Improving Student Access to Library Research Collections through Digital Scanning of Microforms

This proposal addresses the first and second priorities identified by the Computation Advisory Committee (CAC) in its 2006 call for proposals:

#1 - Campus-wide proposals addressing student needs for campus computing capability
#2 - Other innovative proposals with student involvement

Proposed by: University Library

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                                        Date

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                                        Date
II. Project Overview and Expected Benefit

Summary: The Library is requesting funding for equipment that will allow students to digitize library materials—primarily journal articles, but other information resources as well—directly from the Library’s vast research collections stored on microfilm and microfiche.

Detailed description: Digital technology has the potential to breathe new life into an old (and greatly underutilized) format of library materials: microforms. Microforms is a generic term for microfilm, microfiche, and other physical media (such as opaque cards) which store miniaturized images that require only two “tools” to be read by human eyesight: a source of light, and magnification. Properly produced and stored, microfilm has a life-expectancy of 500+ years as determined by accelerated aging tests.

The ISU Library holds an extensive collection of microforms, numbering over 3.4 million pieces, and microfilm continues to be the preferred preservation medium for hundreds of essential journals, newspapers, and government documents—the vast majority of which may never become available in digital format. Each year, the library adds to its sizeable collection of journals and newspapers in microform, as well as purchasing specialized microform collections that are essential to student learning and research, such as Landmarks of Science (a collection of seminal scientific books, journals, letters, charts, and diagrams, in English, French, and German) and the United States Congressional Serial Set (over 117,000 fiche reproducing Congressional documents from 1789-1969). Contrary to popular belief, microforms are not likely to disappear from the research library landscape in the foreseeable future. The micrographic industry continues to enhance both the formats themselves (recently unveiling, for example, long-life color microfilm) and the equipment used to access and add value to microforms. It is therefore essential that libraries continue to find ways to improve student access to the wealth of information still stored in this medium.

The equipment currently used by students to read and reproduce material in the library’s Microforms Unit is approximately ten years old, and is strictly analog in nature. Self-serve reader/printers allow students to magnify images on a screen and print them on 8.5” by 11” paper at a cost identical to photocopying. A staff-mediated reader/printer also allows for copying to larger sized paper (11”x17”). Both devices permit only a limited amount of image manipulation, such as rotation, cropping, and zooming.

With growing frequency over the last few years, students have been asking for the option to scan (digitally) from microforms, and for greater variety with regard to output. In addition to printed copies, students would like to be able to save images to a flash drive, burn them to a CD, or email them to themselves. In many cases, they would like to further enhance and manipulate scanned images (cropping, highlighting, adjusting brightness and contrast, etc.) and incorporate these image files directly into electronic documents or other digital media.

The Library proposes to cost share with CAC the purchase of a total of six state-of-the-art digital scanner/reader/printers for the Microforms Unit, five of which would be self-serve units, and one of which would be a staff-mediated device (with additional functionality). As shown in the attached budget, the Library is prepared to fund the staff-mediated device, as well as one of the five self-serve units, and is asking CAC to fund the remaining four self-serve units. Given the cost of this equipment, a bid process would be required. However, after investigating the products currently available from major micrographic vendors such as Minolta, Canon, and S-T Imaging, the library has provisionally identified two units from Minolta—the MS6000 and MS7000 digital imaging systems—as ideal candidates for self-serve and mediated scanning options (respectively) in the Parks...
Library Microforms Unit. Overviews of these systems appear in **Appendix A**, and the costs of these systems have been used in the proposal budget.

In brief, these systems would allow students to:

- scan images from microfilm and microfiche, using a single universal carrier, at variable resolutions from 200 to 800 dpi;
- view scanned images on a 12” x 12” non-glare screen (or 12” x 17” on the MS7000);
- use digital enhancement features to adjust image position and alignment; zoom in/out; correct density, contrast, resolution, and sharpness; auto-center; auto-adjust for skew, and trim and mask scan areas;
- switch from PC scanning to laser printing at the touch of a front-panel button, and obtain printed copies in 8.5”x 11” or 11” x 17” formats;
- save scanned files to a USB/flash drive, burn them to a CD, and/or email scanned files, for subsequent editing (in programs such as Photoshop) and incorporation into other digital media.

