims 'I drink the air before me, and return Or ere your pulse twice beat' (5.1.102)."

ARIEL$_{(TM)}$ (as described on the Website) uses off-the-shelf hardware which can be used for other functions, too. ARIEL can send and receive simultaneously and runs in the background while you use the PC for any other network, utilities, Internet, word processing, spreadsheet, graphics or other purposes you wish to load. It features direct scanning with no need to photocopy materials before transmitting. The data is compressed for faster transmission over the Internet (not phone lines), allowing reduced storage requirements. High-quality, high-resolution images can handle everything from photographs to manuscripts. User support includes an 800-number line and e-mail help, as well as embedded helpscreens and a thorough user's guide and documentation, a Webpage, directory of current users available through FTP, an archived discussion listserv for information exchange and an FAQ.

ARIEL equipment requirements:

- 486/33 MHz PC or better
- 8 MB RAM
- Hard disk with 2 MB free to install program files; average users can expect to need 10-20 MB free for document files
- 5-1/4" or 3-1/2" floppy disk drive
- Internet access with a permanent IP address for the Ariel PC
- MS-DOS 5.0 or later
- WinSock DLL supporting version 1.1 of the WinSock specification
- HP Scanjet IIc. IIcx, or IIIp
  or
  Fujitsut M3096, M3097 with SCSI adapter supporting ASPI interface
- Hewlet-Packard LaserJet4, 4 Plus, or 4 Si

Ariel software is designed to work on PC's connected to a local area network, which in turn has a direct high-speed connection to the Internet. RLG does not recommend using ARIEL over low-speed or dial-up connections to the Internet.

We began the process of looking for money in March, 1995. We had downloaded the specifications from the *ARIEL* Webpage and, knowing that each workstation would involve a personal computer, scanner, laser printer and the *ARIEL*$_{(tm)}$ software, we estimated a total budget of $40,000 or $4,000 per site for 10 sites--two for Doane: one Doane Crete and one Doane Lincoln (we *were* writing the grant after all!). A two-page proposal was sent off in April and in November we suddenly received confirmation of the award from the Armstrong McDonald Foundation.

Our first steps were to survey the hardware that is presently available on our campuses which we could commit to the project, and then to order the ten-pack of PC telecommunications software for Windows from The Research Libraries Group, Inc. in Mountain View, California. The nicely-packaged Version 1 diskettes and "User's Manual" arrived at the end of December. A volunteer group of PICKLE investigators agreed to look at installations already in use in Nebraska (UNL and, shortly thereafter, Creighton). Before they could put together a shopping list, the software was upgraded to version 1.1, which we could FTP or obtain on disk for the shipping costs, and all models of recommended/supported scanners had changed. Welcome to the world of cybertechnology!

The shopping list we created upon the recommendation of those people who actually use the system contained four items: scanner, cards, printer and document feeder. Those specs were submitted to three local Nebraska companies. As you may notice, the bid list had changed somewhat from the original "ARIEL equipment requirements" because of the opinions expressed by current Ariel users and because of the rise in overall costs.

It was apparent that the original grant would not cover all the goodies which had become desirable and also pay for the change in scanners.

It was decided that each campus would provide a configuration most suited to its individual users and get the broadest possible utility from the workstation as an entity or from the individual components. For example, if a school did not have the volume of interloan traffic to justify the expense of a document feeder, the money which remained would assist in purchasing whatever level of PC they wanted to build into the system. As another example of this flexibility, Doane Lincoln found it very useful to purchase a "super" scanner which could be used in many ways to help that campus create a Web Page, grade exams, etc. This was a very real advantage to them because they previously had *no* scanner there.

In Crete, Doane currently is using a 100 MHz Pentium PC with 16 MB of RAM and 1.2 GB hard disk; HP LaserJet 4; Network interface card to access the Internet; Network printer interface; HP4c color scanner; and *ARIEL*$_{(tm)}$ software.

Which brings me to a conclusion about speed and quality. It rapidly became evident that the poorest quality or slowest component of this workstation or process controls all the variables having to do with speed and quality of the end transmission. The lesson here is to buy the latest, fastest, best quality components that you are able to afford, within the parameters demanded by the software, of course. As we obviously learned, the technology is changing so quickly that one cannot afford *not* to do so. Consider the scenario of sending copy from a tightly bound journal which will not scan well on the flatbed of the scanner. If there is a line of students at the copier with the edge binder adapter, that one hitch in the process quickly slows the overall business of getting the document out. Perhaps it seems excessive to include a color scanner in a setup that has software

which will not transmit color, but the fidelity of the scanned copy is infinitely finer and the scanner will function in color for other projects.

The process of user evaluation, feedback (generally in the literature and now on discussion lists), and that of further software development is an interesting one, especially when one deals with a responsive company. Mary Jackson in her 1993 evaluation of three library document delivery systems enumerated many advantages of ARIEL and then listed the disadvantages which I summarize here and answer from today's later perspective:

- ARIEL is a dedicated system and thus can send only to another ARIEL workstation; (The number of installations is growing rapidly and this is becoming less of a problem. ARIEL IP numbers now apprear in the constant data of the OCLC ILL workform.)