While the library must continue to charge nominal, cost-recovery fees for reproduction services (largely to fund annual equipment maintenance contracts), we are committed to keeping these charges as low as possible, using traditional photocopying charges as a model. If the Minolta MS6000 is purchased, our plan is to charge 10¢ per “portable image,” whether that image is a digital file or printed on 8.5”x11” paper. There would be no additional charge to email image files, burn them to a CD, or save them to a flash drive. (Obviously, there would be no charge to simply view images.) Charges for staff mediated scanning/printing would be slightly higher (15¢ for 8.5”x11”, 30¢ for 11”x17”). Also, all charging options are partially dependent upon specific features of the hardware. Regardless of the equipment purchased, we would attempt to make charges as consistent as possible with the current charging structure for the self-serve “KIC” (Knowledge Imaging Center) scanner that the Library installed in fall 2005 with partial funding from CAC. The KIC unit allows for images to be scanned from printed material and either copied to a USB/flash drive, burned to a compact disc, or emailed to a user. As the library expands its reproduction services for students, we will make every effort to keep charges “format neutral” and consistent across a variety of devices (i.e., laser printers, digital photocopiers, and microform scanner/reader/printers). For student convenience, the digital microform reader/printers would be configured to accept both cash and ISUCard for payment (if allowable)

The proposed budget covers scanners, laser printers, scanning software, PCs, and PC interface software for six complete workstations. Two of these scanners can share a single laser printer, and this is reflected in the proposed budget.

These workstations would be available to ISU students in the Microforms Center, 140 Parks Library, which is open 73 hours per week during the academic year (8:00 a.m.-9:00 p.m., Monday through Thursday; 8:00 a.m.-5:00 p.m. Friday; 1:00-5:00 p.m. Saturday; and 1:00-9:00 p.m. Sunday); hours are reduced slightly during summer, intersessions, and holiday periods. Up to five simultaneous users could benefit from this self-serve equipment at any given time, with many additional students benefiting from the staff-mediated scanning service. The Microforms Center is staffed continuously by a minimum of two employees. See **Appendix B** for a scaled sketch of the Microform Center floor plan, showing the location of the proposed equipment.
III. Support and Maintenance

The University Library will cover recurring costs beyond the term of this project, including annual hardware and software maintenance contracts.

IV. Budget

Table 1. Full Itemized Budget
(Costs for the Entire Project)

<table>
<thead>
<tr>
<th>Description of Item</th>
<th>Number</th>
<th>Unit cost</th>
<th>Total Cost by Funding Source</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Central Pool</td>
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<tr>
<td>Minolta MS6000 scanner</td>
<td>5</td>
<td>$7,950</td>
<td>$31,800</td>
</tr>
<tr>
<td>Minolta MS7000 scanner</td>
<td>1</td>
<td>$10,795</td>
<td></td>
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<tr>
<td>Stand for MS7000 scanner</td>
<td>1</td>
<td>$327</td>
<td></td>
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<tr>
<td>Minolta MSP3000 laser printer</td>
<td>3</td>
<td>$2,425</td>
<td>$4,850</td>
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<tr>
<td>Imaging Professional software</td>
<td>6</td>
<td>$240</td>
<td>$960</td>
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<tr>
<td>PC interface</td>
<td>6</td>
<td>$695</td>
<td>$2,780</td>
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<tr>
<td>PC (3.2 GHZ Pentium processor; 1.0 GB memory; 80GB hard drive; floppy drive/RW-ROM; 19” LCD monitor; optical scroll mouse and keyboard)</td>
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<td>$1,210</td>
<td>$4,840</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
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Table 2. Minimum Feasible Itemized Budget
(Costs for Minimum Feasible Part of the Project)

<table>
<thead>
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<th>Description of Item</th>
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<td>PC interface</td>
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<td>PC (3.2 GHZ Pentium processor; 1.0 GB memory; 80GB hard drive; floppy drive/RW-ROM; 19” LCD monitor; optical scroll mouse and keyboard)</td>
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<td>$1,210</td>
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<tr>
<td><strong>Total</strong></td>
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<td></td>
<td>$22,615</td>
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</table>
Appendix A: Descriptions of the Minolta MS6000 and MS7000 systems

Konica Minolta MS6000

Product Overview:

Read on screen, print on paper, scan to PC—the digital era gives you powerful new ways to use microform information. Now there’s a microform scanner that makes it easy to do all three.

The Minolta MS6000 gives you dual output, to switch from PC scanning to high-speed laser printing at the touch of a button. Connected to a PC, the MS6000 allows scanning at up to 800 dpi-to use and distribute your microform information in websites, e-mails, faxes and desktop publishing.

There’s a wide range of microform media options for film, fiche, jacket and card formats. Modular scanner and printer design lets you set up your system to suit your workspace—and two scanners can even share a single printer, for extra cost-efficiency in multi-user applications.

Features:

Proven Technology:
The MS6000 builds upon Minolta's experience with the popular MicroSP2000 and MS2000 Reader/Printers to give you one of the most reliable, user-friendly microform systems on the market.

Simple Dual Output:
Simple front-panel controls let you switch from high-quality laser prints at up to 20 sheets per minute to scanning into your PC at up to 800 dpi resolution.

Anti-Glare Screen:
A high-resolution 12" x 12" anti-glare screen with adjustable screen brightness makes reading microform information easier on your eyes.

Ergonomic Controls:
All important controls are right at your fingertips—and operation is simple and intuitive, even for first-time users.

Fast Front-Panel Scanning:
"Push" scanning lets you initiate scanning and make all your scan adjustments right from the front panel of your MS6000, so you don’t have to move from scanner to PC keyboard.

Auto Imaging Convenience:
Motorized Image Rotation, Auto Skew Correction, Auto Centering and Auto Frame Masking are all standard features.

Manual Masking:
Optional side-screen LED lights provide visual cues to allow you to manually select print or scan areas, as well as define the areas to be masked or cut.

Multiform Versatility:
The MS6000 supports multiple film and fiche carriers: Universal Carriers UC-2, UC-5, UC-6 and UC-7 for quick changeover from 16mm or 35mm reels to fiche, aperture cards or jackets; Fiche Carrier 5 to accommodate fiche, jackets and aperture cards; Roll Film Carrier 9B, 11, 15A, and 22A (for ANSI) or 15M (for M-type) cartridges, or Roll Film Carrier 21 (both ANSI and M-type) with auto load/rewind. (Carriers are interchangeable with Minolta MicroSP-Series and 600-Series reader/printers.)

Interchangeable Lenses:
Choose from four types of lenses that provide all the magnification ratios you’ll need—from a single-focus 7.5x lens, to zoom lenses that span 9 - 16x, 13 - 27x, or 23 - 50x zoom ratios. (Lenses are interchangeable with Minolta RP605Z/RP603Z models.)

PC Upgrade Kit:
The optional PC Upgrade Kit transforms your MS6000 into a computer peripheral scanner that lets you bring microfilm and microfiche images into your PC—and use them in website, e-mail, fax, and desktop publishing applications.

PC Connection:
Standard SCSI Interface with TWAIN software driver lets you use Windows 95/98, Windows ME, even Windows NT/Millennium; a powerful SCSI-32 connection allows faster transfer rates through standard cables.

Grayscale Support:
The optional Grayscale Upgrade Kit lets you output 8-bit grayscale images to your PC, with 256 grayscale levels that reveal more detail in halftones and allow low-contrast images to be captured as accurately as possible.