- Because ARIEL currently transmits only on the Internet, institutions without access to the Internet are unable to use ARIEL; (This number is also growing very rapidly.)

- "The current version [1993] of software does not permit a scanned document to be previewed before sending;" (This capability has been added by the developer in version 1.1.)

- "Now it is not possible to send from an ARIEL workstation to a fax machine because the Internet does not support normal fax transmission." (It has been predicted that this also will soon change.)

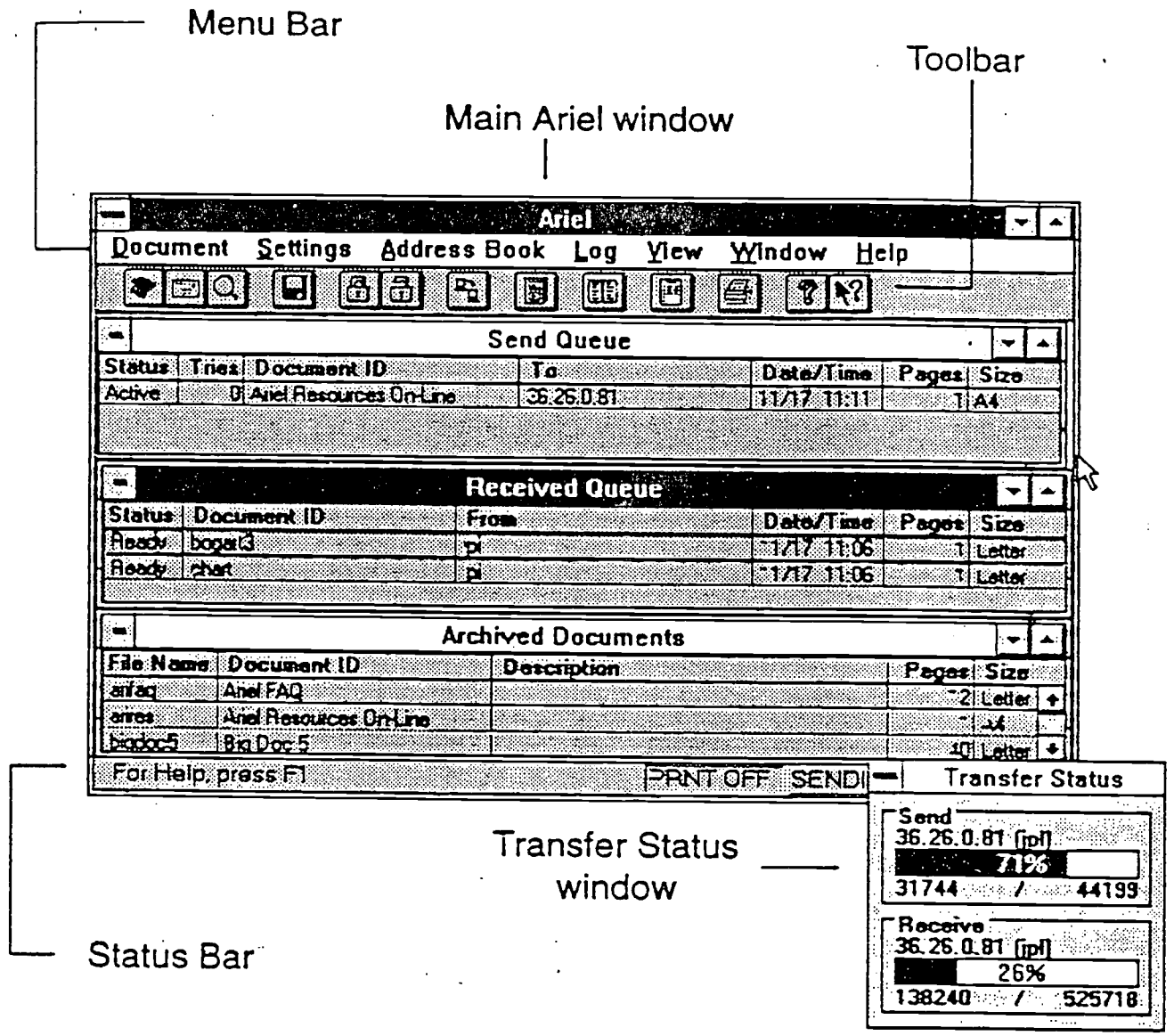
Since most business traffic over telefacsimile continues between entities which have no use for an ARIEL setup, there is no possibility now of carrying on without a traditional telefacsimile machine. We have purchased a low-end, straightforward telefacsimile machine from the original supplier of our older faxes, who was able to offer a significant trade-in on the old machine. The maintenance angle is most important to service agencies like libraries which *must* function at all times. If you find a service provider who will respond quickly when needed, stick with them!