MARS Control Capability:
When using Minolta roll film carriers RFC-15A, RFC-15M, RFC-21, or RFC-22A, the Minolta MARS 4 or MARS Mini 2 Controller enable your computer-aided retrieval software to automatically search, retrieve and print your blipped microfilm images.

Compact Modular Design:
The scanner unit fits easily on a tabletop or counter; modular design lets you position scanner and printer separately.
Specifications (MS6000):

Type: Desktop Universal Digital Microform Scanner

Type of Film: Microfiche, jackets, aperture cards, 16mm & 35mm roll film, 16mm film cartridges

Screen: 12" x 12" (300mm x 300mm)

Magnification Lenses: Fixed lens: 7.5x; Zoom lenses: 9 - 16x, 13 - 27x, 23 - 50x zoom ratios

Focus Control: Manual

Image Rotation: Prism rotation (auto, prism lens included); Carrier rotation (fiche carrier)

Scanning Density: 200, 300, 400, 600, 800 dpi

Optical Resolution: 400 dpi

Electronic Zooming: 50% - 200%

Multiple Printing: 1-19 prints (LED countdown identification) w/ MSP 3000 and MSP 2000 printers

Hardware Interface: Video (Direct Print), SCSI-2 (PC) (switchable on front panel)

Exposure: Auto, manual

Scanning Features: Auto Centering, Auto Frame Masking, Auto Image Rotation, Auto Skew Correction, Date Stamp Annotation (optional, w/printer), Footswitch Support, Front-Panel Scanning ("Push" scanning), Grayscale Support (optional), Manual Masking (trimming & masking: optional)

Halogen Lamp: 20 V, 150 W

Power Requirements: AC 100 V, 50-60 Hz; AC 120 V, 60 Hz; AC 230 V, 50 Hz

Power Consumption: 350 W

Dimensions (W x D x H): 19-3/4" x 32-3/8" x 28-1/4" (503mm x 821mm x 716mm)

Weight: 86 lbs. (39 kg)

From: NMS Micrographics

http://www.nmsmicrographics.com/products/ms6000feat.asp
Konica Minolta MS7000

**Product Overview:**

For reading, scanning, and printing to PC, Minolta offers a powerful widescreen solution that makes it easier to do all three—the Minolta MS7000.

The MS7000 has a big 12” x 17” screen for reviewing more information in less time at a higher magnification. With standard dual output, you can switch from PC scanning to laser printing at the touch of a button. And high resolution PC scanning at up to 800 dpi lets you use and distribute microform information in websites, e-mails, faxes, and desktop publishing.

Financial applications will appreciate the check stacking feature of the MS7000 that lets you automatically combine front and back of checks on a single print. There's a wide range of microform media options for film, fiche, jacket and card formats. And modular scanner and printer design lets you set up your system to suit your workspace.

**Features:**

- **Proven Technology:**
  The MS7000 builds upon Minolta's experience with the popular MicroSP 3000 and MS3000 Reader/Printers to give you one of the most reliable, user-friendly microform systems on the market.

- **Simple Dual Output:**
  Simple front-panel controls let you switch from high-quality laser prints at up to 20 sheets per minute to scanning into your PC at up to 800 dpi resolution.

- **Check Stacking:**
  When you're viewing checks on screen, the MS7000 lets you stack front and back images and output them vertically on a single 8-1/2" x 11" page; you can also crop and de-skew each image separately.

- **Anti-Glare Screen:**
  A high-resolution 12” x 17” anti-glare screen with adjustable screen brightness makes reading microform information easier on your eyes.

- **Ergonomic Controls:**
  All important controls are right at your fingertips -- and operation is simple and intuitive, even for first-time users.

- **Fast Front-Panel Scanning:**
  "Push" scanning lets you initiate scanning and make all your scan adjustments right from the front panel of your MS7000, so you don't have to move from scanner to PC keyboard.

- **Auto Imaging Convenience:**
  Motorized Image Rotation, Auto Skew Correction, Auto Centering and Auto Frame Masking are all standard features.