In terms of the protocols agreed to by PICKLE members, we have found no reason to change the rules by which we cooperate. We continue to operate in the same way as before, leaving the machine on at all times and supplying RUSH orders within 15 minutes to 24 hours to each other, entering the request "update for credit only" on OCLC in order that the lender may receive reimbursement for the loan. There is a recommendation that it might be useful to reboot Ariel once a week in order "to allow Windows to clean up after itself, free up memory that some program grabbed and should have let go of but didn't" as Cindi Carlson at Ariel Support replied on 19 June, but other than that, the machine is always on.

There follow here three prints of the Ariel screens. They are dense with functions but intuitive enough that I "trained" a staff member by giving her just those pages, access to the on-line helps and an order to "send something to somebody!" She was able to scan, send, receive and generally function with the system.

One arcane feature of the system, at least to us who have been used to a fax machine which informs us if a transmission actually is sent, is the lack of notation that the document is sent if the *send-and-delete* function is toggled on. The repeated tries may go as high as 28 times if the system believes it is possible to reach the other machine. We had some copyright questions about the *send-and-hold* alternative which requires the staff to delete manually, but that setting also supplies the notation "sent," which is a lot more reassuring. In the *send-and-delete*, mode the only clue that the addressed machine is not working is the failure of our machine to send more than 1 time. It is easy to believe that the operator should continue to try to send. Notations in the "log" will confirm what has happened but require some experience to understand.

Another cryptic slip of paper on my desk wonders about "*dither on/dither off*?" The function turns out to be quite useful to control shading when sending graphical


Menu Bar
Toolbar
Main Ariel window
Ariel
Document Settings Address Book Log View Window Help
Send Queue
Status Tries Document ID To Date/Time Pages Size
Active 0 Ariel Resources On-Line 36.26.0.81 11/17 11:11 1 A4
Received Queue
Status Document ID From Date/Time Pages Size
Ready boget3 pi 11/17 11:06 1 Letter
Ready chart pi 11/17 11:06 1 Letter
Archived Documents
File Name Document ID Description Pages Size
anfaq Ariel FAQ 2 Letter
anres Ariel Resources On-Line 4 A4
bqdoc5 Bq Doc 5 10 Letter
For Help, press F1
PRNT OFF
SEND
Transfer Status
Send
36.26.0.81 [ipl]
71%
31744 / 44199
Receive
36.26.0.81 [ipl]
26%
138240 / 525718
Transfer Status window
Status Bar

®

Toolbar

The Toolbar lets you carry out commands quickly by clicking an icon instead of choosing from a menu. The following list briefly describes each icon in the Toolbar. Click the icon in this list to find out more about the command it represents.


Start scanning a document


Send the selected document


View the selected document


Save the selected document in the archive


Hold the selected document


Release the selected document


Import a document


Open the Archive


Open the Address Book


Look at the log file


Print the selected document


Get version and copyright information


Change to help mode so you can select an item to get help for

®

Scanning a Document

To scan a document

1. Click the Scan button on the Toolbar (or choose Scan from the Document menu).

   You see the Scan dialog box.

2. Change scanner settings or disposition if necessary.

   For help with fields and settings, press F1 or choose Help. Changes apply only to the current document. Use the Scan Settings dialog box to make permanent changes.

3. Choose Scan or Preview Page to start scanning.

   Scan scans a page without showing it to you. Preview Page scans a page and lets you look at it, so you can decide whether or not to add it to your document.

   If you choose Scan when Auto Scan Mode is selected, Ariel first lets you fill out the Send or Save dialog box, depending on the disposition you have selected, then finishes scanning and sends or saves the document. Selecting Auto Scan Mode is particularly useful if you have an automatic document feeder.

   If you do not have Auto Scan Mode selected, choose either Scan or Preview Page each time you're ready to scan the next page.

4. If Auto Scan Mode isn't selected, choose End when you finish scanning all pages in the document.

   The Scan dialog box closes and the Send or Save dialog box opens, depending on the disposition setting.

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material. Otherwise, the only practice we now require is getting the copy centered on the scanner, a process made much easier by the *preview* function which displays the document on the monitor.

Overall, we are pleased with the *ARIEL*$_{(tm)}$ process. Quality of documents is excellent. We still need practice with centering and dithering. Comments range from "terrifically pleased" to "absolutely delighted;" and "the software works easily and can be handled with a bare minimum of training" to "We're still finishing up the install," or "it's not hitched up yet; we're making our Web page(!)." Mainly, we are grateful to RLG for the development of an effective, thoroughly appropriate use of technology.

Appendix 1
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Appendix 2

PICKLE

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Concordia College
800 North Columbia Avenue, Seward (402)643-7258

Creighton University
2500 California Plaza, Omaha (402)280-2705

Dana College
C.A. Dana-LIFE Library, Blair (402)426-7300

Doane College
1014 Doane Drive, Crete (402)826-8287

Doane Lincoln Campus
303 North 52nd, Lincoln (402)466-4774

Hastings College
800 North Turner Avenue, Hastings (402)461-7330

Midland Lutheran College
900 North Clarkson Avenue, Fremont (402)721-5480

Nebraska Wesleyan University
5000 St. Paul Avenue (402)465-2400

Union College
3800 South 48th Street, Lincoln (402)486-2514

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