- **Manual Masking:**
  Optional side-screen LED lights provide visual cues to allow you to manually select print or scan areas, as well as define the areas to be masked or cut.

- **Multiform Versatility:**
  The MS7000 supports multiple film and fiche carriers: Universal Carriers UC-2, UC-5, UC-6 and UC-7 for quick changeover from 16mm or 35mm reels to fiche, aperture cards or jackets; Fiche Carrier 5 to accommodate fiche, jackets and aperture cards; Roll Film Carrier 9B, 11, 15A, RFC-22A (for ANSI) or 15M (for M-type) cartridges, or Roll Film Carrier 21 (both ANSI and M-type) with auto load/rewind. (Carriers are interchangeable with Minolta MicroSP-Series and 600-Series reader-printers.)

- **Interchangeable Lenses:**
  Choose from four types of lenses that provide all the magnification ratios you'll need—from a single-focus 7.5x lens, to zoom lenses that span 9 - 16x, 13 - 27x, or 23 - 50x zoom ratios. (Lenses are interchangeable with Minolta RP607Z/MS3000/MicroSP3000 models.)

- **Standard PC Connection:**
  Bring microfilm and microfiche images into your PC and use them in website, e-mail, fax, and desktop publishing applications. Standard SCSI Interface with TWAIN software driver lets you use Windows 95/98, Windows ME, even Windows NT/Millennium; a powerful SCSI-2 connection allows faster transfer rates through standard cables.

- **Grayscale Support:**
  The optional Grayscale Upgrade Kit lets you output 8-bit grayscale images to your PC, with 256 grayscale levels that reveal more detail in halftones and allow low-contrast images to be captured as accurately as possible.

- **MARS Control Capability:**
  When using Minolta roll film carriers RFC-15A, RFC-15M, RFC-22A or RFC-21, the Minolta MARS 4 or MARS Mini 2 Controller enable your computer-aided retrieval software to automatically search, retrieve and print your blipped microfilm images.

- **Compact Modular Design:**
  The scanner unit fits easily on tabletop or counter; modular design lets you position scanner and printer separately.
Specifications (MS7000):

Type: Desktop Universal Digital Microform Scanner

Type of Film: Microfiche, jackets, aperture cards, 16mm & 35mm roll film, 16mm film cartridges

Screen: 12" x 17" (300mm x 440mm)

Magnification Lenses: Fixed lens: 7.5x; Zoom lenses: 9 - 16x, 13 - 27x, 23 - 50x zoom ratios

Focus Control: Manual; Auto (optional)

Image Rotation: Prism rotation (auto, prism lens included); Carrier rotation (fiche carrier)

Zooming: Manual

Scanning Density: 200, 300, 400, 600, 800 dpi (for Check Scanning)

Scanning Speed: 5 seconds per page

Optical Resolution: 400 dpi

Electronic Zooming: 50% - 200%

Multiple Printing: 1-99 prints (LED countdown identification) w/ MSP 3000 printer

Hardware Interface: Video (Direct Print), SCSI-2 (PC) (switchable on front panel)

Exposure: Auto, manual

Scanning Features: Auto Centering, Auto Focus (optional), Auto Frame Masking, Auto Image Rotation, Auto Skew Correction, Date Stamp Annotation (optional, w/printer), Footswitch Support, Front-Panel Scanning ("Push" scanning), Grayscale Support (optional), Manual Masking (trimming & masking; optional)

Halogen Lamp: 20 V, 150 W

Power Requirements: AC 120V, 60 Hz

Power Consumption: 350 W

Dimensions (W x D x H): 22" x 30" x 33-1/2" (560 x 760 x 853mm)

Weight: 143 lbs. 4 oz. (65 kg)

From: NMS Micrographics
http://www.nmsmicrographics.com/products/ms7000spec.asp
Appendix B: Floorplan of the Microforms Center, 140 Parks Library